

Social Sustainability Criteria for Green Hydrogen Projects

A Comparison of Existing International Hydrogen Frameworks



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Abbreviations

EU	European Union
FPIC	Free, prior and informed consent
GHG	Greenhouse gas
GHS	Green Hydrogen Standard
ISCC	International sustainability and carbon certification
PtX	Power-to-X
RED	Renewable Energy Directive
RFNBO	Renewable fuels of non-biological origin
RSB	Roundtable for Sustainable Biofuels
SAF	Sustainable aviation fuels
SDG	Sustainable development goals
SSC	Social sustainability criteria

Key messages

- **Social sustainability criteria currently play a subordinate role in the planning and implementation of hydrogen projects** By October 2023, more than 1,400 new clean hydrogen projects had been announced globally. Around 70 per cent of these projects are based on water electrolysis using renewable electricity and are therefore considered green. However, other sustainability criteria on social aspects are often not considered.
- **One reason is that there is only a very limited number of existing frameworks that operationalise social sustainability in the context of green hydrogen projects, i.e., provide guidance on concrete indicators or ways to measure and verify if specified criteria are fulfilled.** Frameworks that already list social criteria for green hydrogen projects include voluntary certification schemes and public funding programmes. In total, these frameworks include 12 distinct social sustainability criteria, even though none of the frameworks encompasses all 12 criteria. The criteria relate to the topics of organisational accountability, fostering community welfare and sustainable development, social justice and human rights, and environmental and social interconnection.
- **Developing green hydrogen and PtX projects in a socially sustainable manner is a means of risk management from the perspective of project developers.** Specifically, the integration of social aspects leads to transparent processes and active participation of communities, thereby contributing to the public acceptance of projects and mitigating the risk of delays or even failure due to conflicting social interests.
- **The further specification of social sustainability criteria within frameworks like voluntary certification schemes can be realised along two dimensions:** First, the criteria should be based on the most specific indicators that are available already today – for example, for criteria like ‘Safe and Good Working Conditions’, ‘Local Development’ and ‘Protection of Local Resources’, clear operationalisation suggestions already exist. Second, the scope of the criteria and respective indicators can be widened to make them applicable and adaptable to specific local preconditions, for example, with respect to indigenous peoples’ rights, the buy-in of communities or dual use.

1 Introduction

Globally, over 1,400 clean hydrogen projects had been announced across all regions by 2023. 70 per cent of the clean hydrogen supply announced by 2030 is based on water electrolysis using renewable electricity, i.e., a project to produce green hydrogen.¹ There is a rising interest in the question of how these projects can be implemented in a way that is not only environmentally sustainable but also scores high on the social sustainability dimension. Social sustainability is a principle that pertains to equity, well-being, access to social services, participation and social harmony within a community.² As such, it is a broad principle that is difficult to grasp.

This analysis aims to fill a gap and provide more clarity through taking stock of frameworks (e.g., voluntary certification schemes and public funding programmes) that already include social sustainability criteria (SSC) for international renewable hydrogen projects – in these cases, fulfilment of the criteria is a requirement for access to government funding or labelling of the end-product as ‘green’ as part of voluntary markets. This paper identifies and clusters criteria for social sustainability in the frameworks available for international projects with the European Union (EU) as an offtake market in a systematic way, and provides a step towards operationalisation by linking the criteria to measurable indicators.

What cannot be measured can neither be realised nor verified – hence a better understanding of social sustainability indicators is a prerequisite for achieving a socially sustainable green hydrogen market ramp-up in line with calls for a Just Energy Transition³ and the Sustainable Development Goals (SDG)⁴, especially SDG 7: ‘safe access to sustainable energy for all’.

¹ Hydrogen Council and McKinsey & Company, ‘Hydrogen Insights 2023’, **Fehler! Linkreferenz ungültig.**

² Jennifer McGuinn et al., ‘Social Sustainability – Concepts and Benchmarks’, ed. Roberto Bianchini (European Union, April 2020), **Fehler! Linkreferenz ungültig.**

³ Just Energy Transition can be defined as ‘the need to ensure that no one is left behind in the transition to net zero economies – particularly those working in sectors, cities and regions reliant on carbon-intensive industries and production.’ (ILO 2021)

⁴ United Nations, ‘The 17 Sustainable Development Goals’, 2024, **Fehler! Linkreferenz ungültig.**

2 Taking stock of frameworks that include social sustainability criteria

The frameworks for hydrogen and power-to-X projects included in the following analysis were chosen as they are applicable to international projects aiming to export to the EU, and include at least some aspects of social sustainability. Among the six selected frameworks are two voluntary labelling standards (atmosfair fairfuel Standard, Green Hydrogen Standard),

two German public funding instruments (H2Global, H2Uppp), one voluntary scheme (ISCC PLUS) and one scheme that seeks recognition for renewable fuels of non-biological origin (RFNBO) certification in the EU (Roundtable for Sustainable Biofuels). *Table 1* gives an overview.

Table 1: Geographical and technological scope of the frameworks included in the analysis

Name	Type of framework	Market/jurisdiction	Production pathway
atmosfair fairfuel Standard	Private market-based standard / label	International	E-kerosene, e-methanol
Green Hydrogen Standard (GHS)	Private market-based standard / label for certificates of origin	International	Hydrogen, ammonia
H2Global (First tender funded by the German government)	Public funding instrument	Germany + exporters (non-EU countries)	Ammonia, methanol, SAF
H2Uppp	Public funding instrument	Germany + exporters (dedicated countries)	Hydrogen and PtX
ISCC PLUS	Voluntary scheme	International	Bio-based products, renewable fuels, biofuels
Roundtable for Sustainable Biofuels (RSB)⁵	Voluntary scheme	International	Sustainable biomaterials, biofuels, biomass

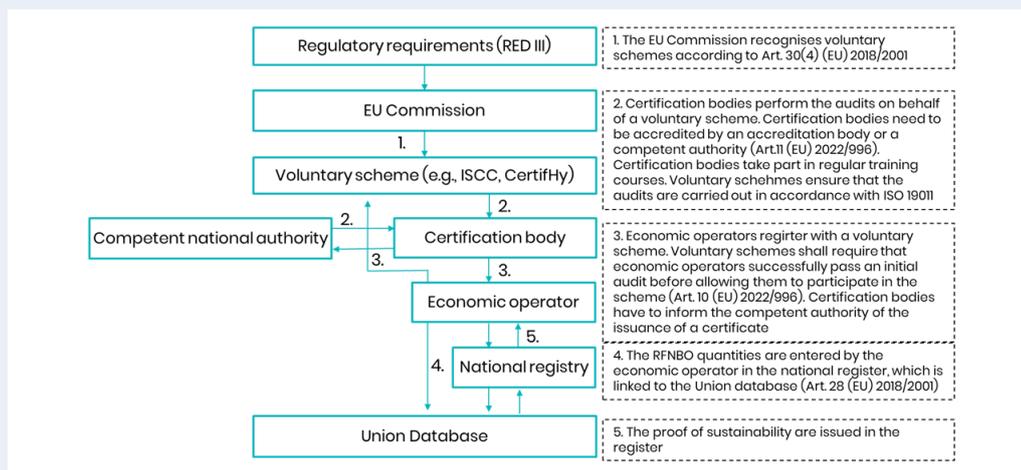
⁵ Referenced documents: RSB-GUI-01-002-01, RSB-GUI-01-005-02; RSB-GUI-01-007-01; RSB-GUI-01-012-01

Additional information: The role of voluntary schemes for hydrogen certification in the EU

Voluntary schemes translate the regulatory framework into tangible, certifiable criteria⁶ and assure overall consistency of the certified products.⁷ Even though these schemes are run privately, they can apply for recognition by the European Commission under the EU sustainability framework. By recognising them, the Commission confirms that they are compliant with the rules included in the revised Renewable Energy Directive (RED III) and, in the case of RFNBO (renewable fuels of non-biological origin), the adopted delegated acts that include criteria for the sourcing of renewable electricity as well as a methodology for determining emission savings.^{8,9} Several voluntary schemes have applied for recognition under the RED III for the certification of RFNBO, but the assessment is still pending.¹⁰

To verify adherence of a standard, a voluntary scheme develops qualitative and quantitative indicators along the value chain, recommendations and codes of practices. For the certification process, external auditors (certification bodies) cooperating with the certification scheme verify the entire production chain from the origin of the raw material and energy to the fuel producer or trader. In the case of RFNBO certification, this means that economic operators must demonstrate that they fulfil the specified sustainability requirements for renewable electricity production, renewable hydrogen production via electrolysis, potential conversion of hydrogen into other RFNBOs, storage and transport, and further use of the final product. The governance structure of the EU certification framework is laid out in *Figure 1*.

Figure 1: Governance structure of the EU certification framework



⁶ ISO, 'Consumer and Standards: Partnership for a Better World', 2012, Fehler! Linkreferenz ungültig.

⁷ Evgenia Pavlovskaia, 'Sustainability Criteria: Their Indicators, Control, and Monitoring (with Examples from the Biofuel Sector)', 2014, Fehler! Linkreferenz ungültig.

⁸ European Union, 'Delegated Regulation - 2023/1184'.

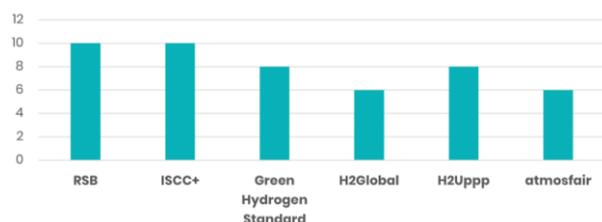
⁹ European Union, 'Delegated Regulation - 2023/1185'.

¹⁰ European Union, 'Voluntary Schemes', Fehler! Linkreferenz ungültig.

3 Systematic account of social sustainability criteria

A total of twelve distinct social sustainability criteria (SSC) are identified across the assessment frameworks under analysis. The voluntary schemes RSB and ISCC PLUS include ten SSC each, the voluntary labelling standard GHS includes eight, the voluntary atmospheric standard includes six and the public funding instrument H2Uppp and H2 Global include eight and six criteria, respectively (see Figure 2).

Figure 2: Number of included SSC in the frameworks under analysis



Building on previous classification exercises and the UN's Agenda 2030¹¹, the identified SSC were grouped into four thematically organised clusters of criteria: *Organisational Accountability*, *Community Welfare and Sustainable Development*, *Social Justice and Human Rights* as well as *Environmental and Social Interconnection*.

Organisational Accountability encompasses SSC that are directly related to the internal responsibilities of a company to ensure ethical, legal and transparent operations. It also refers to the company's organisational and financial stability. **Community Welfare and Sustainable Development** includes criteria aimed at enhancing the well-being and development of local communities. The focus is on engaging and supporting communities through direct involvement and development initiatives. **Social Justice and Human Rights** covers criteria that promote fairness, equality and respect for fundamental human rights. It emphasises the protection and empowerment of

marginalised groups and ensuring equitable treatment for all individuals. **Environmental and Social Interconnection** highlights the interdependent relationship between environmental sustainability and social responsibility. It includes indicators that address how the use and protection of natural resources affect the social fabric of communities. In the table below, the criteria subsumed under each of the four thematic clusters are presented and defined in more detail.

1. Organisational accountability

Compliance with laws and strategies refers to a project developers' duty to both know of and adhere to local laws.

Safe and good working conditions are recognised both by the human right to work and the ILO Conventions.¹² This includes possibilities for collective bargaining and unionisation, protection from discrimination, fair payments and no child or forced labour and safety at the workplace.

Transparency of processes refers to the publication of relevant information, both positive and negative. It is mostly employed as an anti-corruption measure. It may also include the publishing of financial information such as ownership, subsidies and contracts.^{13,14}

Stability of companies refers both to the conditions in the country in which a project is located, such as likelihood of unrest, political stability and the rule of law, but also stability

¹¹ United Nations, 'Transforming Our World: The 2030 Agenda for Sustainable Development', 2015, Fehler! Linkreferenz ungültig.

¹² United Nations, 'Universal Declaration of Human Rights', United Nations, December 10, 1948, Fehler! Linkreferenz ungültig.

¹³ Transparency International, 'What Is Corruption?', 2024, Fehler! Linkreferenz ungültig.

¹⁴ Kristina Kundeliene and Sviesla Leitoniene, 'Business Information Transparency: Causes and Evaluation Possibilities', 2015, Fehler! Linkreferenz ungültig.

of a company regarding their business planning and economic viability.¹⁵

No dual use refers to products that can be applied both for military and non-military use. Hydrogen is referred to in the EU's list of dual-use items regarding various equipment and processes to create heavy water for nuclear technology.¹⁶ The use of hydrogen vehicles in military applications is a dual-use application that is currently under discussion.¹⁷ As part of ethical responsibility of companies, this criterion specifies that the final products may not be used primarily for military purposes.¹⁸

2. Community welfare and social development

Buy-in of communities. The concept of 'community buy-in' refers to gaining the acceptance and active support of local residents. This is frequently described as the ultimate objective of participatory processes. Communities' support for a project is essential for its sustained success and effective implementation. Although it is closely related to the concept of 'participation', this criterion is distinct in that it specifically addresses the need for communities to not only engage but also endorse and support the project fully. Effective communication and delivering of promised benefits, such as job creation, are essential for achieving this goal. Hydrogen frameworks address these needs by developing indicators for participation, feedback and dispute resolution, thereby ensuring that community support is both measured and managed effectively.¹⁹

Local development means to improve the economic future, capacity and quality of life for a local population. For RFNBO projects, this can mean involvement of the community through both job creation and fostering their own businesses, knowledge and technology transfer to the community and an increase in local services such as education facilities or clean energy.^{20,21}

Participation of the public, the affected community, involves processes by which stakeholders are involved in decisions about a project. This can range from simply providing them with information to consultations, involvement, collaboration or empowerment.²²

3. Social justice and human rights

Gender equality contains the absence of discrimination against women (and girls), violence against and exploitation of women, access to equal opportunities and participation in decision-making processes.²³

Indigenous peoples' rights have been declared by the United Nations in 2007.²⁴ Most important for project development are the rights to self-governance and participation in decision making, as well as the rights to occupy their traditional lands and to not be forcibly removed from lands and territories. When establishing criteria around land rights especially for indigenous people in the certification schemes the concept of free, prior and informed consent (FPIC) is often referenced. At its core this means that indigenous people, mostly through their own representative mechanism, can withhold or give

¹⁵ ISCC PLUS, 'ISCC 202 Sustainability Requirements Version 3I', July 1, 2020.

¹⁶ European Union, 'Exporting Dual-Use Items', accessed August 9, 2024, [Fehler! Linkreferenz ungültig.](#)

¹⁷ Walker Mills and Erik Limpaecher, 'The Promise of Hydrogen: An Alternative Fuel at the Intersection of Climate Policy and Lethality', 2021, [Fehler! Linkreferenz ungültig.](#)

¹⁸ H2UPPP 2022.

¹⁹ The Green Hydrogen Organisation (GH2), 'Green Hydrogen Contracting - Community Consultation, Local Development, and Transparency', May 2022.

²⁰ ILO, 'Local Economic Development (LED)', 2024,

[https://www.ilo.org/ilo-department-sustainable-enterprises-productivity-and-just-transition/areas-work/local-economic-](https://www.ilo.org/ilo-department-sustainable-enterprises-productivity-and-just-transition/areas-work/local-economic-development-led#:~:text=The%20promotion%20of%20Local%20Economic)

[development-led#:~:text=The%20promotion%20of%20Local%20Economic.](#)

²¹ Debra Mountford et al., 'Delivering Local Development Review to Assess the Efficiency of the Regional Development Agencies Integrated Network of the Slovak Republic', [Fehler! Linkreferenz ungültig.](#)

²² Frank Vanclay et al., 'Social Impact Assessment: Guidance for Assessing and Managing the Social Impacts of Projects' (International Association for Impact Assessment, 2015), [Fehler! Linkreferenz ungültig.](#)

²³ The Global Goals, 'Goal 5: Gender Equality', 2022, [Fehler! Linkreferenz ungültig.](#)

²⁴ United Nations, 'United Nations Declaration on the Rights of Indigenous Peoples', 13 September 2007, [Fehler! Linkreferenz ungültig.](#)

consent to projects that affect their land and resources. This must be established by giving all necessary information and not coercing them in any form.²⁵

Land rights can refer to the right to access, use, control and transfer land and property. While many countries have formal registries, these rights can also be informal or customary. While it is not a human right in itself, the right to land is closely linked to human rights and other international laws.²⁶ In project development the most important aspect of this is physical or economic displacement. Location choice and minimisation of impacts, as well as compensation for impact on communities, are aspects linked to this criterion.²⁷

4. Environmental and social interconnection

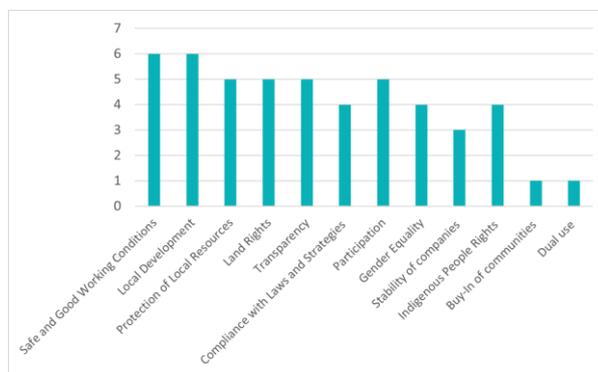
Protection of local resources greatly overlaps with environmental criteria. It includes, for example, the management of water, noise, biosphere and waste both in regard to quality of the resources and with regard to health and safety of the local community.²⁸ Moreover, local resources both affect the right of the local communities to have safe access to those resources on the one hand, and on the other, the duty of the project developers to ensure that those resources are not being damaged. Both sides have to be taken into consideration.

The criteria are interrelated. Land rights are a prerequisite for protection of local resources by local communities. Lastly, it should be noted that of the listed criteria should not be evaluated in strict isolation from one another, but rather be seen as complementary. Aspects such as working conditions and gender

equality are closely linked. Good working conditions encompass the non-discriminatory access of women to jobs, i.e., non-discrimination in employment due to maternity.²⁹ Also, land rights can be categorised under both Social Justice and Environmental Responsibility, reflecting their dual impact on community welfare and resource management.

Figure 3 indicates the occurrence of each SSC in the six analysed frameworks. It shows that *safe and good working conditions* and *local development* are addressed by all of them. Conversely, the buy-in of communities and no dual use are only addressed by one. This descriptive analysis already indicates that there is room for assessment frameworks to become more comprehensive regarding the social sustainability of hydrogen and PtX projects.

Figure 3: Occurrence of each SSC in the six assessment frameworks



²⁵ Free, Prior, & Informed Consent – the Implementation Project, The Implementation Project, 2021, Fehler! Linkreferenz ungültig.

²⁶ United Nations Office of the High Commissioner for Human Rights, 'Land and Human Rights: Standards and Applications', (UN, 2015), <https://digitallibrary.un.org/record/3974850?v=pdf>.

²⁷ Frank Vanclay et al, 'Social Impact Assessment: Guidance for Assessing and Managing the Social Impacts of Projects'.

²⁸ Food and Agriculture Organization of the United Nations, 'Law on Natural Resources (No. 1102-XIII)', (2017), Fehler! Linkreferenz ungültig.

²⁹ 'Rwanda Leads the Way in Gender Equality with First National Gender Standards in Africa', 30 March 2023, Fehler! Linkreferenz ungültig.

4 Operationalisation of social sustainability criteria

What cannot be measured cannot be verified – hence it is necessary to move beyond conceptual descriptions of SSC and identify measurable indicators. *Annex 2* provides a detailed overview of the SSC with the respective indicators and proposed operationalisation measures, if available.

In order to evaluate the frameworks by the degree of operationalisation of the included SSC, the following

provides an ordinal score; see *Figure 4*. If an SSC is referenced within a framework, with no further elaboration or specification provided, the score is one. If a framework includes an SSC and provides indicators for a successful implementation without specifying how to measure it, the score is two. If, on top of a referenced indicator, operationalisation of an SSC within a project is possible and can be measured, the score is three.

Figure 4: Example – Methodology of classification of the scale range of a sustainability criterion

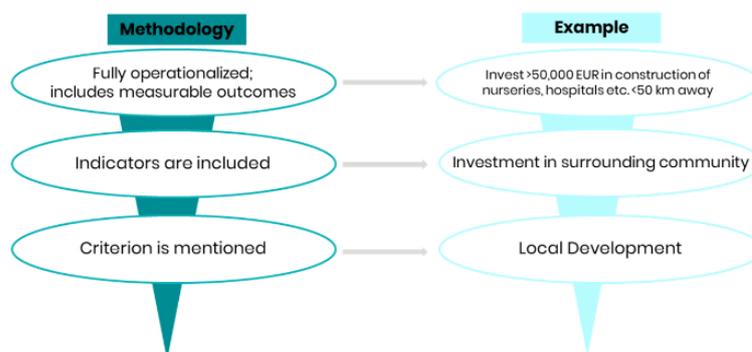
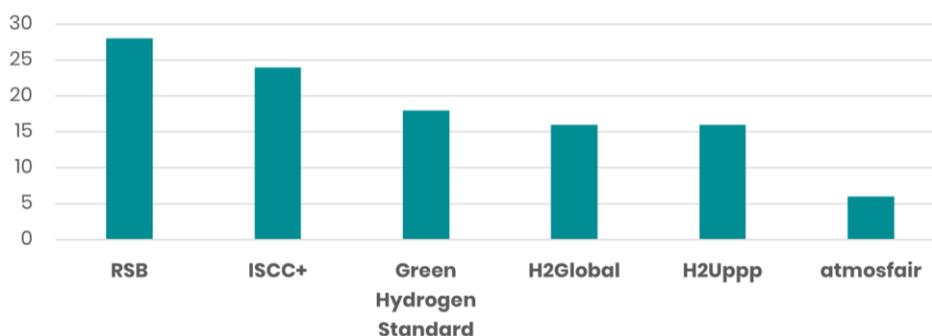


Figure 5 indicates the total score of the different frameworks. The highest possible score a framework can attain is 36, as a score of three for each of the 12

identified SSC can be achieved. *Figure 5* shows that none of the assessment frameworks fully operationalises SSC.

Figure 5: Total score of SSC operationalisation of the frameworks under analysis



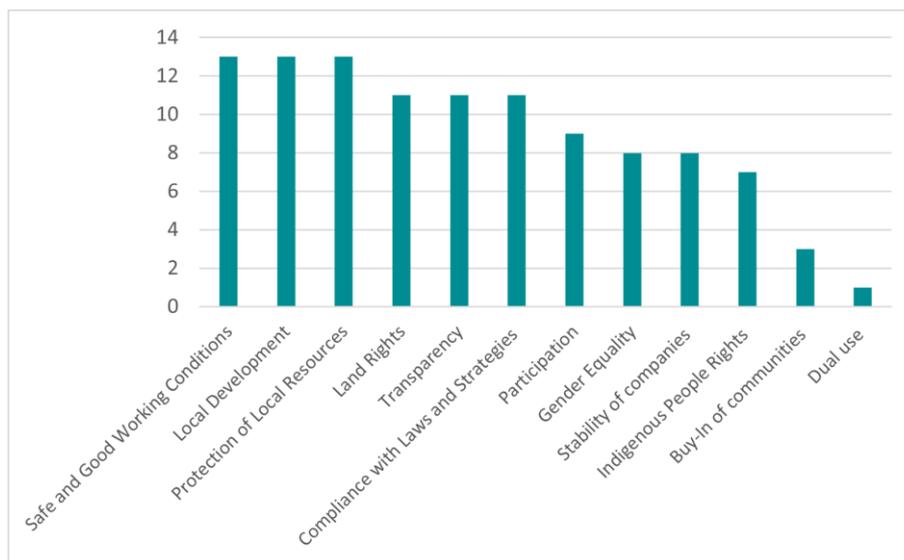
RSB and ISCC PLUS score highest. The other frameworks score around half of the possible points and the atmosfair standard has the lowest operationalisation score. Overall, the results show that there is still significant room for improvement in the operationalisation of SSC.³⁰

Figure 6 shows the total score for each SSC, indicating the respective degree of operationalisation. In the cluster *organisational accountability*, most criteria score relatively high, except for the criterion *dual use*, where limited operationalization is evident. The overall high score for *organisational accountability* is reflected, for example, in the established practice of community benefit agreements (CBAs)³¹ and project labour agreements (PLAs).³² As for the cluster *group community welfare and development*, the results show that local development scores comparatively high, while the buy-in of communities ranks low and participation of the public scores in the middle.

This indicates that more work needs to be done to operationalise the measurement of this group of criteria. The SSC specification facilitates the implementation of the frameworks and ensures the credibility of green hydrogen projects, thereby providing project developers with a risk management tool.

Within the cluster *social justice and human rights*, the criterion related to land rights is most operationalised with gender equality and indigenous peoples' rights scoring moderately low. Finally, the criterion *protection of local resources* scores relatively high as the measurement of environmental impact is comparatively high on international agendas. Particularly important for hydrogen and PtX products is the topic of integrated water resource management, including the management of brine produced by desalination plants, and the protection of biosphere, which is a prerequisite for health and food security for local communities.³³

Figure 6: Inclusion and degree of operationalisation of social sustainability criteria in the analysed frameworks



³⁰ The highest possible score one standard can attend is 36, as for each SSC a score of three can be reached. As 12 social criteria have been identified, one standard addressing all SSC with detailed implementation guidelines would receive the score: $12 \times 3 = 36$.

³¹ A CBA is a voluntary but legally binding agreement that aims to improve local conditions, primarily through the provision of basic services.

³² A PLA is a pre-hire collective bargaining agreement between a labour organisation and a contractor. It determines the employment conditions for local workers.

³³ H2Global suggests: Ensuring no consumption of fossil water and water intended for human consumption within an area that is a dry region (verified by list of value chain activities, including water procurement contractors, list of water supplies).

5 Outlook

Developing green hydrogen and PtX projects in a socially sustainable manner is a means of risk management from the perspective of project developers. To provide guidance in this regard, the further development of voluntary certification schemes that specify sustainability criteria beyond the ecological dimension would be highly instructive. They can be developed further along two dimensions.

First, more specific indicators that can be measured are important for translating social sustainability concepts into real-world fields of action. As a first step in this direction, Safe and Good Working Conditions, Local Development and Protection of Local Resources are the social sustainability criteria that to date provide the most detailed indicators and operationalisation measures.

Secondly, the scope of the criteria and respective indicators can be expanded to make them applicable and adaptable to specific local preconditions, e.g., with respect to indigenous peoples' rights, the buy-in of communities or dual use.

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Annex

Annex I: Detailed overview of the six analysed frameworks

atmosfair fairfuel Standard³⁴: Developed by the German non-profit concerned with decarbonisation in air travel, the fairfuel standard only applies to sustainable aviation fuel (e-kerosene). For social and governance standards they apply the European Investment Bank's ESG criteria and the equator principles:

- EIB6: Involuntary resettlement
- EIB7: Rights and interests of vulnerable groups
- EIB8: Labour standards
- EIB9: Occupational and public health, safety and security
- EIB10: Stakeholder engagement
- EQ5: Grievance mechanism³⁵

Green Hydrogen Standard³⁶: Developed by the Green Hydrogen Organisation, a Swiss non-profit foundation funded by private industries. The accreditation of a project under this standard allows producers to label the produced hydrogen as 'GH2 Green Hydrogen' and to receive tradable certificates of origin. Thus, it is important to note that it is not a standard, which can be confusing based on the name. The main requirements involving social aspects are:

- Stakeholder engagement and government approval
- Project location and design
- Social impact
- Health and safety
- Governance, transparency and accountability

H2Global³⁷: H2Global is a trust established in 2021 and funded by the German government. Companies participating in the tenders have to adhere to sustainability criteria. The main social criteria include:

- An environmental and social impact assessment must be carried out according to established standards
- No forced resettlement
- Social and work standards according to ILO
- Local value creation, competency gains and gender

H2Uppp³⁸: H2Uppp was initiated by the Federal Ministry for Economic Affairs and Climate Action and the German Agency for International Cooperation. H2Uppp aims to support public-private partnerships along the hydrogen and PtX value chain. It focuses on the development of hydrogen markets in developing countries. While only environmental criteria are deemed essential, ESG criteria are evaluated as well. They address the following social aspects:

- Access to energy and resources
- Human rights and labour standards
- Health and safety
- Job creation

³⁴ Atmosfair, 'Atmosfair Fairfuel - Kriterienkatalog: Gütesiegel Für Grünes, Synthetisches Kerosin Version 1.0' (Atmosfair, March 2021), <https://www.atmosfair.de/wp-content/uploads/atmosfair-fairfuel-standard-30092021.pdf>.

³⁵ Further criteria include EIB5: Cultural Heritage and EQ10: Reporting and Transparency

³⁶ The Green Hydrogen Organisation (GH2), 'About | Green Hydrogen Standard', The Green Hydrogen Organisation (GH2), 2022, <https://www.greenhydrogenstandard.org/about>.

³⁷ H2 Global, 'Ankauf von Grünen Wasserstoffderivaten (Los 1 - Ammoniak)', TED § (2022), <https://ted.europa.eu/en/notice/-/detail/675894-2022>.

³⁸ BMWK, 'International Hydrogen Ramp-up Programme - H2Uppp', Bundesministerium für Wirtschaft und Klimaschutz, 2023, <https://www.bmwk.de/Redaktion/DE/Dossier/Wasserstoff/foerdermassnahme-h2uppp.html>.

The International Sustainability and Carbon Certification (ISCC) PLUS: ISCC standards have been developed for biomass applications, including in energy, food, feed, and industrial applications. As such they are not directly applicable to RFNBOs. They are, however, currently working to prepare their RFNBO certification scheme documents.³⁹ Once they receive the approval of the EU Commission, they can certify RFNBOs under the ISCC EU certification scheme.⁴⁰ Therefore, the ISCC Plus and respective Document 202, Version 3.1. are also analysed in this paper. Many considerations regarding biofuel certification can be carried over to hydrogen. Sustainability requirements that fall within the scope of this paper:

- Principle 3: Safe working conditions
- Principle 4: Compliance with human, labour and land rights
- Principle 5: Compliance with laws and international treaties
- Principle 6: Sound management practices and continuous improvement

Roundtable for Sustainable Biofuels (RSB): The Roundtable for Sustainable Biofuels has been set up to cover the topic of biomass applications. The organisation also has a standard for advanced fuels that also applies explicitly to RFNBOs.⁴¹ Additionally, a cooperation with CertifHy was announced in November 2022 to develop an additional CertifHy standard (RFNBO and RSB) that also include the additional RSB sustainability criteria. The social sustainability requirements that are applied to advanced fuels (and which will likely be applied to the RFNBO and RSB standard) are⁴²:

- Principle 1: Legality
- Principle 4: Human and labour rights
- Principle 5: Rural and social development
- Principle 23: Land rights

³⁹ Last updated: June 2024.

⁴⁰ Juliane Pohl, 'ISCC Updates on RFNBO Certification Approach' (ISCC System GmbH, 16 January 2024), **Fehler! Linkreferenz ungültig.**

⁴¹ RSB – Roundtable on Sustainable Biomaterials Association, 'RSB Standard for Advanced Fuels (RSB-STD-01-010)', 1 December 2023, **Fehler! Linkreferenz ungültig.**

⁴² RSB – Roundtable on Sustainable Biomaterials Association, 'RSB Principles & Criteria (RSB-STD-01-001)' (RSB – Roundtable on Sustainable Biomaterials Association, 18 December 2023), **Fehler! Linkreferenz ungültig.**

Annex 2: Overview of SSC with linked indicators and operationalisation measures included in the frameworks

Social sustainability criteria	Indicator	Operationalisation measures
Local Development	Knowledge and technology transfer/ job creation	<ul style="list-style-type: none"> • Water management: <ul style="list-style-type: none"> • Ensuring no contribution to water stress (H2Uppp) • Using waste water where possible • Ensuring no consumption of fossil water and water intended for human consumption within area that is a dry region (Verified by list of value chain activities including water procurement contractors, list of water supplies) (H2Gloabl) • Designated water storage areas (ISCC) • Health and safety <ul style="list-style-type: none"> ○ Avoiding waste, noise and air quality issues identified and monitored, biodiversity protected, i.e., by use of best practices (GHS/ISCC) ○ Identifying and monitoring public health issues (GHS) ○ Preventing abuse by security personnel ○ Undertaking traffic management ○ Ensuring safe material handling (H2Uppp) ○ Ensuring brine disposed of and properly treated (H2Uppp) ○ Ensuring no impact on food security, mitigation measures (ISCC) ○ Prohibiting certain chemicals (ISCC) • Land use <ul style="list-style-type: none"> ○ Ensuring that land has to be one km away from certain listed categories (and dialogues for biodiversity) (H2Gloabl) ○ Ensuring soil quality (H2Uppp)
	Involvement (esp. of vulnerable and marginalised groups)	<ul style="list-style-type: none"> • Community engagement <ul style="list-style-type: none"> ○ Creation of open forums ○ Active feedback process ○ Conducting meetings with affected groups ○ Planning for local development and engagement of small businesses (GHS) ○ Ensuring economic inclusion (GHS) • Appropriate information dissemination <ul style="list-style-type: none"> ○ Establishing mechanisms for complaints ○ Reporting data ○ Building transparency about contracting and procurement (GHS) <p>Socio-economic improvement in region of poverty (RSB)</p>

Social Sustainability Criteria	Indicator	Operationalisation measures
Local Development	Knowledge and technology transfer/ job creation	<ul style="list-style-type: none"> • Water management: <ul style="list-style-type: none"> • Ensuring no contribution to water stress (H2Uppp) • Using waste water where possible • Ensuring no consumption of fossil water and water intended for human consumption within area that is a dry region (verified by list of value chain activities including water procurement contractors; list of water suppliers) (H2Global) • Designated water storage areas (ISCC) • Health and safety <ul style="list-style-type: none"> ○ Avoiding waste, noise and air quality issues identified and monitored, biodiversity protected, i.e., by use of best practices (GHS/ISCC) ○ Identifying and monitoring public health issues (GHS) ○ Preventing abuse by security personnel ○ Undertaking traffic management ○ Ensuring safe material handling (H2Uppp) ○ Ensuring brine disposed of and properly treated (H2Uppp) ○ Ensuring no impact on food security, mitigation measures (ISCC) ○ Prohibiting certain chemicals (ISCC) • Land use <ul style="list-style-type: none"> ○ Ensuring that land has to be one km away from certain listed categories (analogues for biodiversity) (H2Global)
	Involvement (esp. of vulnerable and marginalised groups)	<ul style="list-style-type: none"> • Community engagement <ul style="list-style-type: none"> ○ Creation of open forums ○ Active feedback process ○ Conducting meetings with affected groups ○ Planning for local development and engagement of small businesses (GHS) ○ Ensuring economic inclusion (GHS) • Appropriate information dissemination <ul style="list-style-type: none"> ○ Establishing mechanisms for complaints ○ Reporting data ○ Building transparency about contracting and procurement (GHS) <p>Socio-economic improvement in region of poverty (RSB)</p>

Social Sustainability Criteria	Indicator	Operationalisation measures
	Local processing	<ul style="list-style-type: none"> • Reporting of numbers of jobs and local businesses involved • Measurement from indicators against baseline survey carried out under Social Impact Assessment (SIA) reviewed every three years (RSB)
	Energy transition and safety, grid stability, decoupling of growth from resource use	<ul style="list-style-type: none"> • Energy transition <ul style="list-style-type: none"> ○ Prohibiting impairment of local energy transition (H2Uppp) ○ Reporting of numbers on energy use and grid ○ Estimating transportation requirements • Decoupling of growth from resource use <ul style="list-style-type: none"> ○ Referencing of defossilisation trajectories ○ Diversification of sources Decoupling of energy consumption and GHG emissions (H2Uppp)
	Increase in local services	<ul style="list-style-type: none"> • Providing farm/plantation residents access to basic services^[ii] and primary school education, social benefits (ISCC) • Making retirement funds available for workers and residents • Ensuring SIA and self-declaration on human rights (ISCC) • Providing at least €50,000 investment into kindergartens/schools/hospitals/shelters <=50 km away from installation (if population density too low, in closest town with >20,000 inhabitants) (H2Global)
Respect for Indigenous Communities	Free prior informed consent (FPIC)	<ul style="list-style-type: none"> • Proactive engagement <ul style="list-style-type: none"> ○ Including vulnerable groups in participatory process (RSB) ○ Creating proof of endorsement/agreement ○ Providing informed consultation and facilitating participation (GHS) ○ Respecting existing traditional land rights (RSB) <ul style="list-style-type: none"> • Cultural sensitivity <ul style="list-style-type: none"> ○ Promoting development benefits in culturally appropriate ways (GHS)
	Protection of cultural heritage	<ul style="list-style-type: none"> • Minimising negative impact through project design (GHS) • Ensuring community access • Restoring damaged ecosystems and/or cultural heritage sites

^[ii] Basic services include the following services, defined by the UN: regular availability of power; Internet and computer for pedagogical use; adapted infrastructure for education facilities; basic access to drinking water; basic sanitation facilities, Fehler! Linkreferenz ungültig.

Social sustainability criteria	Indicator	Operationalisation measures
Protection of Land Rights (formal and informal)	Choice of location	<ul style="list-style-type: none"> • Due diligence <ul style="list-style-type: none"> ○ Conducting impact assessment ○ Establishing proof of assessment process and reasoning behind choice ○ Engaging an independent specialist (RSB) ○ Identifying existing land rights (ISCC) ○ Providing proof of documents showing legal ownership/lease and history of land tenure (ISCC) • Conducting active community engagement (GHS)
	Minimisation of impacts	<ul style="list-style-type: none"> • Allowing the retention of access to land/water/resources • In the case of relocation: ensuring that it is not forced, compensation is given and there is improvement of living conditions • Prohibiting forced resettlement up to three years before construction (H2Global)
Buy-in of Affected Communities	Participation	<ul style="list-style-type: none"> • Providing accessible information to communities • Consultations during decision-making process • Providing independent moderation • Procuring official endorsements • Creating proof of process
	Feedback	<ul style="list-style-type: none"> • Facilitating grievance mechanism • Providing independent moderation • Ensuring continuous monitoring
	Dispute resolution	<ul style="list-style-type: none"> • Creating channels and established panel/methods • Carrying out successful resolutions • Providing guidance on consensus building tools and conflict resolution (RSB)

Social sustainability Criteria	Indicator	Operationalisation measures
Protection of Local Re-sources/Health/Safety		<ul style="list-style-type: none"> • Water management: <ul style="list-style-type: none"> • Ensuring no contribution to water stress (H2Uppp) • Using waste water where possible • Ensuring no consumption of fossil water and water intended for human consumption within area that is a dry region (verified by list of value chain activities including water procurement contractors, list of water supplies) (H2Global) • Designated water storage areas (ISCC) • Health and safety <ul style="list-style-type: none"> ○ Avoiding waste, noise and air quality issues identified and monitored, biodiversity protected, i.e., by use of best practices (GHS/ISCC) ○ Identifying and monitoring public health issues (GHS) ○ Preventing abuse by security personnel ○ Undertaking traffic management ○ Ensuring safe material handling (H2Uppp) ○ Ensuring brine disposed of and properly treated (H2Uppp) ○ Ensuring no impact on food security, mitigation measures (ISCC) ○ Prohibiting certain chemicals (ISCC) • Land use <ul style="list-style-type: none"> ○ Ensuring that land has to be one km away from certain listed categories (analogues for biodiversity) (H2Global) ○ Ensuring soil quality (H2Uppp) ○ Ensuring no land use with high value (type of land analysed completely) (ISCC) ○ Prohibiting location in high-nature-value landscapes (H2Uppp) ○ Conducting conservation impact assessment (RSB) ○ Maintaining record-keeping (ISCC)

Social sustainability criteria	Indicator	Operationalisation measures
Safe and Good Working Conditions	Collective bargaining agreement and unionisation	<ul style="list-style-type: none"> • Ensuring no discouragement/punishment • Facilitating collective agreements or unions • Conducting labour management assessment including occupational health and safety, fair pay, unionisation rights, encouraged to adhere to IFC performance standards (GHS) • Allowing elected worker (council) representation, labour organisation/collective bargaining (ISCC)
	Protection from discrimination	<ul style="list-style-type: none"> • Providing grievance mechanism, maternity rights, equity initiatives • Ensuring active involvement of women through data collection
	No child labour, forced labour, slavery	<ul style="list-style-type: none"> • Monitoring of supply chain • Including a minimum working age in contracts • Ensuring no child labour, no forced labour and creating expectations to work with suppliers to eradicate slavery (GHS)
	Fair payment and contracts	<ul style="list-style-type: none"> • Providing yearly negotiations/collective agreements in the absence of official minimum wage • Including overtime documentation in contracts (ISCC) • Providing breaks • Facilitating capacity building, improvement of skilled labour, transfer of knowledge for locals • Ensuring no forced labour, no harsh or inhumane treatment, fair and legal contracts, working hours do not to exceed 48 hours/week at least one of seven days off, documentation (payslips), living wage (ISCC) • Establishing open communication from management, records on all workers available (ISCC)
	Safety (accidents, contamination, etc.)	<ul style="list-style-type: none"> • Providing training, prevention and emergency plans • Implementing, monitoring and executing health and safety measures (H2Uppp) • Establishing certifications and records • Ensuring training and competence via record keeping, qualification requirements (ISCC) • Ensuring accident prevention and handling via risk assessment, measures, protective clothing, warning signs, first aid kits, person responsible for workers' health, safety and good social practice (ISCC) • Ensuring limits on hazardous activities (ISCC)

Social sustainability criteria	Indicator	Operationalisation measures
Transparency	Fair business processes	<ul style="list-style-type: none"> • Enforcing anti-bribery policy, corruption standards • Providing proof of training, handling and absence of incidences • Creating sound business structure that addresses transparency and anti-corruption standards (prohibit bribery and corruption) (GHS) • Ensuring transparent communication (H2Uppp)
Stability of Companies	Business planning and internal commitments	<ul style="list-style-type: none"> • Ensuring funding mechanisms, growth prospects, project planning, market needs, strategies and handbooks, low levels of new debt of developing country • Ensuring economic viability is achieved as planned, adjustment to changing markets • Cooperation is assessed in the context of political stability + economic risk (LCFS) • Creating economic documentation, business plan that reflects long-term viability (SCC)
	Good management practices	<ul style="list-style-type: none"> • Manpower management <ul style="list-style-type: none"> ○ Ensuring record keeping, planning, unit-wise improvements, good worker-management relations ○ Ensuring no grievances exist, development numbers • Financial management <ul style="list-style-type: none"> ○ Maintaining financial responsibility via (listed) instruments sufficient to cover costs of corrective action, well plugging and abandonment, post-injection site care and closure, emergency and remedial response + additional response for other circumstances (LCFS) ○ Financial risk according to Moody's rating/equivalent rating from Standard&Poors and Fitch contributes to project risk (LCFS) <ul style="list-style-type: none"> ○ Identifying public and private financing options (LCFS) <p>Ensuring good customer relations, systematic record-keeping (production units, fields, etc.), commitment to good customer relations, continuous improvement, compliance of subcontractors (SCC)</p>

Social Sustainability Criteria	Indicator	Operationalisation measures
	Compliance with local laws	<ul style="list-style-type: none"> Ensuring compliance Ensuring no litigation, fines, etc.
	Stability and human rights in the region	<ul style="list-style-type: none"> Planning with relevant human rights indices such as World Justice project rule of law index, human rights index, etc. Ensuring no incidence or incidences are reported well
Compliance with laws & strategies	Alignment with national strategies	<ul style="list-style-type: none"> Ensuring compliance Contributing to local and national policies, objectives (Green Hydrogen Standard) Ensuring alignment with national and regional rights and standards (H2Uppp) Maintaining summary of government licences and approvals (property rights, land use, water rights, environment, public health, foreign investment) (GHS)
	Adherence to labour rights	<ul style="list-style-type: none"> Ensuring compliance with labour laws, human rights self-declaration (ISCC) Enumerating list of applicable areas of the law Mitigating/remedying human rights issues (GHS) Providing legal register, training system (RSB)
	Fulfillment of SDGs	<ul style="list-style-type: none"> Carrying out evaluation Ensuring stats show adherence to SDGs Contributing to SDGs (GHS)

Social sustainability criteria	Indicator	Operationalisation measures
	Compliance with international recognised hydrogen certification and standards	
No Dual Use		<ul style="list-style-type: none"> Ensuring that final products are not used for military purposes
Participation		<ul style="list-style-type: none"> Identifying issues through an assessment process utilising local knowledge; proactive engagement (GHS) Promoting effective stakeholder involvement, especially vulnerable groups, etc. (H2Uppp) FPIC, invite all stakeholders, scope of engagement shall be determined by the scale of operations, stakeholder analysis, participation of disadvantaged groups, informal workshops for local understanding, grievance mechanism (transparent access, etc.) (RSB) Establishing grievance mechanism and mediation (SCC)
Gender Equality		<ul style="list-style-type: none"> Providing equal opportunities officer if more than 500 employees who is notified of at least 75% of job postings and job interviews, can attend at least 10% of interviews, prepares report on sex discrimination (H2Global) Ensuring at least ten employment contracts with women that are > one year, minimum €50,000/year, at least 25% of working hours on activities related to construction or operation (H2Global) Establishing special programmes for benefit of women in local development, non-discrimination and special safety training (RSB) Providing verification of equality of opportunities, no discrimination in employment due to maternity leave (SCC)

About the Global Alliance Powerfuels

The Global Alliance Powerfuels was founded in 2018 and is backed by corporate member organisations and an international network of 23 partner institutions from research and civil society. It is coordinated by the German Energy Agency (dena). All members and partners are united by the common goal of advancing the development of sustainable markets for renewable hydrogen and its derivatives (powerfuels). Further details about the Alliance and its activities can be found at www.dena.de.