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Strengthening Sustainability Governance for a Rapid Hydrogen Ramp-Up

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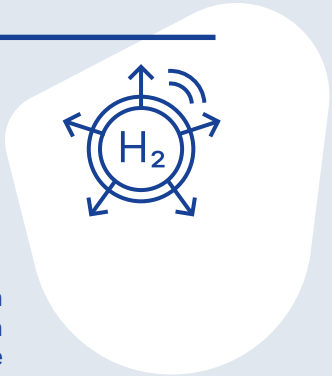
Strengthening Sustainability Governance for a Rapid Hydrogen Ramp-Up

To mobilize investment in the hydrogen sector, it is essential to harness its economic benefits across the value chain, while effectively identifying and managing associated risks. A comprehensive review of the sustainability governance landscape in the hydrogen sector [1] shows that many elements to address sustainability-related challenges are already in place in the European Union. Strengthening sustainability governance in the hydrogen sector, therefore, does not require a host of new instruments or mechanisms. Rather, it requires measures to facilitate its effective and streamlined implementation. This will not only ensure that sustainability requirements are upheld but also strengthen the ability of project developers to comply with pre-existing requirements and support their cost-effective implementation.

This policy paper proposes four specific measures at the international and EU-level that will not only make the governance architecture more effective in supporting sustainability goals but also strengthen capacities along the value chain to comply with already existing requirements.

Key findings

Existing sustainability governance in the EU offers a strong foundation for safeguarding social and environmental risks in the hydrogen sector



The existing sustainability governance landscape in the European Union provides a strong basis for enabling a sustainable ramp-up of the hydrogen sector. It does not require a host of new instruments or mechanisms to be effective. Rather, it requires measures at the international and EU-level to facilitate its streamlined implementation.

Recommendation 1: Develop hydrogen-specific guidelines for implementing sustainability-related due diligence

Hydrogen-specific guidelines for conducting sustainability-related due diligence can support companies in accessing financial resources while strengthening efforts to mitigate environmental and social risks. A joint effort by the major multilateral development banks and key private finance institutions to develop such guidelines for the hydrogen sector could help establish a global reference point for this purpose.

Recommendation 2: Develop an ISO standard for hydrogen sustainability

Complementing the development of sector-specific guidelines, the development of an ISO standard for the assessment of sustainability in the hydrogen sector could further support the harmonization and alignment of approaches over time.

Recommendation 3: Promote sustainability-related best practices, capacity building, and knowledge exchange

Sharing sustainability-related best practices in the hydrogen sector, combined with capacity building and knowledge exchange, can enhance the ability of project developers to establish credible and cost-effective approaches for compliance with sustainability criteria and due diligence requirements, as defined by governments and financial institutions.

Recommendation 4: Ensure a level playing field through robust certification systems

Instances of fraud have undermined the credibility of the biofuels sector. To avoid similar developments in the hydrogen sector and ensure a level playing field for all economic operators, the European Commission should implement the control and reporting obligations outlined in Commission Implementing Regulation (EU) 2022/996.

A rapid and sustainable hydrogen ramp-up requires buy-in from stakeholders across the value chain

Renewable hydrogen is critical for decarbonizing a number of hard-to-abate sectors [1]. In addition to its climate benefits, this transition offers significant potential for value creation.

In particular, countries with abundant renewable energy resources could benefit from these opportunities [3]. At the same time, hydrogen production—like other investments in industrial production—is associated with environmental and social risks [4]. For instance, the deployment of renewable hydrogen production capacity can exacerbate existing water scarcity. Indeed, more than 60 percent of the global potential for onshore renewable hydrogen production is located in regions facing water scarcity [5].

To mobilize investment in the hydrogen sector, it is essential to harness its economic benefits across the value chain, while effectively identifying and managing associated risks [6]. This is critical for ensuring the support of all affected stakeholders, in particular local communities, governments, and industrial stakeholders in potential exporting countries. If export-oriented investments in hydrogen production are not perceived to benefit local populations, they risk losing essential political support and may confront resistance from affected stakeholders [4]. Moreover, experience in the biofuel sector has shown: the failure to anticipate social and environmental risks at the early stage of industry development may lead to a decline in social and political support in critical consumer markets like the European Union [7].

A range of governance mechanisms have emerged that address these sustainability challenges in the hydrogen sector. In this policy paper, we argue that sustainability governance, comprising government regulation and funding criteria, policies in the financial sector as well as standards and certification systems, can—and should—not only safeguard social and environmental risks. If well-designed, it can also facilitate the rapid scale-up of hydrogen infrastructure by securing support and ownership from relevant stakeholders along the value chain. Additionally, robust sustainability governance helps ensure transparency and fair competition by guaranteeing compliance by all economic actors with the same standards and safeguards [1] (see figure 1). After a brief review of the current sustainability governance landscape in the hydrogen sector, this policy paper outlines four recommendations to strengthen sustainability governance in the hydrogen sector to meet these goals.

If well-designed, sustainability governance can facilitate the rapid scale-up of hydrogen infrastructure by securing support and ownership from relevant stakeholders along the value chain.

Figure 1: Sustainability Governance: Purpose and Objectives. Source: Autors

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Mapping the emerging sustainability governance landscape in the hydrogen sector

Sustainability governance consists of a set of mechanisms that span government policy and regulation, finance and quality infrastructure.

Key elements of this landscape of sustainability governance are depicted in figure 2. They include government policies and regulations that establish sustainability requirements for economic activities, including those in the hydrogen sector, or enhance transparency and comparability through disclosure. In addition, due diligence frameworks applied to the financing of hydrogen projects — through public funding programs, development banks, and private financial institutions — play an important role in safeguarding environment and social risks [8]. As part of the overall quality infrastructure, sustainability-related standards and certification schemes provide the basis for a robust and transparent governance landscape. Standards provide common definitions and methodologies, while certification schemes enable actors to demonstrate compliance with both mandatory and voluntary sustainability requirements [9]. Finally, high-level principles and initiatives serve as reference points and can support the development of governance approaches across actors and jurisdictions [1].

Our analysis shows that many elements of effective sustainability governance are already in place, though many are generic in nature. In other words, they constitute existing governance mechanisms that have been established to promote and ensure climate and sustainability across sectors and technologies. Others specifically target the hydrogen sector. Moreover, some are exclusively focused on climate-related issues, i.e., measuring and limiting greenhouse gas emissions, while others tackle a broader set of sustainability issues, including environmental and social issues.

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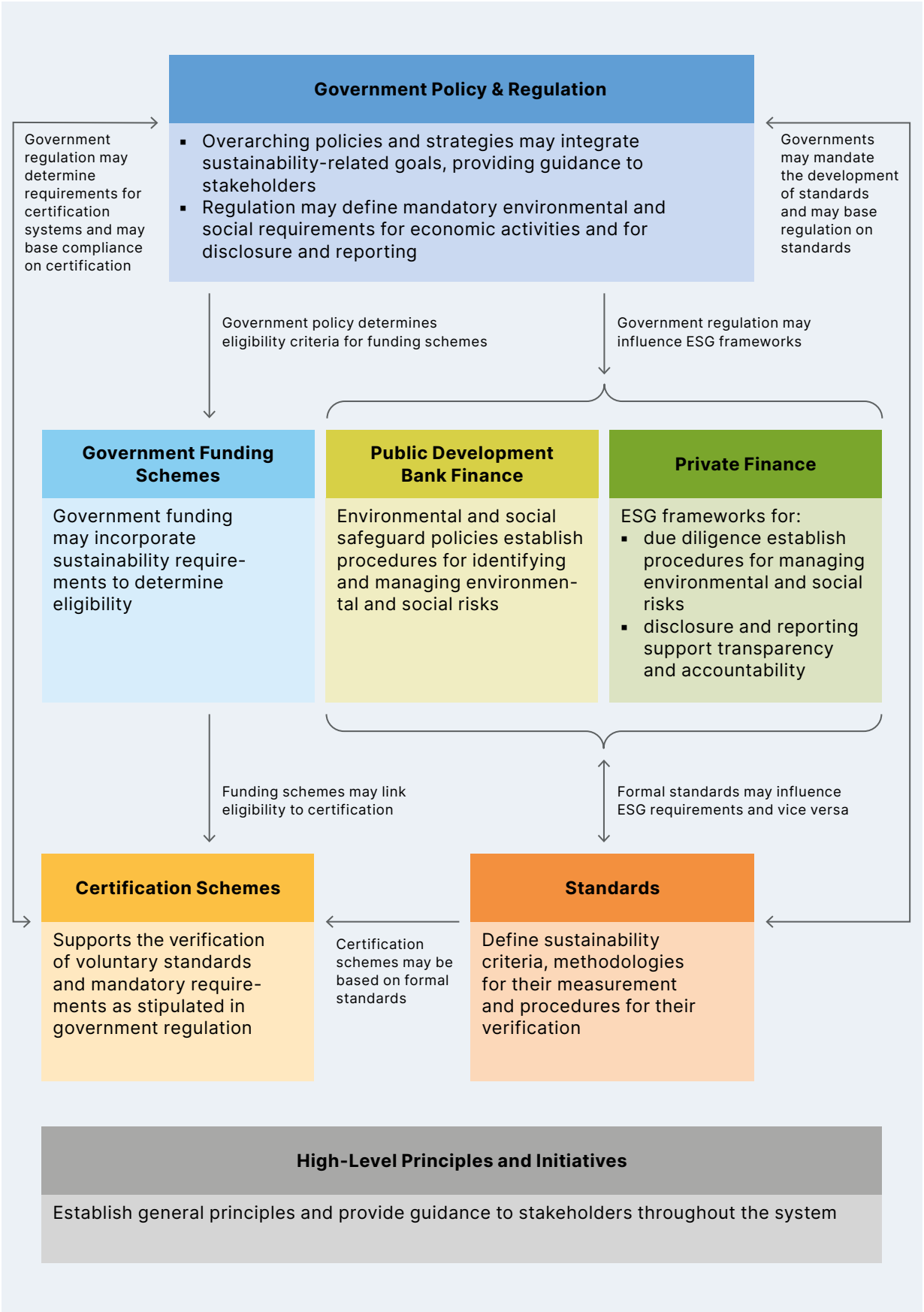

Figure 2: Sustainability Governance in the Hydrogen Sector: An Overview of Key Elements. Source: Authors

Figure 3 provides an overview of this emerging governance landscape. It shows that a range of generic governance instruments adopts a multi-dimensional sustainability approach (upper-right quadrant). Although these instruments are not tailored to the hydrogen sector, they can play an important role in promoting sustainability in the sector. Key examples are found in EU regulations, including the EU Corporate Sustainability Due Diligence Directive (CSDDD), sustainability-disclosure regimes like the Corporate Sustainability Reporting Directive (CSRD), the Sustainable Finance Disclosure Regulation (SFDR), alongside well-established environmental legislation. It should be highlighted that the CSDDD plays a particularly important role in this context. It is the main regulatory instrument that aims at directly upholding sustainability criteria within supply chains that extend beyond the borders of the EU. For this reason, it is an essential vehicle for ensuring the sustainability of future hydrogen imports. In addition, financial institutions integrate generic due diligence requirements for environmental, social, and governance (ESG) aspects. The most stringent requirements are found in multilateral development banks, such as the World Bank's International Finance Corporation (IFC). In the private sector, ESG frameworks like the Equator Principles and high-level principles like the OECD Guidelines for Multinational Enterprises on Responsible Business Conduct are important reference points.

Alongside these generic instruments, a variety of hydrogen-specific governance mechanisms have emerged. Many of these focus on GHG-related requirements (lower-left quadrant). This includes legislative packages such as the EU Renewable Energy Directive (RED), a number of certification systems (at the global and national levels), and hydrogen-specific GHG emission calculation methodologies, like ISO/TS 19870. A small number of hydrogen-specific instruments take a broader approach (lower-right quadrant). These include certification schemes as well as sustainability requirements within public funding mechanisms. In Germany, a draft sustainability standard for hydrogen has been developed within the framework of the national standardization body, DIN.

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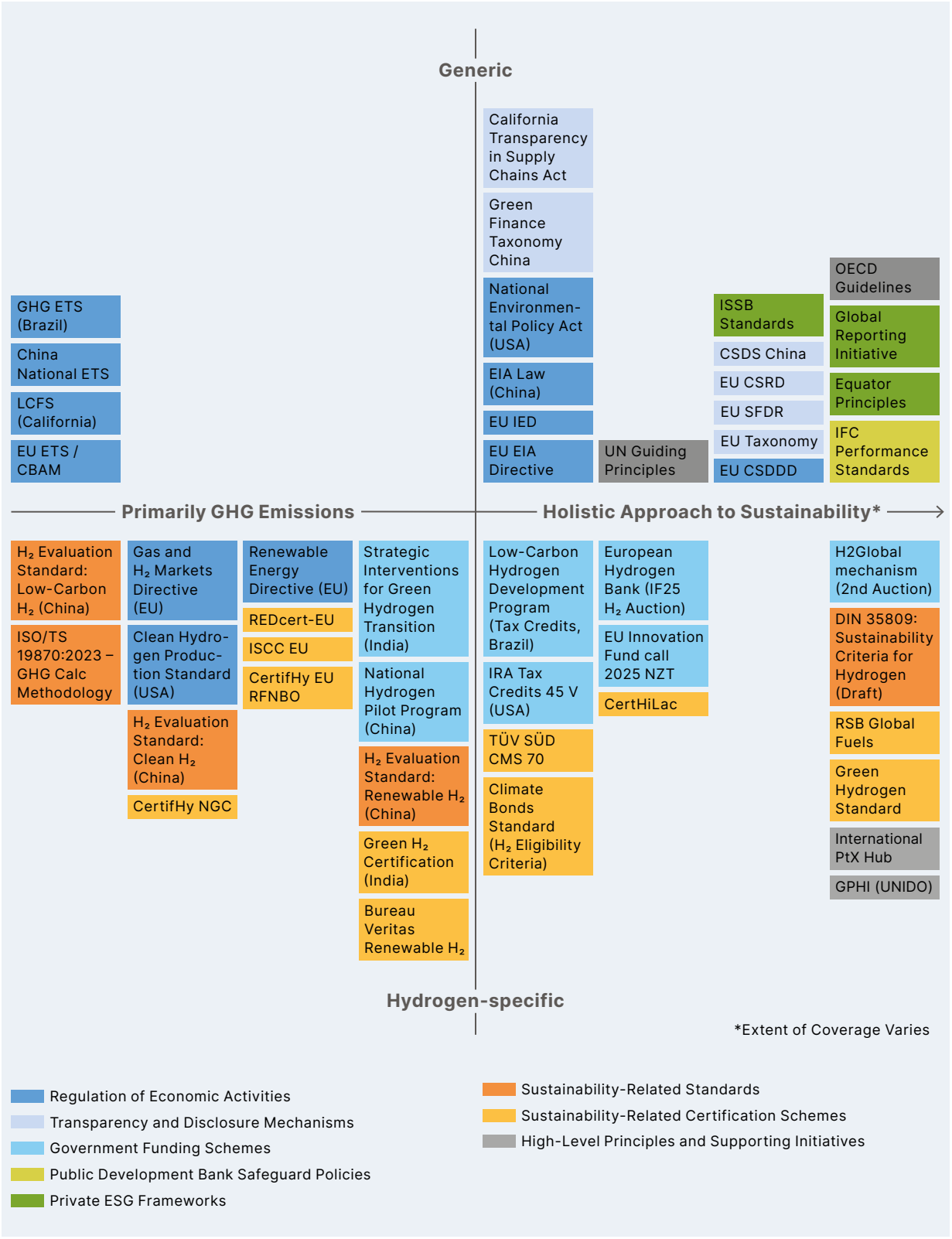

Figure 3: Categorization of Sustainability Governance Mechanisms in the Hydrogen Sector. Source: Authors

The horizontal axis indicates the extent to which elements incorporate environmental and social sustainability dimensions, with positions further right generally reflecting broader coverage. The vertical axis distinguishes between generic and hydrogen-specific governance approaches. The figure is schematic and illustrative; it does not capture differences in how individual elements address specific dimensions. Vertical positioning carries no additional meaning.

Strengthening sustainability governance to facilitate a rapid and sustainable hydrogen ramp-up

This policy paper argues that the existing sustainability governance landscape in the European Union provides a strong basis for enabling a sustainable ramp-up of the hydrogen sector.

We propose that strengthening sustainability governance in the hydrogen sector does not require a host of new instruments or mechanisms. Rather, it requires measures to facilitate its effective and streamlined implementation. This will not only ensure that sustainability requirements are upheld but also strengthen the ability of project developers to comply with pre-existing requirements and support their cost-effective implementation. To this end, this policy paper proposes that efforts should focus on creating synergies between instruments and supporting the efficient, effective, and robust implementation of existing requirements. We propose four specific measures that will not only make the governance architecture more effective in supporting sustainability goals but also strengthen capacities along the value chain to comply with already existing requirements.

Recommendation 1:
Develop hydrogen-specific guidelines for implementing sustainability-related due diligence

Due diligence constitutes a core and frequently mandatory element of a wide range of primarily generic governance instruments. These include various EU directives (like the EU CSDDD and EU CSRD) and development banks' environmental and social policy frameworks and ESG frameworks, such as the Equator Principles or those implemented internally by private finance institutions. The development of hydrogen-specific guidelines for conducting sustainability-related due diligence could play an important role, not only by enhancing sustainability efforts but by supporting efficient implementation by economic operators. The legislative text of the EU CSDDD, for example, explicitly requires the development of sector-specific guidance.

Such sector-specific guidelines would be particularly useful if they dovetailed with existing ESG frameworks and standards, while specifying the specific challenges of hydrogen-related investments. The Green Hydrogen Organization's Green Hydrogen Standard and the Inter-American Development Bank's technical note "Environmental, Health, Safety, and Social Management of Green Hydrogen in Latin America and the Caribbean" represent important efforts in this direction. A joint effort by the major multilateral development banks and key private finance institutions to further develop such guidelines could help establish a global reference for sustainability-related due diligence in the hydrogen sector. Jointly developed guidelines would not only support sustainability efforts by private sector

actors, they would also support the harmonization of due diligence requirements being established by governments and financial institutions. The World Bank's Energy Sector Management Program or a similar knowledge hub at one of the multilateral development banks would be a suitable actor to lead such an initiative, while the Roundtable of Development Finance Institutions for Green Hydrogen, coordinated by the Green Hydrogen Organisation, could function as a forum for related discussion and alignment.

Recommendation 2:
Develop an ISO standard for hydrogen sustainability

Complementing the development of sector-specific guidelines, the development of an ISO standard for the assessment of sustainability in the hydrogen sector could further support the harmonization and alignment of approaches over time. By establishing an internationally agreed reference point, it could help promote consistency and comparability of sustainability-related requirements and schemes in the sector, including due diligence practices in the financial sector, certification schemes, and requirements within government funding schemes. To do so effectively, such a standard should build on existing approaches to sustainability-oriented due diligence, so that the resulting standard can foster increasing alignment of requirements, not only across countries but also across government and finance.

To foster such alignment, the standardization process should be coordinated with the proposed effort to develop sector-specific due diligence guidelines (Recommendation 1). Relevant stakeholder groups should be involved in this process, including representatives from potential importing and exporting countries as well as from finance, certification bodies, industry, civil society, and public administration. This will also be crucial for achieving broad acceptance and ownership among the relevant parties. The draft standard developed by Germany's DIN Joint Working Group on Sustainability Criteria for Hydrogen and Hydrogen Derivatives represents an appropriate starting point for such a process.

Recommendation 3:
Promote best practices, capacity building, and knowledge exchange

Promoting and highlighting best practices in the implementation of sustainable hydrogen projects can also play an important role in supporting the ramp-up of the hydrogen economy. It can facilitate learning and build trust among stakeholders and the public. Moreover, it can enhance the ability of project developers to develop cost-effective approaches for complying with the due-diligence required by financial institutions, thus facilitating their access to financial resources.

Activities should include the showcasing of exemplary projects and leveraging initiatives, such as the UNIDO's Global Programme for Hydrogen in Industry, the International PtX Hub or the Green Hydrogen Organisation, to support capacity-building, knowledge sharing, and practical guidance in support of sustainable hydrogen production. In parallel, structured multi-stakeholder dialogues that bring together actors from potential exporting and importing countries can enhance cooperation, knowledge sharing, and, ultimately, increased alignment of approaches.

Recommendation 4:
Ensure a level playing field through robust certification systems

Finally, to support a sustainable hydrogen market, robust certification systems are essential. Instances of fraud have undermined the credibility of the biofuels sector, raising questions about its ability to contribute to the durable reduction of GHG emissions. To avoid similar developments in the hydrogen sector, it will be critical to put in place a robust system of oversight that ensures that certified hydrogen and hydrogen-based derivatives (i.e., renewable fuels of non-biological origin) meet the promised standards. The failure to ensure robust oversight of certification systems creates the risk of unfair competition. To ensure a level playing field, it is essential that all certified companies are subject to the same rules and requirements.

In response to the lessons learned from the biofuels sector, the European Commission has already taken steps to improve oversight by requiring economic operators and EU Member States to comply with a set of control and reporting obligations outlined in Commission Implementing Regulation (EU) 2022/996. These aim to enhance transparency and improve the detection of non-compliance (7). One important element is the establishment of a "Union Database" (UDB) that will record all certified fuels and its characteristics throughout their value chain, to be further operationalized in an upcoming Commission Delegated Regulation.

In the scheduled revision of the Commission Implementing Regulation (EU) 2022/996, it is important that these compliance mechanisms remain firmly in place to ensure that all economic operators are subject to the same requirements and that rules are consistently upheld, with specifications clearly defined for hydrogen and its derivatives. At the same time, effective and efficient implementation should be ensured. This requires not only a well-designed database architecture that adequately reflects the specific characteristics of the hydrogen sector and that accounts for existing national databases and reporting schemes. It should also be underpinned by capacity-building and communication efforts to support implementation by Member States, certifiers, and economic operators.

ABOUT THE AUTHORS

RAINER QUITZOW
leads a research group on the Geopolitics of Energy and Industrial Transformation at the Research Institute for Sustainability (RIFS) at GFZ Helmholtz Centre for Geosciences. He is also Professor of Sustainability and Innovation (Honorarprofessor) at the Technische Universität Berlin.

MAXIMILIAN RISCHER
works as a Research Associate at RIFS, focusing on hydrogen governance and sustainability. He holds a Master's degree in Sustainability from KTH Royal Institute of Technology and conducted research on hydrogen developments in Namibia as a DAAD fellow. He also has professional experience in the energy sector and holds degrees in Industrial Engineering and Management.

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IMAGE SOURCES

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Research Institute for Sustainability (RIFS) at GFZ
Berliner Straße 130
14467 Potsdam
Tel: +49 (0) 331-28822-300
media@rifs-potsdam.de
www.rifs-potsdam.de

ViSdP:
Prof. Dr. Doris Fuchs,
Scientific Director, Speaker

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