

---

## Workshop on Quality Infrastructure for Green Hydrogen

21 June 2022, 1400-1600 hrs CET, virtual

### *Minute*

---

#### BACKGROUND

On June 21<sup>st</sup> the International Renewable Energy Agency (IRENA) has organised a virtual ‘close-door’ workshop with experts to present IRENA’s new project on **Quality Infrastructure (QI) for Green Hydrogen (GH2)**. The workshop has introduced the objectives of the project, funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) via the National Metrology Institute of Germany (PTB), and has **facilitated the dialogue among stakeholders** on the topic of QI for GH2. In fact, the workshop has achieved the objective to **increase awareness among the stakeholder** network on the fact that a robust and internationally harmonised QI is an important and crucial instrument to materialise national and international plans for the production and trade of green hydrogen and its derivatives.

#### OPENING

In the opening remarks, **Andrea Ulbrich** (BMZ) highlighted the importance of ensuring that green hydrogen for export does not displace domestic energy demand. **Ulf Seiler** (PTB) stressed the issue that QI contributes substantially to a safe and effective energy transition. **Roland Roesch** (IRENA) affirmed that the development of a roadmap for QI for GH2 is crucial to enhance the establishment of the hydrogen-based economy and to support the national and international hydrogen strategies.

The project manager **Francisco Boshell** (IRENA) has presented the extensive work IRENA has done and is carrying out in the area of GH2, focusing on the preparatory analysis for this project, concerning data collection for QI and mapping QI initiatives for GH2. The challenge is that there are different standards, certifications test methods and unifying them in a single harmonized QI is key for the production and trade of green hydrogen and its derivatives.

#### PANEL DISCUSSION

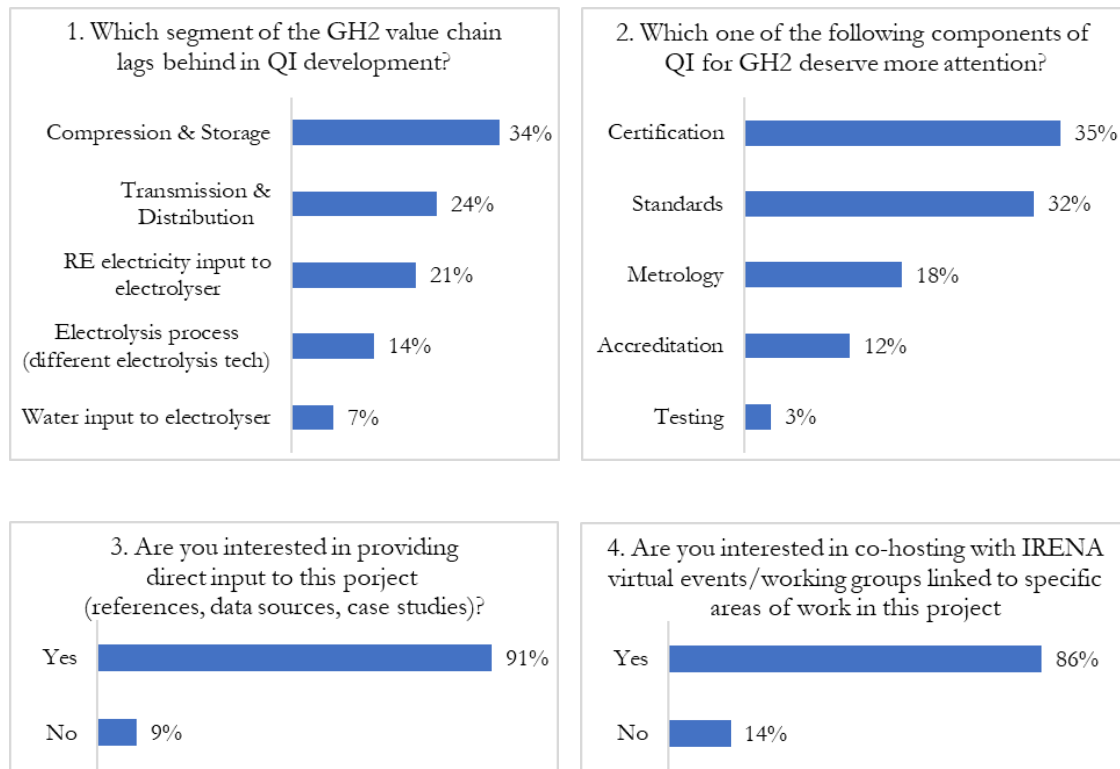
Ten panelists have contributed to the workshop, bringing their experience and work in the area of QI for GH2. There is a common consensus among experts that international standards are very important and will play a positive role if applied to specific technologies like GH2 and that standardising measurements will facilitate growth of hydrogen trade. To achieve this, there is the need to develop a QI holistically, across the whole value chain, following a global approach avoiding duplication in efforts.

It was affirmed that metrology (efficiency and purity) and standardization (on equipment and guarantee of origin) are key to producing and distributing more hydrogen, but there is a lack in robust measurement for GH2. For this, it is very important to have trade and regulatory framework to define a common understanding about standards (safety, interoperability, measurement of CO<sub>2</sub>), thereby avoiding duplication in assessments. One way to overcome difficulties is to use existing international standards of both ISO and IEC and to identify areas where additional standards are required. Further, it is important to set the goal to develop, via ISO and IEC, international standards for H<sub>2</sub> production, transport, and distribution and to develop mutually agreed upon methods of LCA, even if there are challenges consisting on defining fugitive emissions from Natural Gas and on clarifying use of RE certificates, PPAs, land use change and CO<sub>2</sub> uptake. Additional challenges for GH2 consist on figuring out the amount of CO<sub>2</sub> emissions in hydrogen and on how to classify this accordingly. Therefore, there is a need of a very rigorous approach on calculating emissions from fugitive methane and of standards that are in place across the lifecycle. Certification is equally needed in whole value chain of electricity storage and production, including green hydrogen storage; some GH2 certification program already exists where customer gets a certificate of safety and performance verification of electrolyzers. The collaborative work between IECEx and ISO TC 197 in providing International Certification covering H<sub>2</sub>, which includes GH2 for both safety and performance as well as personal competence certification was also noted. Among hydrogen derivatives, safety standards covering hydrogen, of IEC 60079 and ISO 80079 series, have long been used to ensure safety of plant, equipment and personnel but may need to be reviewed or expanded because the use of ammonia in the hydrogen

economy is relatively new and should be regulated. Eventually, international standards are also needed on how gas pipelines can be adapted for hydrogen. During the workshop, it was also noted the need for a shared definition and terminology related to hydrogen and its colour labelling.

## POLL QUESTIONS

During the workshop, four poll questions were addressed to all participants (see summary charts below). It emerged that several segments of the GH2 value chain are lagging in QI development (like compression & storage, transmission, and distribution) and that certification and standards deserve more attention while developing QI for GH2. Further, most of the participants are interested in providing direct input to this project and to co-hosting with IRENA virtual events or working groups related to QI for GH2.



## NEXT STEPS

Before the closing remarks, IRENA announced the following steps of this project:

- Send minutes and power point presentation (28 June 2022)
- Prepare survey to engage participants in the study on QI for GH2 (to be sent by end of July). Workshop participants who indicated willingness to provide input to the project will be contacted.
- Send emails to stakeholders with updates on the project (1 every quarter of the year)
- Organise workshops with the network on specific issues around QI and certification of GH2 and its derivatives (2 workshops on Q3 and Q4 2022). Workshop participants who indicated willingness to co-organise events under the project will be contacted.

## CLOSING

**Roland Roesch** (IRENA) concluded the workshop summarising key points. First, international trade of GH2 technology, products and services calls for sound and harmonised standards, but also countries will need testing labs, metrology, calibration, certification, etc. Second, despite the focus of the project is on technical standards and conformity assessment; the interlinks with carbon accounting standards and certification are very important and those aspects will be incorporated. Standards must be in place across the lifecycle of green hydrogen- from production, distribution, and consumption. Third, there are already a broad set of international of standards for hydrogen in general, but experts agreed that focusing on GH2 is important as there are still some gaps to be addressed.