

Background Note

Collaborative Framework on Green Hydrogen

Thursday 18 June 2020, 15:00-16:30 Gulf Standard Time (GST)

1. Introduction

IRENA Members have emphasised the need for the Agency to proactively function as a network hub to harness its global membership and convening power effectively. This includes the request to facilitate peer-to-peer collaboration and exchange of knowledge, in addition to targeted engagement of critical players in this sphere, such as international and regional organizations, and the private sector.

At the Ministerial Roundtable on Green Hydrogen during IRENA's 10th Assembly, Members called upon IRENA, as the lead intergovernmental organization mandated to promote renewable energy and support countries in their energy transition, to continue its work on hydrogen from renewable power.

In response to this call, IRENA looked into avenues for supporting its Members in assessing the role of green hydrogen for national energy transition strategies. In this regard, the Agency is considering the possibility of establishing a Collaborative Framework on Green Hydrogen to exchange knowledge on hydrogen from renewable power, including new projects and developments in this field. This concept has been outlined in the note by the Director-General of IRENA to the membership dated 16 April 2020 (ref. DG/EN/2020/O/17214) and further detailed in ST/EN/2020/O/17311 dated 28 May 2020, which states that *“The virtual meetings will provide a forum for interested Members and States in Accession to share ideas on the plan of work under each one of the collaborative frameworks for the various themes (Hydropower, Geopolitics of the Energy Transformation, Green Hydrogen and Ocean Energy/Off shore Renewables), as well as on modalities for future work and to define next steps. Members and States in Accession interested in participating in the work under each one of the collaborative frameworks are also encouraged to consider how these can contribute to the work of the Agency”*.

The Collaborative Framework would leverage the Agency's work on green hydrogen, the wealth of knowledge and expertise that exists within IRENA's Membership, and the benefits that may be reaped through wider global cooperation with other entities.

The Collaborative Framework would serve as an effective vehicle for dialogue, co-operation and coordinated action to accelerate development and deployment of green hydrogen and its derivatives for the global renewable energy transformation and contribute to the achievement of the objectives defined in the work programme and medium-term strategy of the Agency.

2. The Role of Green Hydrogen in the Energy Transition – Opportunities and Challenges

Differently from 15 years ago, the rapidly falling cost of renewable electricity has changed the narrative for hydrogen economics. In this context, green hydrogen allows large amounts of cheap renewable energy to be channelled from the power sector into sectors for which electrification (and hence decarbonisation) is otherwise difficult. Therefore, in a world dominated by renewable power, hydrogen and electricity are complementary energy carriers.

Many countries have identified hydrogen as a high priority due to its potential role as an energy carrier to integrate renewables, to decarbonise sectors where direct electrification is difficult and more broadly support their energy transitions. However, significant challenges need to be addressed.

During IRENA's 10th Assembly on 11 January 2020, **IRENA organized the Ministerial Roundtable on Green Hydrogen**, where Members and private-sector stakeholders debated the potential of hydrogen from renewables and its relevance. Members shared their vision on developing an effective and viable global hydrogen supply chain. The roundtable was instrumental to discuss opportunities and challenges of green hydrogen as well as its relevance for the energy transition.

3. The Collaborative Framework on Green Hydrogen

IRENA's work on hydrogen from renewable power focuses on assessing the potential role of green hydrogen in the energy transition, as an enabler to integrate higher shares of renewable energy in the power sector and in turn decarbonise end-uses such as transportation, industry and buildings. As a key global facilitator, the Agency continues to disseminate analytical information among relevant stakeholders to inform debate and contribute towards building a consensus on the role of green hydrogen, as there is still a lot of uncertainty and competing visions amongst policymakers on the most suitable applications and the different pathways to scale-up its production.

Objective of the Collaborative Framework

Upon request from Members during the Ministerial Roundtable held at IRENA's 10th Assembly, IRENA proposes the creation of a Collaborative Framework on Green Hydrogen. Under this platform, IRENA intends to periodically bring countries together to discuss barriers and identify opportunities for accelerating green hydrogen. An online platform for the exchange of relevant information can also be created to share experiences on policies, regulations and projects related to green hydrogen.

Establishment of a Collaborative Framework on Green Hydrogen

Due to the unique situation the world is currently facing, the 19th session of the IRENA Council has been rescheduled. Nevertheless, a series of virtual meetings are planned to be held on June 2020 in order to enable the Agency to continue engaging Members and seek for input to advance the programmatic activities.

In this respect, a virtual meeting on Green Hydrogen will be held on 18 June 2020. During this meeting, it is proposed that the IRENA Membership discusses **the modalities this Collaborative Framework that would be supported and facilitated by the IRENA Secretariat**. IRENA would support building the **foundations of the framework based on its Members' vision and priorities** on Green Hydrogen. Some of the issues for discussion would include the following:

- **Terms of reference for the work to be conducted in the collaborative framework:** while a significant number of networks and organisations focusing on hydrogen already exist, they generally have narrow memberships (e.g. only including industry, specific regions, or a limited group of countries). The IRENA Collaborative Framework on Green Hydrogen would leverage IRENA's near-universal Membership to foster dialogues between countries that have different perspectives and stages of development for green hydrogen. The Framework can provide a platform for dialogue among governments, IGOs, NGOs, private sector, associations, and research and academic institutions within an IRENA context. This would enable to host fruitful discussions and have a holistic approach to the formulation of innovative policy frameworks and business models that could address the needs for rapidly scaling up and reducing the cost of green hydrogen production and use.
- **Actors engaged in the framework:** Members and States in Accession taking part in the virtual meeting may wish to discuss the extent and timing of participation of other stakeholders (IGOs, NGOs, private sector and other institutions) in the Collaborative Framework.

- **Expected outputs from the framework:** Members of the Collaborative Framework may consider discussing and agreeing on collaborative plans, that may include hosting events, preparing white papers and insight documents and sharing best policy instruments and business models for green hydrogen, among other options.

IRENA Members' inputs and context

At the Ministerial Roundtable on Green Hydrogen during IRENA's 10th Assembly, Members intervened with their views and expectations on the role of Green Hydrogen for the Energy Transition. These topics could be taken into consideration by Members for the focus of future work by the Collaborative Framework as follows:

- The need to address the challenge of scalability which is not primarily technical. Green hydrogen and Green hydrogen-based commodities and fuels must become widely available at low cost.
- The need for policy support from the beginning to help create the early applications that can lead to the scale up necessary to bring prices down. The gas sector for example, might be an early opportunity.
- The need to reduce the cost of electrolyzers which is key to achieve competitive green hydrogen.
- The importance of continued work on standards and establish international trade of CO₂-free hydrogen that can be certified and verified in its production route, to ensure clear signals are given to investors and enable rapid scale-up.
- Acknowledge and discuss the capability of Green hydrogen production and storage to increase the flexibility of the power system at all timescales, from contributing to frequency control to providing seasonal storage for wind and solar.
- Discuss the opportunity to establish bilateral trade relationship between countries with abundant, low-cost renewable resources and countries that are going to need green hydrogen beyond what they can domestically produce, or with limited low-cost renewable energy resources.

Funding of activities

- The institutional, administrative and technical support of the Collaborative Framework would be provided and facilitated by the IRENA Secretariat, and funded through contributions from interested and supporting Members.
- Member countries are invited to pledge voluntary funding to support this work.

4. Agenda

The main goal of the virtual meeting to be held on June 18 is to discuss the process and structure of the collaborative framework rather than presenting the latest developments on the subject (i.e. hydrogen developments). The suggested Agenda for the virtual meeting includes a discussion of the following items:

- Justification for the Collaborative Framework on Green Hydrogen
 - Value addition
 - Complementarity with other existing partnerships and platforms

- Proposed terms of reference and modalities
 - Goals of the Collaborative Framework
 - Name, structure and working methods
 - Ensuring the necessary linkages with IRENA Governing Bodies, Work Programme and Medium-Term Strategy
 - Value addition and complementary activities with other exiting partnerships and platforms.
- Inputs for a proposed work plan and activities for 2020-2021
 - Milestones and processes
- Participation and timing of the inclusion of stakeholders (IGOs, NGOs, private sector, independent researchers and academic/research institutions).
- Funding including Member commitments for the provision of Voluntary Contributions
- Way forward