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**Economic Commission for Europe****Committee on Sustainable Energy****Thirty-second session**

Geneva, 13-15 September 2023

Item 9 (b) of the provisional agenda

**Looking ahead: Future work of the Committee on Sustainable Energy:****Approval of documents****Update on the Hydrogen Task Force and the next steps****Note by the Secretariat****I. Introduction**

1. At its thirty-first session held in September 2022 the Committee on Sustainable Energy asked the Group of Experts on Gas to lead the work on hydrogen, in collaboration with other Committee's subsidiary bodies (groups of experts). The Committee requested that a Terms of Reference for a Hydrogen Task Force be developed and presented to the Committee at its thirty-second session (Geneva, 13-15 September 2023) for review and approval.

2. In response to the Committee's request, the Group of Experts on Gas at its tenth session held in March 2023 drafted a formal United Nations document (ECE/ENERGY/GE.8/2023/4) and reviewed the proposed Terms of Reference. The Group of Experts on Gas invited the Chair of the Committee, as well as the Chairs of other groups of experts, to discuss these ToR and the next steps. The discussants concluded that hydrogen is the key element of the future decarbonized energy system. In many ECE member States, hydrogen is perceived not only as an energy carrier of the future hydrogen economy but, equally importantly, as a feedstock for decarbonization of several hard-to-abate industrial sectors, such as metallurgy, nitrogen fertilizers, and cement.

3. At the March session the Group of Experts on Gas reiterated the need to develop a classification for hydrogen that goes beyond colours and that accounts for the full life-cycle of hydrogen production, transport, storage, trade, and use. This activity should cover the entire scope of hydrogen emissions from all production methods, including renewable and low carbon hydrogen.

4. Since March the secretariat has received comments and suggestions to the draft ToR from some member States. These suggestions are reflected in the amended ToR, attached to this document.



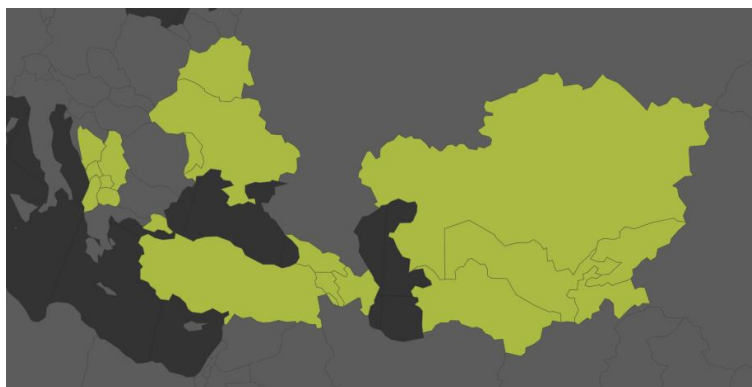
## II. The Task Force in the international context

5. Hydrogen is a hot topic in the intergovernmental discussions. Currently, there are many – one might add, too many – initiatives dealing with various facets of the hydrogen economy. Therefore, one of the first activities of the Task Force will be to take a snapshot of the situation and review existing international initiatives on hydrogen in the ECE region and beyond. After that, the Task Force will continuously monitor developments in this field, with an aim to minimize duplication of efforts as the circumstances change and new initiative arise.

6. An illustration of such initiatives is the International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE).<sup>1</sup> IPHE is set up to facilitate and accelerate the transition to clean and efficient energy and mobility systems using hydrogen and fuel cell technologies. IPHE informs policymakers and the public on the benefits and challenges to establishing commercial hydrogen in the economy. Many ECE member States are active in IPHE as partners. Yet, 17 ECE member States that are covered by the Regular Programme of Technical Cooperation still do not participate in it. Of them, eleven are the so-called landlocked developing counties (LLDC), who face unique challenges in becoming part of the future globalized hydrogen economy. One of the aims of the Task Force will therefore be to expand the geographic reach of the current initiatives by engaging the ECE member States that are often less present in hydrogen related discussion and work.

Figure I

### 17 ECE member States that are not IPHE partners



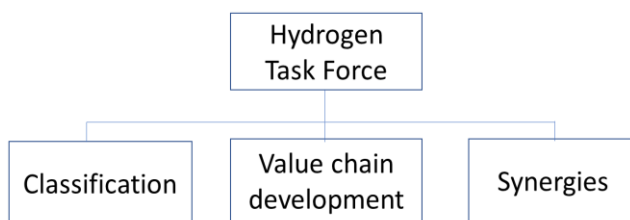
### A. Proposed structure of the Task Force

7. In May 2023 the secretariat invited ECE member States to nominate their representatives to the Task Force. The secretariat organized several rounds of consultations with member States and several international organizations and mechanisms that cover various facets of hydrogen sector and discussed with them the scope of work of the future Task Force, with an aim to identify complementarities, potential overlaps, and the source of funding for the future activities. The Secretariat also reached out to the private sector, academia, and other independent experts, many of which had previously been involved in UNECE hydrogen-related activities.

8. Given the scope of work as defined by the Terms of Reference, within the Task Force three work streams are envisioned (Figure II).

<sup>1</sup> <https://www.iphe.net/>

Figure II  
**Hydrogen Task Force and its work streams**



## B. Classification

9. The United Nations Framework Classification for Resources (UNFC) is a global classification and management system that can be applied to mineral resources, nuclear fuel, renewable energy, anthropogenic resources, water, and carbon dioxide injection projects. Managing material and energy resources sustainably is at the core of the Sustainable Development Goals (SDGs). UNFC could in principle be applied to hydrogen to the extent hydrogen can be regarded as a resource.

10. In 2017, ECE member States decided to extend UNFC beyond a classification system to a dynamic resource management system – the United Nations Resource Management System (UNRMS), as a voluntary global standard for integrated and sustainable resource management. When it becomes fully operational, UNRMS will include several tools, standardized methodologies, approaches, and concepts, such as: Clean Energy Index, resources as a service, resource supply system, blockchain and machine learning/artificial intelligence model for resource management, and critical raw materials dashboard.

11. Based on preliminary research done by the ECE secretariat, currently there is no internationally accepted hydrogen classification that deals with its sustainability. The Task Force will examine if and how UNFC and UNRMS could be applied to hydrogen projects, with a view to develop pilot hydrogen production projects applying UNFC and UNRMS principles.

12. In addition, and pending the availability of resources, the Task Force will work on taxonomy on hydrogen based on a life-cycle analysis (LCA) and on developing a Guarantee of Origin for Hydrogen (GOH), in close collaboration with other actors such as Hydrogen Council, Hydrogen Europe, IPHE, the International Organization for Standardization (ISO), and many others.

## C. Value chain development

13. It is safe to say that today the hydrogen economy does not exist. Creating it, or “jump-starting” it, is a daunting task – it is to be done practically from scratch. Today hydrogen is produced, stored, and used mostly within the petrochemical sector. As a rule, it is produced *in situ*; this means that the distance between the points of production and use is very short, typically within the same industrial facility so the trade in hydrogen is limited.

14. Production without consumption is not sustainable, and vice versa. Creating a large-scale, multi-sectoral and international hydrogen value chain requires a well-thought, simultaneous, and coordinate action that would establish massive, continuous yet flexible material and energy flows.

15. Task Force will promote action along the entire value chain: in the upstream production from renewable electricity and gases, in short and long-range transport via pipelines, ships, trains and trucks, in transformation into hydrogen-bearing liquid carriers, in storage in various forms including in underground storage, and in a plethora of end-use applications, many of which use hydrogen as a feedstock.

## D. Synergies

16. Under synergies we primarily refer to the interactions between the renewable electricity sector and the existing gas infrastructure. The frequently used label “sustainable hydrogen” describes, although not exclusively, the hydrogen produced from distributed renewable energy such as wind and solar, and then shipped as gas or liquid via pipelines to the storage sites and ultimately to the end users.

17. The Group of Experts on Gas has pointed out many times that the gas infrastructure can play the key role in accelerating development of hydrogen projects. This can be illustrated with the concept of Hydrogen Gas Asset Readiness (H2GAR).<sup>2</sup> H2GAR explores how to use the existing assets and materials for the transport of hydrogen, to identify any technological and regulatory gaps, both for existing and for new pipelines.

18. Another important concept is the blending of hydrogen with natural gas. In January 2023, the Group of Experts on Gas dedicated a workshop<sup>3</sup> to this concept.

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<sup>2</sup> <https://unece.org/documents/2021/04/presentations/hydrogen-gas-assets-readiness-h2gar>

<sup>3</sup> <https://unece.org/sustainable-energy/events/business-case-hydrogen-blending>

## Annex

### Hydrogen Task Force – Terms of Reference

#### Draft for discussion as of 6 June 2023

Prepared by the Secretariat

#### I. Introduction

1. At its 31<sup>st</sup> session held in September 2022 the Committee on Sustainable Energy noted the importance of hydrogen as part of resilient energy systems that provide access to affordable, reliable, sustainable, and modern energy for all, help reduce GHG emissions and the carbon footprint of the energy sector in the ECE region and support the transition to net-zero greenhouse gas (GHG) emissions.
2. The Committee further noted the importance of defining criteria for sustainable hydrogen that strike a balance between the emissions associated with its production and the sufficient flexibility needed to scale-up a nascent industry. This is critical for strengthening the case for hydrogen as a reliable, renewable, affordable, and low carbon energy carrier.
3. The Committee also took note of the document “Comprehensive and science-based terminology, classification and taxonomy for hydrogen” (ECE/ENERGY/2022/8) and the need to develop a classification for hydrogen that goes beyond colours and addresses the full life-cycle of hydrogen production and transport. In this regard, the Committee agreed to support ongoing policy dialogue on hydrogen projects and, through it, foster cooperation within the ECE region and with the global resource community.
4. As hydrogen activities are currently not centralized in the sustainable energy subprogramme and are based on informal collaboration amongst several groups of experts, the Committee requested the Group of Experts on Gas to lead the work on hydrogen, in close collaboration with the other groups of experts. The Committee asked the Group of Experts on Gas, in collaboration with the other groups of experts, to develop a Terms of Reference for this work by the thirty-second session of the Committee.
5. This document has been drafted in response to the Committee’s request.

#### II. Areas of Work

6. The Task Force catalyses dialogue on hydrogen, with emphasis on sustainable hydrogen, at all levels of policymaking in the ECE region.

#### III. Concrete activities

7. The Task Force will:
  - Promote and facilitate policy dialogue on hydrogen and foster cooperation on it within the ECE region
  - Support current and future extrabudgetary projects on hydrogen managed by the Sustainable Energy Division
  - Prepare a paper on existing international initiatives on hydrogen in the ECE region and beyond, and continuously monitor developments in this field, with an aim to minimize duplication of efforts
  - Prepare, for the Committee’s consideration, a work plan for future hydrogen activities of the Committee aiming to:

- Identify hydrogen-related activities to be carried out using the regular budget
  - Propose new hydrogen-related activities that require extrabudgetary resources
  - Pursue available resources to provide clarity on hydrogen and its potential viable applications.
8. In collaboration with the Expert Group on Resource Management:
- Develop specifications for the application of the United Nations Framework Classification for Resources (UNFC) and the United Nations Resource Management System (UNRMS) to hydrogen projects and production technologies
  - Establish a taxonomy on hydrogen based on a life-cycle analysis (LCA) approach
  - Work towards developing a Guarantee of Origin for Hydrogen (GOH)
  - Develop pilot hydrogen production projects applying UNRMS principles.
9. In collaboration with the Group of Experts on Gas and other Groups of Experts as relevant, discuss, develop, and promote good practices and recommendations on:
- The business case for blending hydrogen with natural gas
  - Hydrogen purity requirements for its production, transmission, and use
  - The role of gas infrastructure to accelerate development of hydrogen projects
  - Issues related to hydrogen emissions in the context of climate change
  - Help develop project proposals on any of the aforementioned items that may require extrabudgetary resources for presentation to potential donors.

#### **IV. Working procedures**

10. The Task Force is led by a Chair, nominated by the Group of Experts on Gas, and by several Vice-chairs, nominated by other groups of experts who wish to be actively involved in the Task Force activities.
11. In its work the Task Force engages experts nominated by ECE member States' governments. The secretariat has also invited some of the experts involved in previous hydrogen activities and projects, who come from the private sector, academia, civil society, and international organizations.
12. The work of the Task Force will be supported by the secretary of the Group of Expert on Gas.

#### **V. Reporting**

13. The Task Force reports to the Group of Experts on Gas at its annual meeting and, through it, to the Committee. Between the session the Task Force will report to the Bureau of the Group of Expert on Gas, as needed.

#### **VI. Duration**

14. The Task Force is established for a period of two years effective September 2023. Its term is renewable, subject to the approval of the Committee.
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