The Global Hydrogen Industrial Association Alliance (GHIAA) call on COP27 for more dedicated action

The Global Hydrogen Industrial Association Alliance (GHIAA) actively supports COP 27 in Egypt to overcome the global climate crisis and urges participants and other stakeholders to support and invest in the hydrogen industry to achieve Net-Zero targets and secure clean energy supplies.

Hydrogen is an essential element of decarbonization and is an infinite clean energy source that can be produced. It has the potential to reduce carbon emissions in several industrial sectors, including transportation, heating and heavy industry. In addition, it can be shipped and traded worldwide as a clean fuel for both liquefaction forms and derivatives (such as ammonia).

Therefore, the world is currently paying attention to hydrogen as an important means of solving the climate crisis and energy security, and more than 40 countries are surveyed to have hydrogen strategies.

According to the Hydrogen Insights 2022 of the Hydrogen Council, hydrogen investment worth about $700 billion by 2030 is needed to get on a carbon-free economy by 2050, but only 3% of the total cost is currently being spent. Therefore, we should quickly and boldly increase investment to build a hydrogen ecosystem.

For the rapid transition to the global hydrogen economy, the international cooperation is essential. Through this, opportunities for the growth of the global hydrogen industry and the expansion of the hydrogen market will be created with mutual cooperation. GHIAA will actively support this and play the role of a bridge.

The associations include the H2KOREA, the Hydrogen Europe, the Fuel Cell & Hydrogen Energy Association (FCHEA), the Canadian Hydrogen and Fuel Cell Association (CHFCA), the Asociación Chilena de Hidrógeno (H2CHILE), the France Hydrogène (AFHYPAC), the UK Hydrogen and Fuel Cell Association (UK HFCA), the Asociación Española del Hidrógeno (AeH2), the Nederlandse Waterstof en Brandstofcel Associatie (NWBA), the Norsk Hydrogenforum (NHF), the International Hydrogen Fuel Cell Association(IHFCA), the Hydrogen and Fuel Cell Association of Singapore (HFCAS), the Australian Hydrogen Council (AHC), the Asociación Colombiana del Hidrógeno, the H2ar Consortium, the Brintbranchen (Hydrogen Denmark), the Vätgas Sverige (Hydrogen Sweden), the Deutsche wasserstoff- und brennstoffzellen-verband(DWV), the Hungarian Hydrogen Technology Association(HH2), and the Japan Hydrogen Association(JH2A).

3rd November, 2022

Jaedo Moon, the Chair of GHIAA, sends this mail on behalf of 20 associations

Statement for COP27

GHIAA which is organized by 20 hydrogen industry associations around the world called on COP27 participating nations and parties to support investment and technology development and to expedite international cooperation and collaborations for action on the hydrogen economy to implement a net zero target.

1. We, members of GHIAA, collectively welcome that more governments have been recognizing hydrogen as an essential component for achieving carbon neutrality and tried their best to transform their visions into actions as shown in the appendix.

2. Notwithstanding these positive developments, it goes without saying that there are still a lot of challenges to be done by private and public entities. To solve this problem, it is necessary to maximize hydrogen utilization technology, develop clean hydrogen production technology, expand scale-up and infrastructure, and establish an international system for hydrogen trade. It is also urgent to raise funds for continuous investment to address these issues.

3. In order to realize their strategies into action, we call on governments to establish an inclusive policy framework, e.g. to set clear targets for clean hydrogen to decarbonize every sector of the economy as much as possible, establish public hydrogen financing scheme as practically as possible, invest in infrastructure for hydrogen supply chain, and apply globally recognized standards. These certification schemes aim to promote the international trade of clean hydrogen as fairly and transparently as possible.

4. Accordingly, we commit that GHIAA will work closely together to enhance multilateral private cooperation in the dissemination of best practices, technology transfer, and mutual investment.

Appendix. Examples of Countries actions in 2022

- The world is now facing an energy supply chain crisis caused by the protracted Russia-Ukraine war and lingering climate issues.
- In May, the European Commission announced a "REPower EU" strategy aimed at reducing Europe's dependence on Russian gas. Particularly, the Commission aims to achieve 10 million tons of domestic green hydrogen production capacity and 10 million tons of hydrogen imports by 2030 in the EU.
- In August, U.S. president Biden signed a bill, the Inflation Reduction Act, into law, that includes significant support for hydrogen, including a subsidy plan of up to $3 per kilogram for green hydrogen production. The U.S. DOE has released a Funding Announcement as part of the Infrastructure Investment and Jobs Act (IIJA)’s 8 Billion dollars for regional clean hydrogen hubs (H2Hubs). These initiatives strive to develop a hydrogen sector to as part of broader

decarbonization efforts.

- Germany announced support measures worth 9 billion euros with the aim of securing 5GW of electrolysis capacity by 2030 and is pushing forward to secure green hydrogen production capacity at home and abroad.
- Korea revised the Hydrogen Act in 2022 to specify the strategy for establishing the hydrogen industry ecosystem. Currently, about 26,000 fuel cell electric vehicles (FCEVs) are operating nationwide, and about 190 hydrogen refueling stations (HRSs) have been built and are operated nationwide. The hydrogen fuel cell power plant is in operation at 800MW, and separately, it is expected to expand the power plant that directly or mixed combusts hydrogen to achieve carbon neutrality. Moreover, Korean government held an international forum in May 2022 and is reaching out to the international community to enact a clean hydrogen certification system for international trade in clean hydrogen.
- The Netherlands has set targets to have 3 to 4 GW electrolysis capacity and further accelerates offshore wind energy generation towards 70 GW in 2050. Financial stimuli are diverse and cover the entire value chain, and with use of the Import Project of Common European Interest (IPCEI) facility, at least 1.385 billion Euro is available for these projects. The NWBA will focus on creating, sharing and consolidating knowledge across the value chains in industry, mobility and the built environment.
- In 2022, the UK has seen a doubling of the Government's low carbon hydrogen production target to 10 GW by 2030, with a commitment that at least 50% is from renewable hydrogen. As part of plans to support both capex and opex of hydrogen production, the first electrolytic hydrogen production funding call for both capital development and operation, with initial funding of £100 (more calls planned) million, was launched. The UK's Low Carbon Hydrogen Standard was set at 20g CO2e/MJLHV. On the demand side, £60 million was made available for industrial emissions savings and decarbonisation, and ~£480 million for demonstration and deployment across trucks, buses, maritime and associated refuelling infrastructure. Government published a Sector Development Plan covering aspects such as supply chain development and skills, and has taken the first steps to develop a business model for hydrogen transportation and storage infrastructure.
- After launching the Colombian Hydrogen Roadmap with ambitious goals by 2030, as well as the Energy Transition Law that gives tax benefits for investment in Hydrogen projects, in March of 2022 the first two industrial pilot projects were inaugurated. One of the pilots is on using green hydrogen in the refinery process in Cartagena, and the other one is on analyzing a blend between natural gas and hydrogen. In terms of regulation, in July of 2022, the Government of Colombia issued a national decree that establishes the institutional framework and assigns responsibilities to different ministries to develop the hydrogen ecosystem. In parallel, via the Renewable Energy Fund FENOGE, financial funds were assigned to 10 hydrogen projects for the development of prefeasibility studies.
- Last year, the Economic Development Agency of Chile (CORFO) auctioned a fund of US$ 50 million for the development of hydrogen projects, where 6 projects were awarded. Furthermore, Chile has signed MoUs with different Ports to position its green hydrogen and its derivatives

including the Port of Hamburg, the Ports of Rotterdam, and Antwerp-Bruges. There are also additional agreements with South Korea and Singapore for the technical and commercial viability of supply routes. In August 2022, the Government of Chile created the Green Hydrogen Committee to support the implementation of the National Green Hydrogen Strategy, manage public activities and programs, propose innovation R&D guidelines, support the creation of promotion tools on financing, productive innovation, and the development of local supply chain.

- Major Achievements: 2021 1st HRS opened in Budapest (at present in test operation). 2022 1st 2,5MW industrial H2 electrolyzer and H2 gas motor methane blending project is ongoing-name: Akvamarin, 2022 Evaluation of EU IPCEI projects for the Ministry of Technology and Industry such as: 1. Creating electric system flexibility with H2, seasonal storage, and pyrolizer from biogas), 2. Petrochemical greening, 660MW PV park, electrolyzer, storage, 14500t H2 as the first step), 3. Underground H2 storage at Öcsöd empty gasfield, 4. airport services H2 transformation, H2 airplane fuel development, 5. H2-algae production plant, heavy truck filling station, 6. waste burning, enriched syngas, H2 , and liquid CO2 selling, 7. PV-elektrolyzer-H2 storage- filling station

- In march , China published the "Medium and Long-term Plan for Hydrogen Energy Industry Development (2021-2035)". The plan proposes four goals for the development of China's hydrogen energy industry to 2025: Increase the quantity of hydrogen Fuel Cell Vehicles (VFC) to 50,000, Build-up hydrogen refueling station networks, Hydrogen production from renewable energy to reaching 100,000-200,000 tons/year, Carbon dioxide emission reduction of 1-2,000,000 tons/year.

  In August, "Science and Technology Support the Carbon Neutralization Implementation Plan (2022-2030)" was announced, clearly proposing ten major actions, including technological support for energy green and low-carbon transformation, and technological breakthroughs in low-carbon and zero-carbon industrial process reengineering.

- In August, Canada and Germany signed a Joint Declaration of Intent urging the two countries to collaborate in the export of clean Canadian hydrogen to Germany. The Canada–Germany Hydrogen Alliance will commit the two countries to enabling investment in hydrogen projects through policy harmonization; supporting the development of secure hydrogen supply chains; establishing a transatlantic Canada–Germany supply corridor; and exporting clean Canadian hydrogen by 2025. In addition, the province of Nova Scotia set a target to offer leases for five gigawatts of offshore wind energy by 2030 to support its budding green hydrogen industry.

- Norway invested heavily in the development of a domestic hydrogen infrastructure. In 2022, Enova has increased the support with 1,8 bn NOK, of which 669 million was allocated to the establishment of 5 hydrogen production facilities along the Norwegian coast and 451,3 million was allocated to 7 ground-breaking hydrogen- and ammonia-powered vessels. In addition, two research centers on hydrogen and ammonia were established in October 2022. The Norwegian government also supports the establishment of a full-scale value chain for carbon capture, transport and storage in the North Sea and has allocated 16.8 bn NOK to the Longship project. Further CO2 storage capacity has been installed both in the Barents and North seas in 2022. This shall enable large-scale production of very-low emission hydrogen with CCS.

- With ambitious goals of hydrogen production and economic development, Spain presented its

hydrogen roadmap in 2020. It plans to commission 4 GW of electrolyzers, which is around 10% of Europe's production target. Furthermore, the Spanish government approved a Strategic Project for the Recovery and Economic Transformation (PERTE) of Renewable Energies, Renewable Hydrogen, and Storage (ERHA) that will provide 16.37 billion euros of funding.

- Japan announced "The Clean Energy Strategy Interim Report" which shows a roadmap for economic growth and energy transition. Striving towards building a Hydrogen / Ammonia supply chain, and rapid expansion and commercialization, a detailed study will be conducted to advance support measures based on differential cost of conventional fuels in terms of production, transportation and storage together with development of common infrastructures such as storage tanks and pipelines.
- France has an ambitious national strategy to reduce greenhouse gas emissions by 6 million tons of CO2 annually in 2030. Backed by €9 billion from the French government, one of the strategy's main targets is 6.5 GW of installed electrolyzer capacity by 2030, which will enable France to produce clean hydrogen on a large scale. French companies, with the support of the French government, will invest in the construction of gigafactories to manufacture electrolysers, fuel cells, tanks and vehicles with a twofold objective: both to drive down costs and to make France and the European Union self-sufficient in manufacturing key equipment. As an important milestone in 2022, the first ten industrial projects have been launched in France and approved by the European Commission involving public and private investment of €2.1 billion and €3.2 billion respectively – directly leading to the creation of 5,200 jobs.
- Denmark has set out a government target of 4-6 GW of installed electrolyzer capacity in 2030 – and Industry as even greater ambitions aiming for between 14 and 17 GW installed capacity in 2030. All to be powered by renewable energy, mainly from offshore wind, in the recognition that Green Hydrogen as well as fuels based on green Hydrogen are key components in a successful green transition. Denmark will also establish a domestic Hydrogen infrastructure aiming to inaugurate the first pipelines already in 2026 and to establish export opportunities for green Hydrogen by connecting the domestic Hydrogen infrastructure to the wider European network by 2030. This will enable the utilization of the renewable resources in the North and Baltic Seas and the creation of hubs across the country for the production and refining of green Hydrogen for domestic as well as export needs.

This statement was co-signed by the following GHIAA members.

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