Joint-Agreement on the Responsible Deployment of Renewables-Based Hydrogen

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Dubai: December 5th, 2023; Today, representatives from across the world have come together to sign a **Joint-Agreement on the Responsible Deployment of Renewables-Based Hydrogen**. This agreement aims to ensure that the implementation of renewables-based hydrogen technologies is conducted in a manner which sufficiently prioritises the intentional and judicious scaling of deployment, outlines required principles and standards for the production, application, and trade of hydrogen; and sets forth a framework for understanding the potential impacts (both negative and positive) on local communities, the natural environment and the climate, as well as the inclusive and equitable energy transition in the context of a global 1.5°C pathway.

The Flagship Partners and Endorsing Organisations – representing regional hydrogen alliances from across the world, hydrogen organisations & corporations, national labs, industry stakeholders, academia, government institutions, public agencies, environmental organisations, and civil society – hereby join forces to address the urgent issue of climate change and codify the world's mutual understanding of renewables-based hydrogen as a potential solution in a truly net zero future (if and only if it is deployed locally, responsibly). We unequivocally agree to the understanding that the only scalable, truly near-zero emissions hydrogen is produced from water using renewable energy (including solar, wind, geothermal and hydro power – i.e., renewables-based). In recent years, renewables-based hydrogen has emerged as a means of decarbonising select hard-to-abate / hard-to-electrify sectors around the world. These include what The Breakthrough Agenda Report 2023 has defined as "Priority Sectors", including some specific products/processes in chemicals and steel (fertiliser, methanol, chemical feedstock, direct reduced iron), maritime shipping (as a renewables-based hydrogen power-to-x derivative), aviation (as a renewables-based hydrogen power-to-x derivative), seasonal electricity storage when renewable supply to the grid is >100%, and some very limited segments of heavy-duty trucking / off-road mobility. However, notably, renewables-based hydrogen presents a range of opportunities and challenges which must be proactively and holistically accounted for in order to avoid any pitfalls on the journey to a net zero economy. In comparison to other solutions, renewables-based hydrogen can often be both inefficient and more costly. Additionally, it has the potential to add a range of complexities to the energy transition – delaying our progress towards delivering on a 1.5C pathway.

Recognising the urgency of the climate crisis, specifically the ever-increasing potential risks and real-world impacts on vital ecosystems and weather patterns around the world, we are committed to taking immediate action to ensure a pathway of 1.5 degrees Celsius warming is achieved in a truly responsible manner as it relates to the hydrogen sector and its impactful but limited role in a net zero future. As such, we acknowledge the need for a broad range of principles and standards guiding the deployment of renewables-based hydrogen around the world. These principles and standards, outlined below, will support global actors in ensuring the growth of the hydrogen economy is both climate positive and puts people + the planet at the forefront of hydrogen-related development.

By endorsing this document, representatives from across the world demonstrate their collective willingness to both promote and collaborate on the implementation of a set of principles and standards related to responsible production, transportation, and end use of renewables-based hydrogen technologies – as well as to collectively address the challenges and opportunities associated with the growth of hydrogen ecosystems around the world. We recognise that, while all Flagship Partners and Endorsing Organisations hereinafter codify their support of the principles and standards contained in this document, only some actors will be able to play an active role in the implementation of specific principles and standards in the years to come.

These principles and standards are built upon existing international conventions, treaties and frameworks – including but not limited to: The Ten Principles of the United Nations Global Compact, the United Nations Organization's Declaration on Fundamental Principles and Rights at Work & Convention 169, the Rio Declaration on Environment and Development, the United Nations Framework Convention on Climate Change and the United Nations Convention Against Corruption.

The implementation and monitoring processes of these principles and standards, as well as specific timelines, will be outlined in a support document, known as the Guiding Document for the Implementation of the Joint-Agreement.

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1. The term 'renewables-based hydrogen' refers to hydrogen which is produced from water using renewable energy (this includes solar, wind, geothermal, and hydro power). The term does not refer to or include what is known as 'fossil' hydrogen removed from subsurface deposits. The term does not include or exclude what is known as "fossil" hydrogen but it means the optimisation of the hydrogen produced from renewable sources, including electrolysis and nuclear energy.

2. We recognise and are pleased to expand on the initial work done by the UN Climate Change High-Level Champions for COP26 and COP25 known as the *Guiding Principles for Climate-Aligned Hydrogen Deployment*.

3. The term ‘international scaling’ refers to the establishment of a hydrogen market which sees greater than the current hydrogen market size, is developed within the framework in which the hydrogen is primarily produced locally to avoid transportation-related emissions and costs, and is part of a broader system of solutions which will maximise value to communities, the natural environment and the climate.

4. The term ‘responsible’ will hereinafter refer to the language referenced here - wherein responsible deployment indicates the implementation of renewables-based hydrogen technologies is conducted in a manner which sufficiently prioritises the intentional and judicious scaling of deployment, end use of hydrogen, responsible production, and positive impacts on local communities, the natural environment and the climate.

5. The term ‘sustainable’ includes, but is not limited to, adherence to standards which address equitable social, environmental and economic benefits throughout the project lifecycle.

6. By adopting the following principles, signatories agree to implement policies and practices that will avoid congestion issues, enable the responsible deployment of climate-aligned renewables-based hydrogen while ensuring a safe and secure supply chain.

7. We recognize this list is both non-exhaustive and variable as the end use applications are variable to change as ‘responsible’ deployment of climate-aligned renewables-based hydrogen is concerned.
Thematic Grouping

#1
Continuously defining and integrating a holistic, dynamic approach to technology readiness levels – as well as stringent methodologies and thresholds for emissions intensities – into investment & project decision-making criteria
We agree to assess key geotemporal regional and sectoral supply and demand sensitivities which will – when considered in concert with environmental, social, and economic risks – maximise the achievement of the Sustainable Development Goals (specifically SDGs 6, 13, 14, and 15 which are considered fundamental to mitigating the impacts of climate change as well as SDGs 7, 9 & 12 which renewables-based hydrogen will have a direct impact on). We agree to both a) prioritise the displacement of fossil fuel-based hydrogen and b) focus the use of renewables-based hydrogen on specific hard-to-abate sectors which have the potential to be key applications of renewables-based hydrogen as we work to achieve economy-wide near-zero emissions intensities; such key applications will likely include (but are not limited to) specific products/processes in chemicals and steel (fertiliser, methanol, chemical feedstock, direct reduced iron), maritime shipping (as a renewables-based hydrogen power-to-x derivative), aviation (as a renewables-based hydrogen power-to-x derivative), seasonal electricity storage when renewable supply to the grid is > 100%, and some very limited segments of heavy-duty trucking / off road mobility.

We agree to prioritize deployment of renewables-based hydrogen technology and infrastructure which does not cannibalise the use of more efficient, fitting solutions, perpetuate unnecessary dependencies on fossil fuels and related fossil fuel subsidies, or prevent the permanent displacement of fossil fuels (including but not limited to most use cases related to residential & commercial heating and power generation).

Successful deployment of hydrogen technologies will require a bespoke approach – to responsibly supersede other available solutions – each region and sector will require contextualized strategies best suited to an efficient, effective transition in pursuit of 2030/2050 net zero targets.

14. The term ‘geotemporal’ refers to a combining of the variables space and time. In other words, the question is not only what are the right use cases for hydrogen but when should we deploy hydrogen-related infrastructure based on the region/market in question.
15. This implies reassessing hydrogen applications and projects as technology matures and – as such – this list may change as the responsible end use applications of hydrogen are reassessed over time.
Responsible hydrogen trade must be built around the development priorities of emerging economies; related agreements, regulations & market-based mechanisms should therefore take into account the economic, environmental, and social viability of a project insofar as it supports decarbonisation of all involved parties as well as working collectively towards harmonised certification to ensure net positive impact is delivered to the environment.

We agree to only support the development of a renewables-based hydrogen trade ecosystem which properly delivers on the principles and standards outlined in this document; specifically principles/standards 1, 2, 3, 4, 5, and 18 – and takes into account national development priorities of emerging economies.

We acknowledge the importance of leveraging and deploying regulation and market-based mechanisms which embody the spirit of the Joint-Agreement (specifically as it relates to the reversing of the historical dominance donor economic priorities have had over the sustainable development of emerging economies in North-South partnerships). This includes an agreement to work towards harmonised certification schemes for product quality, origin, and emissions intensity.

We will assess the economic, environmental and social viability of an export project – as well as regional and sectoral supply and demand sensitivities (as previously outlined) – and in so doing support the general decarbonisation of emerging economies which are projected to be net exporters of renewables-based hydrogen and/or its relevant derivatives.
Evaluation of capital deployment, financing, and policy schemes for the responsible deployment of renewables-based hydrogen must extend beyond traditional frameworks – encompassing considerations around social, environmental, and resiliency impacts. Equally important is transparency in all financial transactions as well as shared emphasis on specific policies and capital deployment in alignment with TRLs for responsible hydrogen production, transport, and end uses which are truly climate-positive and nature-centric.

We agree to conduct cost analysis – evaluating economic feasibility and competitiveness of renewables-based hydrogen projects – which goes beyond traditional frameworks to include specific methodologies for assessing both the potential negative and positive outcomes to local communities; including but not limited to: the potential negative impacts of climate change, biodiversity loss, and increased presence of air pollutants as well as the potential benefits such as job creation, enhanced air quality, increased energy resilience, and the overall advancement of sustainable and resilient local economies.

We agree to establish transparent financial mechanisms which ensure the responsible deployment of financial resources for renewables-based hydrogen projects; and/or Flagship Partners and Endorsing Organisations agree to engage responsible, transparent financiers who adhere to the same standards of transparency and fossil fuel divestment. Additionally, we commit to promoting transparency in all financial transactions between hosting states, operating companies, and supporting states. This includes subsidies provided by supporting states to operating companies.

We agree to ensure equitable access to funding for renewables-based hydrogen projects, including end uses, particularly for underserved regions and sectors (any public funding for the project should be used in a way that increases transparency and ownership for the general public).

We recognise the necessity for significant increases in RD&D budgets – which are essential in delivering the required work to achieve acceptable TRLs for a broad range of production, transportation, and application technologies. We also recognise the need for increased budgets to develop the testing infrastructure required to accelerate and support the development/deployment of those technologies which have advanced to a higher TRL.

We recognise the critical role of policy instruments in fostering responsible hydrogen deployment, and hereby agree to coordinate on cross-border carbon trade agreements, subsidies, and related policy schemes for hydrogen production and end uses.
Inclusion and equity for communities in which hydrogen development and deployment are undertaken will involve deep engagement and collaboration with local residents to provide the greatest possible benefit and consent. Just and responsible deployment in these localities will prioritise access to resources such as healthcare, housing, water, energy, upskilling and reskilling where necessary, and opportunities for employment as well as local offtake of a portion of project resources.

We agree to work collaboratively to support solutions that ensure the responsible deployment and use of renewables-based hydrogen (and its relevant derivatives) is truly inclusive and equitable.

We recognise the importance of developing robust community benefits agreements and grassroots ownership models to create shared value in host communities (e.g., community training for jobs above the prevailing wage, addressing legacy pollution, improvement in local air quality, clean energy security and access, and/or other community-identified benefits). We recognise that consistent auditing and reporting is required to ensure these benefits and new ownership models are delivering the intended outcomes (such efforts on “responsible” reporting must be focused on open access to information and stringent methodologies for assessing real-world impact).

We agree to avoid, to the best of our ability, impacts to disadvantaged or at-risk communities in alignment with best practices regarding environmental justice outcomes – i.e., primarily ensuring impacts do not exacerbate undue environmental burden onto disadvantaged communities. Where not possible, environmental restoration and cultural preservation plans, that are developed in consultation with impacted communities, will be put in place. In addition, investments in community development, such as improved housing and healthcare facilities, will be put in place.

We agree to prioritise local usages of renewable-based hydrogen to provide social, environmental health, and economic benefits to local communities. Additionally, we agree to the general consensus that clean energy access and national just energy transition plans should be prioritised ahead of export models which do not provide direct benefits to the most disadvantaged communities in question.

We agree, in areas with limited electricity or clean water access, to allocate a portion of renewable energy and/or water production for local consumption.

We agree to promote and follow responsible sourcing practices for input materials into renewables-based hydrogen production (e.g. responsible mining of input materials for proton-exchange membrane catalysts).

We agree to actively involve all impacted communities in an accessible manner, in their respective local languages, and with full disclosure of information – ensuring free prior and informed consent from indigenous people and local communities from the initial pre-feasibility phase of the project design process through operations; as well as establishing a comprehensive process for engaging civil society throughout the project lifecycle that is informed by impacted communities’ input (International Labour Organization Convention 169 must be respected for all affected populations).

We commit to respect local labour laws, human rights and implement health and safety measures for all workers, contractors and suppliers throughout construction and operations phases.

We agree to prioritise local job creation through upskilling/reskilling and workforce contracting, as well as considering local suppliers of materials and services. In any region with high renewable energy potential, this will include training and employing local residents in the operation and maintenance of all related infrastructure.
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Thematic Grouping

#6

Protecting the natural environment & delivering a net-positive impact on ecological systems

The protection of sensitive habitats, biodiversity, and critical resources is essential to the responsible deployment of renewables-based hydrogen. From initial project design, to construction, to operations – responsible hydrogen deployment will require consideration of a range of environmental management practices as well as considerations of resiliency due to the ever-evolving impacts of climate change.

26 We commit to prevent the compromising of sensitive habitats during renewables-based hydrogen project development and operation.

27 We agree to take into consideration the required measures to make all hydrogen-related infrastructure resilient to the impacts of climate change, ensuring safe and efficient delivery of power or fuel to the end user.

28 We commit to delivering a net-positive impact on biodiversity and local ecology specifically as it relates to new installations or retrofits for existing infrastructure – acknowledging the interconnectedness of biodiversity loss and mitigation efforts.

29 We agree to prioritise non-freshwater sources for all required volumes of ultrapure, cooling, and raw water usage – if and only if desalination ensures proper dissemination of the resulting brine to avoid damage to salt-water environments and fish populations. In water-stressed areas, sustainable water management practices will be enacted in cooperation with the local community.

30 We will prioritise regenerative practices as it relates to soil and land usage with a mitigation plan for restoring any impacted terrains at close of operations.
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Expo City - Dubai; December 5th, 2023

We, representatives from diverse sectors and regions, come together with shared dedication in driving the responsible deployment of renewables-based hydrogen. By developing and signing this document, we affirm our commitment to the principles and standards outlined herein – thus ensuring the widespread adoption of renewables-based hydrogen in a manner that is just, inclusive, and sustainable.\textsuperscript{17}
To date, the **Joint-Agreement on the Responsible Deployment of Renewables-Based Hydrogen** is endorsed by the following stakeholders:

Please indicate your interest in endorsing the **Joint-Agreement on the Responsible Deployment of Renewables-Based Hydrogen** by contacting:

Bradford Willis | bradfordwillis@climatechampions.team
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The Flagship Partners are very grateful to all external and internal experts who reviewed the Joint-Agreement at length. The reviewers do not carry any responsibility for the final publication, which is the sole responsibility of the Flagship Partners and Endorsing Organisations.
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