Contribution to the consultation on the EU Hydrogen Strategy

The Global Alliance Powerfuels welcomes the opportunity to contribute to the development of a dedicated European hydrogen strategy. We believe that with the following recommendations, the strategy, in conjunction with the EU Strategy for Energy System Integration, can become an important milestone for the successful decarbonisation of all sectors, especially hard-to-decarbonise sectors such as transport, industry and buildings, and ultimately enable the EU to achieve the goal of climate neutrality by the year 2050.

The **Global Alliance Powerfuels** was founded in 2018 and is backed by 19 member organisations and an international network of partner institutions. It is coordinated by the German Energy Agency (dena). The strategic objective of the Alliance is to foster the development of a global market for powerfuels.

Powerfuels was chosen as a term denoting not only renewable hydrogen but all gaseous and liquid fuels from Power-to-X processes that draw their energy content from renewable electricity. This definition of powerfuels includes, but is not limited to, synthetic gas (e.g. methane) and synthetic liquid fuels (e.g. methanol, ammonia, Fischer-Tropsch products).

I. The benefits of hydrogen and powerfuels

There are four main reasons that highlight the critical importance of powerfuels (including hydrogen):

1. **Powerfuels offer climate-friendly solutions for hard-to-decarbonise sectors and create flexibility**: Powerfuels complement the direct use of renewable energies and are crucial where direct electrification is not possible or economical. By offering climate-neutral options to applications with no viable alternatives, powerfuels allow for more far-reaching de-fossilisation of all end-use appliances, across all sectors – thus enabling deeper emissions reductions. Powerfuels also offer flexibility by expanding the available decarbonisation options in hard-to-decarbonise sectors in a technology-neutral approach.

2. **Powerfuels reduce the system costs of the energy transition**: Powerfuels can reduce the cost of the energy transition by utilising existing infrastructures and providing long-term storage options.

    a. Powerfuels can be integrated completely or partly into the existing gaseous and liquid fuel infrastructure as well as in applications with very long investment cycles. Due to their compatibility with existing gas infrastructure, they reduce the infrastructure cost of the energy transition as they can be used in existing infrastructure and consumer equipment.

    b. By providing long-term storage options and reducing the burden on the power grid, powerfuels can lower renewable electricity curtailment and costs. This is especially beneficial as load volumes will increase with rising electrification and production of renewable energy.

3. **Powerfuels accelerate the integration of the energy system**: Powerfuels can replace fossil energy sources in existing consumer equipment in the short term and thus significantly accelerate the de-fossilisation of existing consumer end-use equipment. They can thus smooth the transition from a fossil-based energy system to a renewable one.

4. **Powerfuels enable the trading of renewable energy**: Powerfuels allow for the geographically widely-distributed potentials of renewable energy production to be traded, stored and transported on a global market. This is especially beneficial for countries which are scarce in renewable energy resources and wish to not only secure their energy supply but also diversify their energy imports. Powerfuels therefore support stability and energy security in a renewable energy system.

II. Current obstacles and barriers to the market development of powerfuels

Despite their potential for emissions reductions, powerfuels are facing competitive disadvantages at present:

1. One of the main challenges are relatively high investment costs and high production costs; a major reason is the early stage of industrial scaling of powerfuels technologies and/or the choice of sub-optimal production locations.
2. Furthermore, state-induced price elements substantially increase operational costs of powerfuels production plants/supply chains, e.g. levies on renewable power used for powerfuels production add additional costs to powerfuels.
3. Finally, stronger price signals are necessary to start market development. Powerfuels are also not yet fully integrated in the European efforts to lower GHG emissions. Depending on which sector powerfuels are deployed in, different regimes are covering these efforts. E.g., energy conversion, aviation and of the majority of industrial emissions are covered by the Emission Trading System (ETS) while the Effort Sharing legislation is covering transport and building sectors. Consequently, different price signals are given, which does not provide a stable investment signal for powerfuels as a measure for both sector integration and carbon-abatement options.

III. Policy recommendations

Bearing in mind the importance of powerfuels and the time required to build up capacities, a hydrogen strategy should be ambitious in incentivizing their market development. An increasing and continuous European powerfuels demand will create long-term planning stability for producers and thus enable investments in production capacities for powerfuels inside and outside of the EU.

1. The reduction potential of GHG emissions from powerfuels should be **acknowledged within the existing energy policy frameworks and regulations** by crediting powerfuels on renewable targets and CO_2 reduction targets in all sectors. In some instances, this can provide sufficiently large incentives for the development of the powerfuels market. A first step has been taken, for instance, by the opportunity for green hydrogen in refineries to count towards targets in the revised Renewable Energy Directive (RED II).
2. Further **support of Research and Development (R&D)** is necessary to enhance process efficiency, improve technology readiness and understand the interplay between the technologies involved on a large scale. This could be provided in the form of public funding (e.g. ETS Innovation Fund, Important Projects of Common European Interest (IPCEI)) and by removing regulatory barriers for R&D investments. The EU should make renewable gases, liquids and hydrogen a priority when drafting its work programme for Horizon Europe this year.
3. An adequate regulatory and market framework needs to be established. It is recommended that a regulatory framework employs market-based instruments that support the development of a **stable demand for powerfuels** to encourage cost competition and avoid stranded investments. Auctions can be an effective instrument that allows for competition between powerfuels producers to bring a guaranteed amount

of powerfuels into the market. Following the experience from promoting renewables, auctions will ensure low public cost while providing the necessary investment security for investors, especially in markets with fast learning effects and economies of scale.

4. Alternatively or in addition to market-based instruments (MBIs), quotas can similarly be an effective command and control tool, but in many sectors must follow a coordinated European approach, especially in internationally regulated or competing markets, such as industry, aviation and maritime.

5. The strategy should not exclude the use of powerfuels in certain sectors a priori. The technology's emission reduction potential should be **open to applications in all sectors.** In sectors with high willingness-to-pay, near-term market-driven demand is possible and can accelerate initial market ramp-up. In the long-term, the focus should be on sectors without feasible alternatives. Leveraging the demand for powerfuels will create long-term investment perspectives. Long-term investment security and planning stability are key for scaling the powerfuels market as investment decisions for capital-intensive assets are made with long-term outlooks.

6. The strategy should recognize the **potential of powerfuels supply regions outside of the EU** as a complement to domestic generation. These regions can supply powerfuels at often significantly lower cost, thereby creating welfare benefits. They improve the acceptance of the energy transition in regions where the expansion of renewables has been met with criticism. They also increase resilience and strengthen economic ties, and maintain European expertise in these areas by developing export markets. Any support measures for powerfuels should therefore explicitly allow for projects outside of the EU.

7. Powerfuels should be put on an equal footing with other carbon-mitigation technologies and political instruments should fully recognise the sustainability benefits of powerfuels. This implies ensuring openness to all de-fossilisation technologies and end-use applications and the creation/adjustment of sector-specific financial incentives (e.g. taxes, levies) for the deployment of powerfuels. Such measures would create a level-playing field for all energy carriers that adequately reflects the carbon reduction benefits of powerfuels. Measures should also include the creation of long-term GHG emission policy with a **consistent framework for pricing carbon emissions** in the effort sharing sectors (such as transport fuels) that makes final consumer prices reflect GHG emissions.

8. Concerning the transport sector, the further definition of the revised Renewable Energy Directive (RED II) through the delegated act of Art. 27 should be undertaken as soon as possible and its implementation should follow the principles of practicability and simplicity. This would provide potential suppliers of powerfuels with the necessary planning security and facilitate market development.