Joint Declaration by

HYDROGEN EUROPE, HYDROGEN EUROPE RESEARCH and **WATERBORNE TECHNOLOGY PLATFORM**

On the cooperation and collaboration of proposed partnerships for Horizon Europe

"CLEAN HYDROGEN FOR EUROPE" and **"ZERO EMISSION WATERBORNE TRANSPORT"**

The emerging partnership portfolio proposed by the European Commission (EC) for the Horizon Europe Research and Innovation Framework (H.EU) includes a new partnership focused on waterborne transport ("Zero Emission Waterborne Transport cPP" - hereinafter "ZEWT") as well as a successor of an existing partnership on hydrogen ("Clean Hydrogen for Europe" - hereinafter "CHE") as a reformed continuation of the Fuel Cells and Hydrogen Joint Undertaking (FCH JU).

Both partnerships have a common interest towards the major challenge of eliminating GHG emissions and air pollution, with a focus respectively on the waterborne transport value chain (including the full range of maritime shipping and inland waterway transport) specifically for the former, and hydrogen production, distribution and end-uses at cross-sectorial level for the latter.

Both the hydrogen sector, represented by Hydrogen Europe (HE) and Hydrogen Europe Research (HER), and the waterborne transport sector, represented by Waterborne Technology Platform (TP), confirm their willingness to ensure that both partnerships can be developed in an efficient and complementary manner and create synergies through targeted collaboration efforts.

In this spirit, HE/HER and Waterborne TP have come to the recommendations below.

A. Scope of the two partnerships

ZEWT aims at providing zero-emission solutions for all main ship types and services before 2030, which will enable zero-emission waterborne transport before 2050. The preliminary actions as elaborated in the respective Strategic Research and Innovation Agenda (SRIA) include:

1. Increasing use of *sustainable alternative fuels;*
2. *Electrification* of waterborne transport;
3. *Increasing energy-efficiency;*
4. D*esign and retrofitting* solutions for the new and existing fleet;
5. *Digital green to improve efficiency;*
6. *Sustainable bunkering and charging solutions for climate neutral ships*

Concerning the use of sustainable alternative fuels onboard, hydrogen, hydrogen-based fuels and hydrogen technologies are important elements of the R&D&I programme developed jointly by the ZEWT partnership and EC services. Therefore, coordination and cooperation with CHE activities is essential.

The **Clean Hydrogen for Europe (CHE) partnership** should be organised around three pillars:

1. Hydrogen production;
2. Hydrogen storage and distribution;
3. End uses application

The third pillar includes transport applications and notably the waterborne transport sector is considered as a key sector in terms of the large-scale usage of hydrogen, hydrogen made-fuels and hydrogen technologies (fuel cells, storage, bunkering and possibly ICE). Therefore, coordination and cooperation with the ZEWT activities is required.

The list of sustainable alternative fuels that can be experimented in the ZEWT programme may be broader than the scope of the CHE, the cooperation will mainly focus on those that are at the core of CHE competence, i.e., hydrogen and ammonia (which is already today the main hydrogen-made product).

B. Scope of the cooperation

While each partnership should develop its own activities, involved associations agree that there is an important potential for synergies and cooperation in particular in the following fields:

- Sustainable alternative fuels: Hydrogen and hydrogen made fuels (in particular ammonia)
- Power conversion: Fuel cells / turbines / ICE
- Emission reduction (non-GHG): Fuel cells
- Input to pertinent regulatory and standardisation processes

It is mutually understood that

- Hydrogen technologies, including fuel cells, exist for land transport and stationary applications but these need customised and up-scalable technologies with a view to deliver waterborne fit-for-purpose solutions for the main ship types and services of the waterborne transport sector before 2030.
- CHE and ZEWT shall share with each other updates of relevant technology roadmaps and plans as an overview of actual achievements as far as relevant for waterborne applications, providing opportunities for both partnerships to contribute.
- ZEWT shall ensure to demonstrate the integration of technologies developed through R&I efforts in CHE in line with the guiding principles, onboard at scale in waterborne transport conditions.
- ZEWT and HE-HER-CHE shall share their analysis about the demand for the different technologies in the full range of waterborne transport application cases and the technological offer for fuel cells and hydrogen systems and equipment respectively.

The division of tasks and cooperation efforts will be based on the *guiding principle* that all onboard aspects which require knowledge of naval architecture and marine engineering will be dealt with by ZEWT whilst all shore-side aspects and hydrogen technology building blocks will be led by CHE. This guiding principle must be complemented by a permanent spirit of cooperation and flexibility to ensure both parties contribute best to achieve the common objectives.

The integration of the technology building blocks onboard represents a major challenge due to its complexity and is, therefore, the core competence of the ZEWT Partnership, and should be at the core of ZEWT activities, without preventing cooperation in integration and demonstration and CHE proposing to take the initiative towards demonstrators for some ships. This pertains, in particular, to the possibility of an early technology transfer from land applications where the implementation pathway is not maritime-specific and where investor confidence is easier achieved, for example through avoiding lengthy certification processes in international bodies.

Technology will be identified, developed and demonstrated on this basis, not precluding that for some building blocks common work is envisaged. In case of a topic of common interest, CHE and ZEWT will exchange the draft topic and one of both will take the lead. Outcomes will be shared in case of these topics of common interest.

ZEWT should be responsible for organising the demonstration of solutions developed for the main commercial ship types, including onboard storage, distribution, treatment and use in power converters.

Both parties understand that many hydrogen technologies require specific development to fit with the unique requirement of the waterborne sector. This is at the core of their cooperation. They also observe that there exists a fraction of the small ship fleet for which existing hydrogen technologies developed for land applications can be easily installed in ships and demonstrated (as already initiated with a few FCH JU projects). CHE could therefore support these projects in good cooperation with ZEWT.

Regarding the shore side bunkering infrastructure, CHE should be responsible for the entire landside (incoming pipeline, land storage, and distribution of hydrogen and hydrogen carriers such as ammonia). As the safety of the bunkering operation falls within the regulatory framework of the waterborne sector, the bunkering operation is dealt with in ZEWT. However, technology components may be dealt with in CHE as well. Here again a close-knit cooperation will be needed to ensure the indispensable coordination between the infrastructure and the ship and the necessary safety in handling sustainable alternative fuels.

More broadly, both parties shall coordinate their activities to ensure that the development of technology building blocks by CHE and the demonstration by ZEWT are well synchronised.

The development of new technologies and their integration on a vessel is subject to the development or adaptation of many technical regulations. The associations agree to cooperate actively in this matter considering their respective expertise and experience.

ZEWT should take the lead in drafting contribution to the discussions with the relevant bodies (ESSF, IMO, CESNI etc.) while HE-HER-CHE should support the regulation effort by providing all useful information and testing data and results with regard to hydrogen technologies. HE and HER will support the development of pertinent rules and guidelines either through the Waterborne TP or by a direct participation in the relevant bodies.

HE-HER-CHE should take the lead when it comes to the standardisation and certification of hydrogen technologies through for instance ISO, IEC and CEN_CENELEC while ZEWT should support the effort by sharing all the requirements to ensure that they are considered in standards.

CHE should take the lead in developing the necessary high-power fuel cell technologies necessary as a building block towards the deployment of hydrogen on ships at scale.

Beyond vessels and bunkering infrastructure, ports are a particular area of common interest.

The ZEWT Partnership should develop and demonstrate solutions for the specific port-based supply interface with vessels (other sustainable alternative fuels, electricity) needed to enable zero-emission waterborne transport by 2030 and 2050, respectively.

For CHE seaports and inland ports are promising hydrogen hubs, combining

- Ports operations (which can also resort to hydrogen technologies to reduce their emission),
- Multi-modal logistics,
- International trade of hydrogen and derivatives,
- Supply to ports industrial hinterlands with a significant usage of hydrogen in order to decarbonise production.

The associations expect to identify common RD&I actions on ports and will inform each other of developments in this field.

C. Cooperation process

In order to fully benefit from the synergies between the two partnerships it is necessary to cooperate both at programming level (i.e., the identification of funding priorities) and at implementation level (i.e., monitoring the results of projects).

As a first principle, in case of a topic of common interest, HE and HER as well as CHE programme office and ZEWT will exchange the draft topic, and one of both will take the lead. Outcomes will be shared in case of these topics of common interest.

More detailed cooperation will be discussed between ZEWT and HE-HER possibly taking into account any comments from the European Commission based on the following elements:

The partnerships have a key role to play in the cooperation at programming level. This cooperation shall take place bilaterally (between HE/HER and Waterborne TP). A continuous and transparent dialogue and regular update will be facilitated on a strategic level. In addition, the partnerships have identified a series of common members ("bridging members") that can further facilitate the dialogue between the associations on a technical level.

ZEWT and HE-HER as well as CHE will fully involve each other in any of their consultation mechanisms and committees for the areas of common interest; this might include consultations with other partnerships, if deemed necessary.

In preparation of their respective partnerships ZEWT and HE-HER as well as CHE will nominate interlocutors mandated by the partnership to liaise on the developments of the partnerships with relevant initiatives, in order to avoid duplication of efforts as well as to discuss necessary prioritisation. Finally, the representatives of the partnerships, H.EU Missions, Technology Platforms and other relevant initiatives and bodies will be invited to meetings with the Waterborne TP on a regular basis in order to discuss issues at stake, the creation of possible synergies, the development of joint work plans and common or coordinated calls (where possible) and any other issues relevant for the execution of the tasks of the partnership.

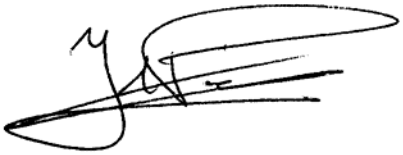
If cases arise where responsibility for a technological development or innovation cannot be clearly assigned to one of the partnerships or where this responsibility is a shared one by its nature both partnerships will investigate the possibility to support aligned or complementary calls.

Each partnership remains free to elaborate topics according to its individual roadmap prioritisations.

The European Commission will be kept informed of the progress in the cooperation and collaboration between the two partnerships.

Done in Brussels, February 2021

Hydrogen Europe	**Hydrogen Europe Research**	**Waterborne TP**
Valérie Bouillon-Delporte	Laurent Antoni	Henk Prins
President	President	Chairman



ANNEX: SIMPLIFIED PRESENTATION OF THE DIVISION OF TASKS

Group	Item	Hydrogen*	Ammonia
Techno building block	Infrastructure (bunkering)	**HE** / ZEWT	**HE** / ZEWT
	Large maritime fuel cells	**HE** / ZEWT	**HE** / ZEWT
	Combustion engine	**ZEWT** / HE	**ZEWT**
Ship integration	Integration in ship of storage and adaptation of storage (tank) technologies	**ZEWT** / HE	**ZEWT** / HE
	Integration in the ship of FC and ICE	**ZEWT** / HE	**ZEWT** / HE
Regulation	**IMO** regulation/standards related research	**ZEWT** / HE	**ZEWT** / HE
	ISO/CEN-CENELEC regulation/standards related research	**HE** / ZEWT	**HE** / ZEWT
Demonstration	Demonstration on ships	**ZEWT** / **HE****	**ZEWT** / **HE****

- **Bold names**: indicate lead entity
- Names: indicate entity that will be consulted or puts forward initiatives to the lead entity
- Remark: HE means here Hydrogen Europe and Hydrogen Europe Research
- * Including CH2/LH2 and carriers like LOHC
- ** ZEWT will take a leading role in demonstration on ships. This does not prevent CHE to support demonstration projects including small ships where technologies developed for land applications can be easily installed on ships either into a specific project or as part of a Hydrogen Valley project.