THE EU CALLS WEBINAR SERIES

VESSELS
HYDROGEN & AMMONIA

Norwegian Centres of Expertise
NCE Maritime CleanTech

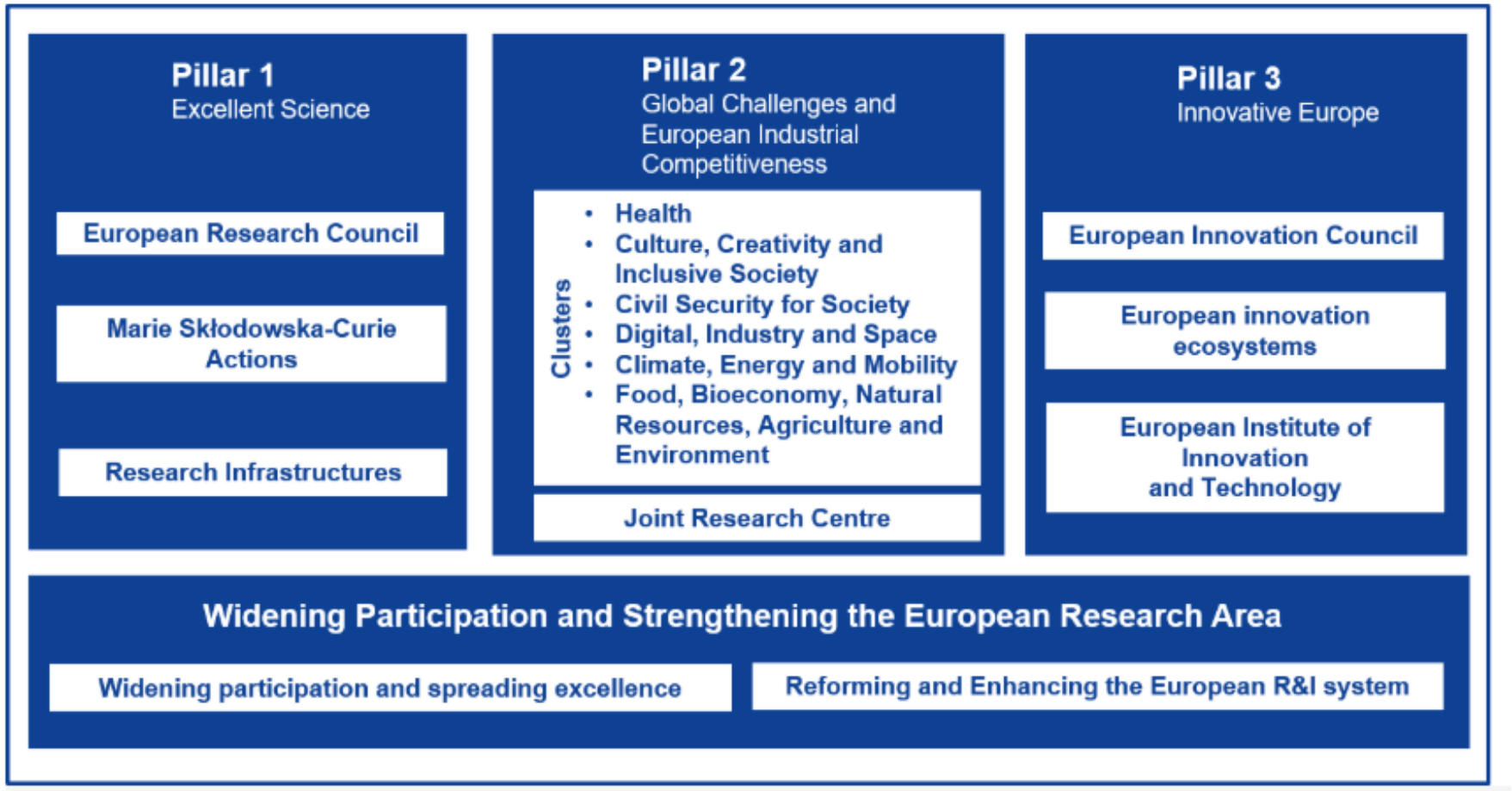
15 APRIL 11.00–11.30

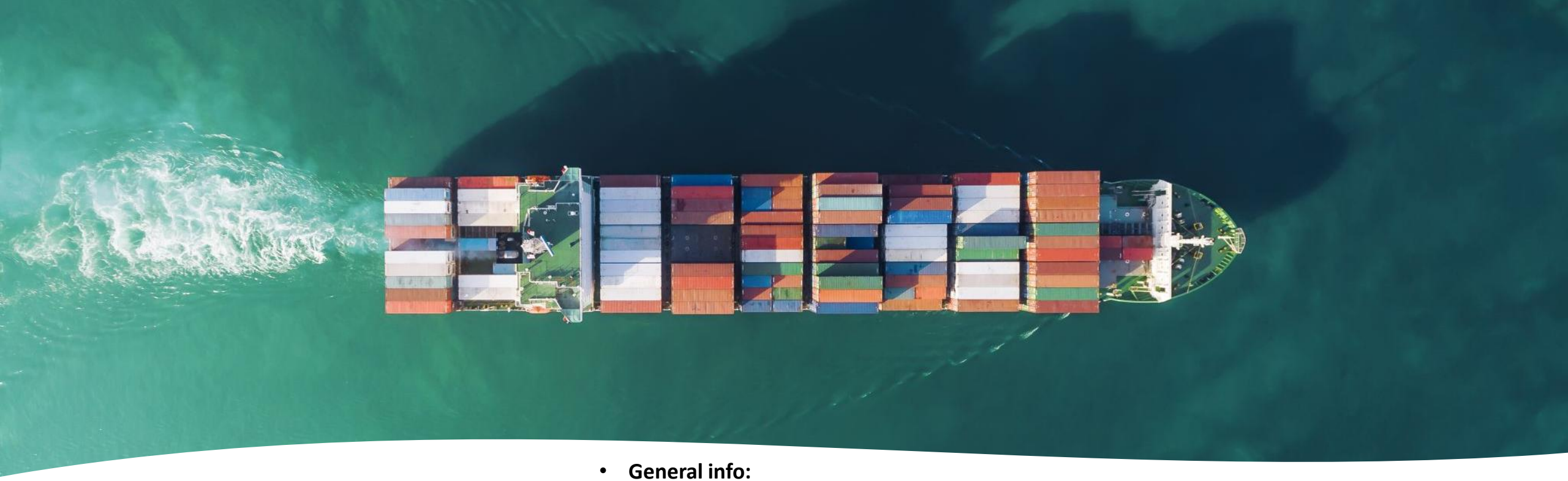
Horizon Europe

THE NEXT EU RESEARCH & INNOVATION PROGRAMME (2021 - 2027)

Norwegian Centres of Expertise
NCE Maritime CleanTech

Horizon Europe 2021-2027: The world's largest research and innovation programme





Zero Emission Waterborne Transport (ZEWT Partnership)

- **General info:**
  - New co-programmed partnership linked to Horizon Europe, Cluster 5 «Climate, Energy and Mobility»
  - Provide for core activities of waterborne transport for Horizon Europe
- **Key focus areas:**
  - Climate neutral fuels, electrification of shipping
  - Increased energy efficiency and lower fuel consumption
  - Innovative port infrastructure
  - Enable fully automated shipping

EU funds research and market-ready projects

Technology readiness level

Full commercial application

TRL 9: Actual system proven in operational environment

TRL 8: System complete and qualified

TRL 7: System prototype demonstration in operational environment

TRL 6: Technology demonstrated in relevant environment

TRL 5: Technology validated in relevant environment

TRL 4: Technology validert in lab

HORIZON-CL5-2021-D5-01-07:

Enabling the safe and efficient on-board storage and integration within ships of large quantities of ammonia and hydrogen fuels

HORIZON-CL5-2021-D5-01-07:

- Demonstration of the feasibility to store and use hydrogen-based fuels (generally in liquid form with capacities equivalent to +300 tons of conventional marine fuel) in a realistic environment on-board.
- Develop large and very large storage solutions for hydrogen and ammonia (e.g. compressed H2, liquid H2, LOHC, hydrides, ammonia derived compounds) and their integration on-board.
- Demonstration of the use of these fuels in high power applications with long autonomy
- Demonstration of the applicability, in particular with respect to short sea shipping, IWT vessels, and the stricter environmental expectations for passenger ships.
- Two full scale demonstrators by 2027 using 100% climate neutral fuels in one project.

- Innovation Action
- TRL 6-7
- €10M expected EU contribution
- Opening 15.04.21
- Deadline 07.09.21

HORIZON-CL5-2021-D5-01-08

Enabling the full integration of very high-power fuel cells in ship design using co-generation and combined cycle solutions for increased efficiency with multiple fuels

HORIZON-CL5-2021-D5-01-08:

- Feasibility and technical demonstration of the use of high-power fuel cells in co-generation and/or combined cycle mode in waterborne transport.
- Proof of scaling up, to a target of above 3 MW, of fuel cell installations for shipping applications, including main propulsion of a short sea shipping or inland navigation vessel.
- In case of a fuel cell using fossil fuel as input proof of significant efficiency gains (at least 20%) in a realistic environment compared to the conventional use of the fuels (e.g. within an ICE).
- On-board demonstration of waste thermal energy produced by high temperature fuel cells in ship-specific applications (e.g. hot water, steam production, HVAC, etc.) for potential mass-market application.
- Show a pathway to wider use of fuel cell technology in waterborne transport including the assessment of the maturity and resulting mid-term potential of various fuel cell systems.

- Research and Innovation Action
- TRL 6-7
- €15M expected EU contribution
- Opening 15.04.21
- Deadline 07.09.21

HORIZON-CL5-2021-D5-01-14:

Proving the feasibility of a large clean ammonia marine engine

HORIZON-CL5-2021-D5-01-14:

Draft

- Demonstration and validation of an ammonia-fuelled marine engine with power output in the +10 MW range. The validation shows safe and reliable operation in realistic scenarios and for a range of load cases.
- In case of proven feasibility pathways to the uptake of ammonia as a marine fuel for deep sea shipping and high power vessels are set out.
- Analysis of pathways to ammonia as a marine fuel through the establishment of regulations and solutions for health and safety issues.
- The aim is to develop, demonstrate and validate a multi-cylinder internal combustion engine of at least 10 MW power output running on ammonia as its main fuel, with IMO-Tier III or lower NOx emissions
- As an indication total tank-to-wake GHG emission reduction versus an MGO baseline should be at least 80% (taking into account that the climate-neutral upstream supply of ammonia is not part of this topic).

- Innovation Action
- TRL 6-7
- €10M expected EU contribution
- Opening 15.04.21
- Deadline 07.09.21

HORIZON-CL5-2022-D5-02-04:

Transformation of the existing fleet towards greener operations through retrofitting

HORIZON-CL5-2022-D5-02-04:

Draft

- Demonstrate retrofit solutions for sea-going and inland navigation vessels in operation.
- Retrofit solutions to reduce GHG emissions that are developed and ready to deploy. The target is to achieve a GHG emissions reduction of at least 35% compared to the original design.
- Retrofit solutions involving climate neutral fuels making vessels GHG emission free. These solutions are expected to have a significant R&I content going beyond a simple exchange of fuels through minor technical adaptations.
- Establishment of an up-to-date catalogue of suitable solutions for a wide variety of ship types and operation scenarios.
- Projects will focus on the design for technically and economically efficient retrofitting of the ship along these main lines.

- Innovation Action
- TRL 7-8
- €5M expected EU contribution
- Opening 03.12.21
- Deadline 26.04.22

Contact us for further info about funding opportunities

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