European Commission

#HorizonEU

THE EU RESEARCH & INNOVATION PROGRAMME

2021 – 2027

Horizon Europe CLUSTER 5

INFO DAYS 2022

15-16 December 2022

Research and Innovation

EUROPEAN UNION

CLUSTER 5 Climate, Energy & Mobility

INFO DAYS 2022 - 15-16 December 2022

WELCOME

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THE EU RESEARCH & INNOVATION PROGRAMME 2021 - 2027

Destination 5

Clean and competitive solutions for all transport modes

European Commission

Thematic area

Waterborne transport

Agnieszka ZAPLATKA, Hugues VAN HONACKER

European Commission

HORIZON-CL5-2023-D5-01-11
Developing the next generation of power conversion technologies for sustainable alternative carbon neutral fuels in waterborne applications (ZEWT Partnership)

SCOPE

- **Develop and validate to TRL 5 power conversion technologies for sustainable climate neutral fuels,** including ship configuration, performance simulation and scenario comparisons concerning the use of one or more different fuels
- **Open to all potential energy converters,** including for example ICEs, turbines, fuel cells and others
- **Validate** for fuel impurities, **minimising** noise and air pollution, with the **lowest** possible well to wake GHG's
- **Develop safety KPI's** for using the fuel concerned (particularly ammonia and methanol) and **realistic pathways** for technology deployment

European Commission

HORIZON-CL5-2023-D5-01-11
Developing the next generation of power conversion technologies for sustainable alternative carbon neutral fuels in waterborne applications (ZEWT Partnership)

EXPECTED OUTCOME

- **Establish basis for the onboard deployment of power conversion technology needed for sustainable alternate climate neutral fuels,** validate the feasibility of this innovative technology
- **Prove scalability** to greater than 3MW, with power density above 5kw/m3 for the converter itself, achieving at least 45% system energy efficiency, weighted to Marpol Annex V1, E2 or E3
- **Support regulatory development** (EU&IMO)
- **Prove Safety**
- **Develop pathways** for deployment, coherent with batteries and hydrogen partnerships, risk assessing; lifetime, maintenance, life cycle cost and GHG emissions

European Commission

HORIZON-CL5-2023-D5-01-11
Developing the next generation of power conversion technologies for sustainable alternative carbon neutral fuels in waterborne applications (ZEWT Partnership)

TYPE OF ACTION

- **RIA –** Research and Innovation Action
- Expected **TRL 5** by the end of the project

EU CONTRIBUTION

- Per project: **8 M€**
- Total: **16 M€**

TIMING

- Call opening: **13 December 2022**
- Call closing: **20 April 2023**

European Commission

HORIZON-CL5-2023-D5-01-12
Demonstrations to accelerate the switch to safe use of new sustainable climate neutral fuels in waterborne transport (ZEWT Partnership)

SCOPE

- **Projects address either** a) Inland waterways **or** b) maritime transport. The most highly ranked proposal above the minimum threshold will be selected in each area
- **Demonstration at large scale to TRL 7-8 the use of potentially sustainable climate neutral fuels,** particularly for more challenging fuels such as ammonia and hydrogen
- **At least 1MW, higher power encouraged**, addressing challenges and **going beyond the state of the art**, achieving the 2040 targets within the proposed FuelEU Maritime regulation
- **Inland waterway projects must address more than one vessel,** for maritime projects this is optional
- **Validated risk and safety assessments** supporting IMO and EU regulatory provisions
- **Plan for exploitation and disseminate results,** providing a strong business case and exploitation strategy. Plan and propose relevant **Horizon Europe synergies**

European Commission

HORIZON-CL5-2023-D5-01-12
Demonstrations to accelerate the switch to safe use of new sustainable climate neutral fuels in waterborne transport (ZEWT Partnership)

EXPECTED OUTCOME

- **Accelerated transition to neutral or zero emission fuels** in both inland and marine ship operations, **focusing on fuels where significant on-board challenges remain**
- **In a realistic operational environment full demonstration of sustainable climate neutral fuel system** including; fuel distribution, storage, power conversion and possible residue handling
- **KPI's** for effectiveness, viability, impact, power optimisation, bunkering, GHG and pollution reduction, life cycle GHGs in a range of operational scenarios
- **Demonstrate possibilities from smart digitilisation** to facilitate the on-board use of sustainable climate neutral fuels
- **Demonstrate achievement of the 2040 targets** within the European Commission **proposal for a Fuel EU Maritime regulation**

European Commission

HORIZON-CL5-2023-D5-01-12
Demonstrations to accelerate the switch to safe use of new sustainable climate neutral fuels in waterborne transport (ZEWT Partnership)

TYPE OF ACTION

- **IA –**Innovation Action
- Expected **TRL 7-8** by the end of the project

EU CONTRIBUTION

- Per project: **8 to 13 M€**
- Total: **34 M€**

TIMING

- Call opening: **13 December 2022**
- Call closing: **20 April 2023**

European Commission

HORIZON-CL5-2023-D5-01-13
Integrated real-time digital solutions to optimise navigation and port calls to reduce emissions from shipping (ZEWT Partnership)

SCOPE

- **Development of a collaborative and harmonised interoperable system** which facilitates real time sharing of operational and enhanced situational awareness to optimize port calls **so as to reduce emissions through lower total voyage fuel consumption.** Standards **should address security and resilience** as well as integration within existing infrastructures

- **Development of tools and methodologies,** that enable real time information sharing, route and arrival time optimisation including decision support algorithms using for example AI, edge analytics, heuristics and business analytics.

- **Demonstrate full scale operation, progressing beyond the state of the art**, using existing routes and services with at least three ports and two shipping companies

- **Consider security, resilience and mitigation actions** in case of failure.

- **Address full voyage** including far from port to **maximise emission and operational benefits**

European Commission

HORIZON-CL5-2023-D5-01-13
Integrated real-time digital solutions to optimise navigation and port calls to reduce emissions from shipping (ZEWT Partnership)

EXPECTED OUTCOME

- **Progression beyond the state of the art with the full-scale demonstration of a port call and voyage optimisation tool** with at least 3 ports and 2 shipping companies
- **Improved operational efficiency** and better traffic management to **increase safety** within a **realistic environment**
- **Reduction in total voyage vessel emissions** through more efficient sailing speeds and optimised port arrival which are demonstrated to achieve a10 to 20% reduction fuel consumption compares to business as usual
- Shipping companies and ports can **quantify resulting savings**
- Support **development of related standards**
- Adaption to existing or development of business models to **prove commercial viability**

European Commission

HORIZON-CL5-2023-D5-01-13
Integrated real-time digital solutions to optimise navigation and port calls to reduce emissions from shipping (ZEWT Partnership)

TYPE OF ACTION

- **IA –**Innovation Action
- Expected **TRL 6-8** by the end of the project

EU CONTRIBUTION

- Per project: **7.5 M€**
- Total: **15 M€**

TIMING

- Call opening: **13 December 2022**
- Call closing: **20 April 2023**

European Commission

HORIZON-CL5-2023-D5-01-14
Developing a flexible offshore supply of zero emission auxiliary power for ships moored or anchored at sea deployable before 2030 (ZEWT Partnership)

SCOPE

- Whilst provision of electric power to ships berthed in port is mature technology, this is not the case for ships at anchored at sea in the port region. To increase the impact from onshore power (OPS) **technology needs to be rapidly developed to provide OPS to ships not at birth which can be deployed by 2030**

- **Develop and test OPS for ships not at** birth which are at least 5000 GT that can be flexible concerning where they are applied. TRL 6 to 8

- Could for example be based on direct electrification from the shore or offshore renewable power, or sustainable alternative fuels, **minimising air pollution and cutting GHGs**

- Solutions may for example be **barge mounted generators** or **fuel cells with low GHG fuels**, **floating energy storage** or **cabled offshore supplies** towards buoys or other supply interface

- **Exploitation and dissemination plan with strong business case**

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HORIZON-CL5-2023-D5-01-14
Developing a flexible offshore supply of zero emission auxiliary power for ships moored or anchored at sea deployable before 2030 (ZEWT Partnership)

EXPECTED OUTCOME

- Closely cooperating with ship owners, operators and ports **development and demonstration of an innovative solution to provide auxiliary power and possibly battery charging for ships moored or anchored at sea** so as to cut GHGs and air pollution and which can be deployable by 2030
- **Development of guidelines** on technical operation and safety for the provision of offshore power
- **Assessment of GHG and pollution reductions through verifiable KPIs**
- **Assessment of CAPEX and OPEX** of the developed solution and optimisation to **increase financial viability**

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HORIZON-CL5-2023-D5-01-14
Developing a flexible offshore supply of zero emission auxiliary power for ships moored or anchored at sea deployable before 2030 (ZEWT Partnership)

TYPE OF ACTION

- **IA –**Innovation Action
- Expected **TRL 6-8** by the end of the project

EU CONTRIBUTION

- Per project: **8.5 M€**
- Total: **8.5M€**

TIMING

- Call opening: **13 December 2022**
- Call closing: **20 April 2023**

European Commission

HORIZON-CL5-2023-D5-01-15
Reducing the environmental impact from shipyards and developing a whole life strategy to measure and minimise the non-operational environmental impacts from shipping

SCOPE

- **Address the greening of shipyards** through cleaner more efficient processes that minimise pollution and contribute to greater ship circularity
- Develop an **environmental performance index for shipyards** with verifiable **KPIs**
- **Identify the contributions that can be made from shipyards towards the circular life cycle of ships**, including ship building, value chains, repair and refit, end of life circularity disposal, value and cost. Considering difficult materials such as reinforced plastics
- **Develop a validated shipyard environmental model** that can be benchmarked and used to reduce energy use and emissions, also considering any consequential links to safety
- **In line with the "Green Passport" develop a material circularity passport for maritime assets,** including best practices to increase circularity and maintenance of the passport throughout the ships' life
- Establish a **strong business case** and **plan for exploitation and dissemination**

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HORIZON-CL5-2023-D5-01-15
Reducing the environmental impact from shipyards and developing a whole life strategy to measure and minimise the non-operational environmental impacts from shipping

EXPECTED OUTCOME

- **Reducing non-operational environment impacts and increasing circularity** of shipping. Identifying the most important ship building factors contributing to these objectives
- **Benchmarks and KPIs** to measure environmental performance
- Demonstrating **advanced production processes to reduce environmental impact**
- Development of a **generic digital shipyard model encompassing processes, energy use and emissions to assess and benchmark environmental performance**
- **Guidelines** on technical, organisational and personnel training to reduce energy use and emissions
- Development of an **EU material passport for waterborne transport assets** and guidelines to ensure the passports maintenance throughout the ships' life

European Commission

HORIZON-CL5-2023-D5-01-15
Reducing the environmental impact from shipyards and developing a whole life strategy to measure and minimise the non-operational environmental impacts from shipping

TYPE OF ACTION

- **IA –**Innovation Action
- Expected **TRL 7-8** by the end of the project

EU CONTRIBUTION

- Per project: **9 M€**
- Total: **4.5M€**

TIMING

- Call opening: **13 December 2022**
- Call closing: **20 April 2023**

European Commission

HORIZON-CL5-2023-D5-01-16
Developing small, flexible, zero-emission and automated vessels to support shifting cargo from road to sustainable Waterborne Transport

SCOPE

- **Develop, test and demonstrate automated flexible vessel concepts** with emission free propulsion in a relevant environment, also addressing logistic chain optimisation
- Applying innovative automated approaches and tailored propulsion for **small flexible craft that are compatible with shallow water**
- Automated operation together with multimodal logistics towards development of a single automated system encompassing vessel command, machine monitoring and maintenance, berthing, cargo handling, transshipment etc
- Self organized or remotely controlled **fleet coordination and integration** with land-based logistics
- Ensuring **safety, cyber security and resilience**
- Early **discussion with regulatory and standards body. Business model** development

HORIZON-CL5-2023-D5-01-16
Developing small, flexible, zero-emission and automated vessels to support shifting cargo from road to sustainable Waterborne Transport

EXPECTED OUTCOME

- **Development and validation of small zero emission vessel** concept which can support shifting cargo from road to water, considering cargo types and navigation conditions such as small waterways, bridges, locks, shallow coastal waters and estuaries

- **Quantification and assessment of reduced costs and emissions** as well as stronger intermodal competitiveness through integration of automated system into transport chains

- Development of **business models that benefit from a high degree of automation, digitlisation and with consideration of technical safety, security and organizational aspects**

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HORIZON-CL5-2023-D5-01-16
Developing small, flexible, zero-emission and automated vessels to support shifting cargo from road to sustainable Waterborne Transport

TYPE OF ACTION

- **RIA –**Research and Innovation Action
- Expected **TRL 5-6** by the end of the project

EU CONTRIBUTION

- Per project: **9 M€**
- Total: **4.5M€**

TIMING

- Call opening: **13 December 2022**
- Call closing: **20 April 2023**

European Commission

HORIZON-CL5-2023-D5-01-17
Towards the implementation of the inland navigation action programme with a focus on Green and Connected Inland Waterway Transport

SCOPE

- In the context of the European Green Deal and NAIADES III **development of an action plan for innovative change** to drastically reduce emissions and modal shift towards Inland waterways
- **Development of an implementation plan**, closely cooperating with industry, learning from past experience and totals costs of ownership
- **Development and validation of a digital twin to compare and simulate scenarios and options**
- Consolidation of the **IWT knowledge network** previous established within Horizon 2020 and ending in 2023
- In coordination **with the Waterborne Technology Platform further develop a RD&I road map**
- **Monitor IWT related RD&I and their impacts in coordination with the Waterborne Technology Platform**

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HORIZON-CL5-2023-D5-01-17
Towards the implementation of the inland navigation action programme with a focus on Green and Connected Inland Waterway Transport

EXPECTED OUTCOME

- **IWT policy development,** ensuring implementation of green and digital environmentally sound solutions
- **Identification of best practices and increasing their take-up** to accelerate IWT modernisation, including relevant **financial engineering instruments** for digitilised zero emission IWT
- **A labeling system for EU waterways**
- **Estimation of potential modal shift to IWT resulting from Naiades III and provision of knowledge exchange and promotion plan for Naiades III actions**
- Work with end users**, improve IWT environmental performance and future proof workforce**
- Work with the Waterborne Technology platform, IWT sector and all stake holders**, strengthen coordination of research and deployment across the entire waterborne sector**

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HORIZON-CL5-2023-D5-01-17
Towards the implementation of the inland navigation action programme with a focus on Green and Connected Inland Waterway Transport

TYPE OF ACTION

- **CSA –**Coordination and Support Action

EU CONTRIBUTION

- Per project: **1.5M€**
- Total: **1.5M€**

TIMING

- Call opening: **13 December 2022**
- Call closing: **20 April 2023**

European Commission

Thematic area

Transport-related health and environment

Georgios TZAMALIS

European Commission

HORIZON-CL5-2023-D5-01-18
Advanced transport emissions monitoring networks

SCOPE

- Monitor **pollutant** and **noise** emissions to the level of the individual vehicle and their cumulative effect at the city scale
- Integrate monitoring technologies in networks for 24/7 operation for **fleet monitoring** and **enforcement** purposes
- Install monitoring stations around at least 5 ports and 5 airports for
    - Enforcing the fuel use mandates
    - Noise abatement procedures
- Monitor **emerging pollutants** (ammonia, nitrous oxide etc) for informing policy decisions by contributing to emissions inventories across EU
- Contribute to **national level databases** of traffic related emissions to support population-based **health studies** about the impact of these emissions to human health

HORIZON-CL5-2023-D5-01-18
Advanced transport emissions monitoring networks

EXPECTED OUTCOME

- Monitoring **pollutant** (including both exhaust and non-exhaust traffic related particles) and **noise emissions** of road vehicles on specific sites in urban areas with high density traffic to feed real time systems and databases
- Monitoring **pollutant** (including both exhaust and non-exhaust traffic related particles) and **noise emissions** around ports, rail stations or junctions, dry ports, and airports for enforcement purposes
- Establishing **real time maps and networks** in at least **eight cities** with **at least three** traffic air quality and noise stations on each city capable of measuring noise and solid particle number and other emerging pollutants and GHGs
- Supporting local, regional and **national** emissions and **noise reduction** plans
- Supporting **health studies** about the impact of **ultrafine** particles according to recent WHO guidance

European Commission

HORIZON-CL5-2023-D5-01-18
Advanced transport emissions monitoring networks

TYPE OF ACTION

- **IA** Innovation Action
- Expected **TRL 7-8** by the end of the project

EU CONTRIBUTION

- Per project: 5 **M€**
- Total: 10 **M€**

TIMING

- Call opening: **13 December 2022**
- Call closing: **20 April 2023**

European Commission

Thematic area

Cross-cutting actions

Patrick MERCIER

European Commission

HORIZON-CL5-2023-D5-01-19
Support for the organisation of EU-US symposia in the field of Transport Research

SCOPE

- **Implementing Arrangement** between the European Commission and the US DoT was signed in 2013 for cooperative activities in the field of research, development, technology and innovation applied to all modes of transport
- The aim is to support the European Commission in **organising the future annual symposia** in 2024 (Washington), in 2025 (Brussels), in 2026 (Washington) and in 2027 (Brussels)
- **Involvement of and collaboration** with all the **relevant European actors** incl. ETPs and partnerships etc. - representing the transport sector, in collaboration with the EC services
- Organisation of the event, definition of the overall planning of symposium, drafting of a White Paper and conference proceedings reports, design the structure the sessions of the event,…
- The outcome of these symposia will help define a **common vision** for future transportation and lay the foundation for **activities of mutual interest** and benefit in all modes of transport

European Commission

HORIZON-CL5-2023-D5-01-19
Support for the organisation of EU-US symposia in the field of Transport Research

EXPECTED OUTCOME

- Reinforced **cooperation** between the **European Union** (EU) and the **United States of America** (US) in the field of transport research and innovation

- **EU-US Transport Research Symposia organisation** with high visibility, political and strategic relevance of the transport sector and of the EU policy in the field

- More effective **links** and **exchanges** between research and innovation stakeholders and policy makers from the EU and the US

European Commission

HORIZON-CL5-2023-D5-01-19
Support for the organisation of EU-US symposia in the field of Transport Research

TYPE OF ACTION

- **CSA –** Coordination and Support Action

EU CONTRIBUTION

- Per project: **0.50 M€**
- Total: **0.50 M€**

TIMING

- Call opening: **13 December 2022**
- Call closing: **20 April 2023**

European Commission

Thank you!

HorizonEU

http://ec.europa.eu/horizon-europe

THANK YOU FOR YOUR PARTICIPATION!

Cluster 5 Info Days on 15-16.12.2022

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CLUSTER 5 Climate, Energy, Mobility

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