

Cluster meeting “Green transition in Montenegrin higher education landscape”

Enhancing knowledge and skills at WB HEIs in preparation for zero carbon maritime transport and logistics society (Zero C)

(Unaprijeđenje znanja i vještina u visokoškolskim ustanovama Zapadnog Balkana s ciljem pripreme društva za postizanje nulte emisije ugljenika u sektoru pomorskog transporta i logistike)

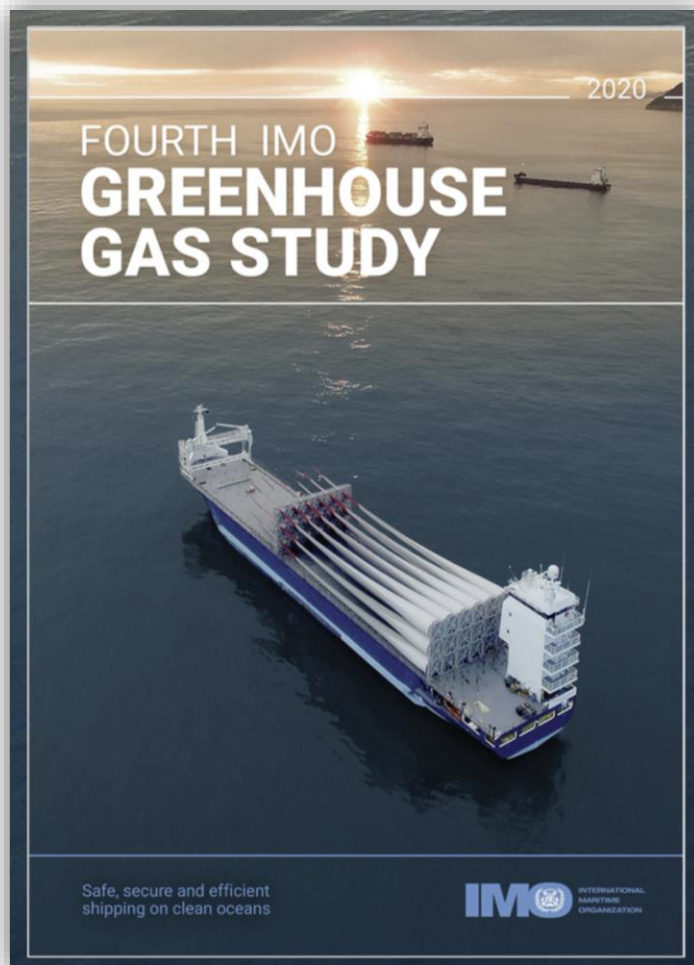
Project Coordinator: prof. Danilo Nikolić, PhD

UoM/Faculty of Maritime Studies Kotor

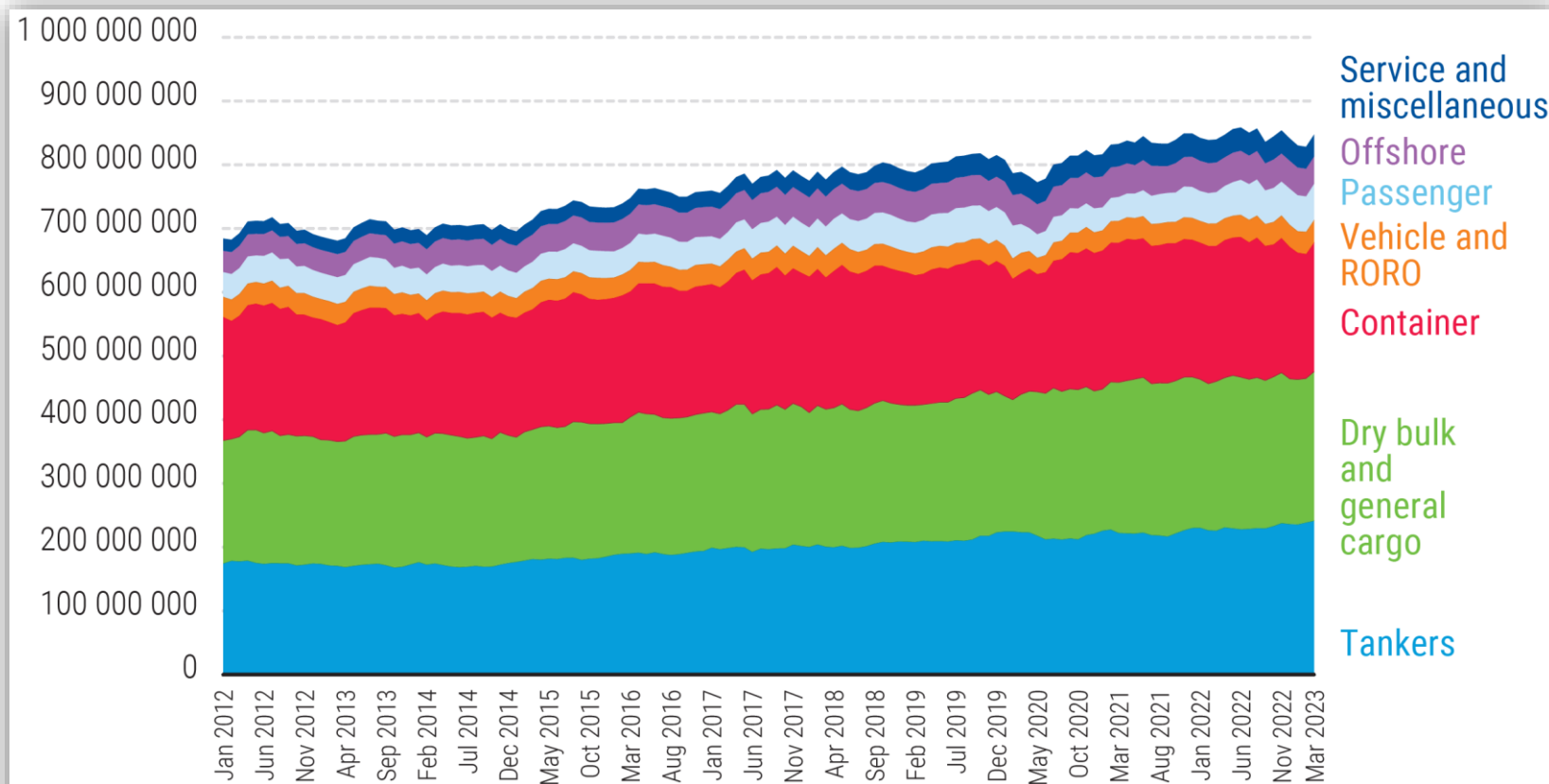
16th April 2024, UCG/GF



Contribution of Maritime transport to Carbon emissions



The share of shipping GHG emissions is **2.89% in 2018**.

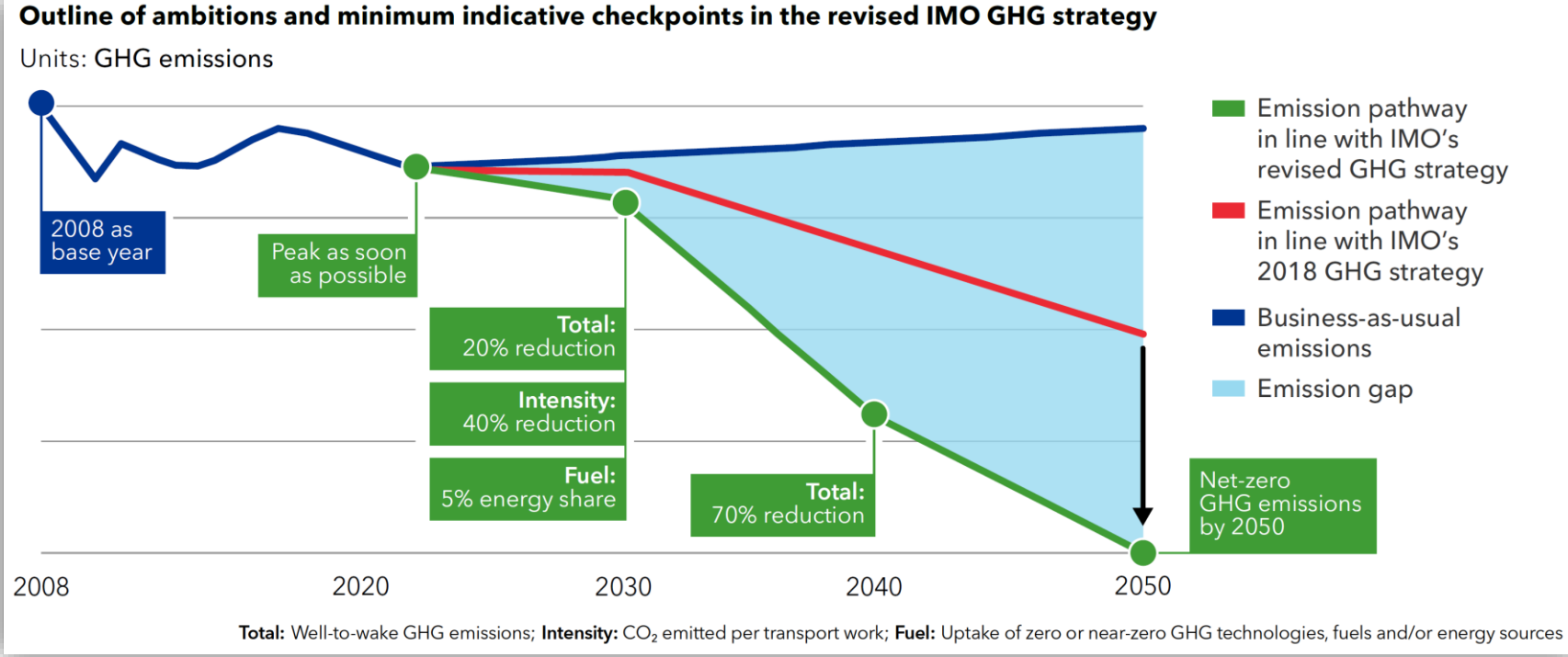
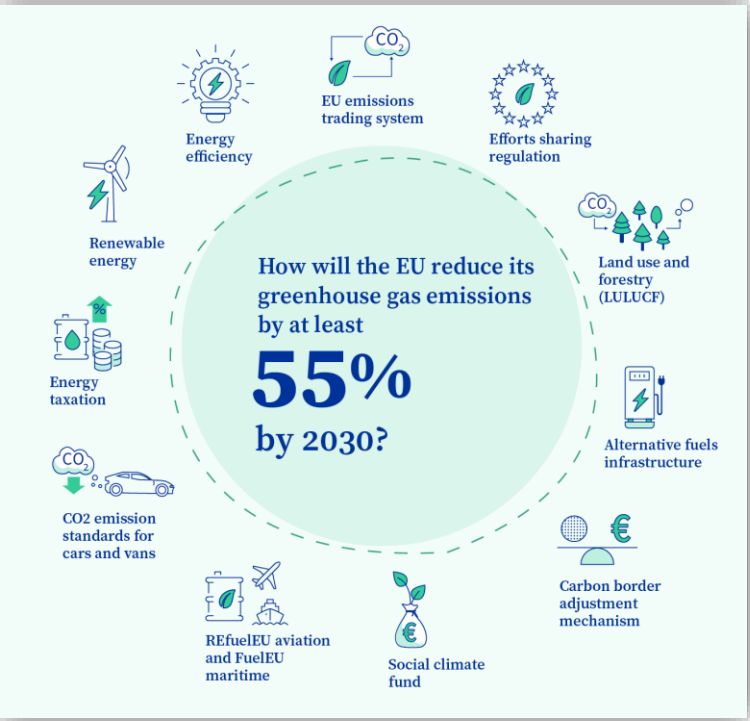


Source: UNCTAD, based on data provided by Marine Benchmark, July 2023.

Note: RORO means roll-on/roll-off vehicle carrier.

Total carbon dioxide emissions by vessel types, tons, January 2012—
March 2023 (**684 mil t CO₂ - 850 mil t CO₂**)

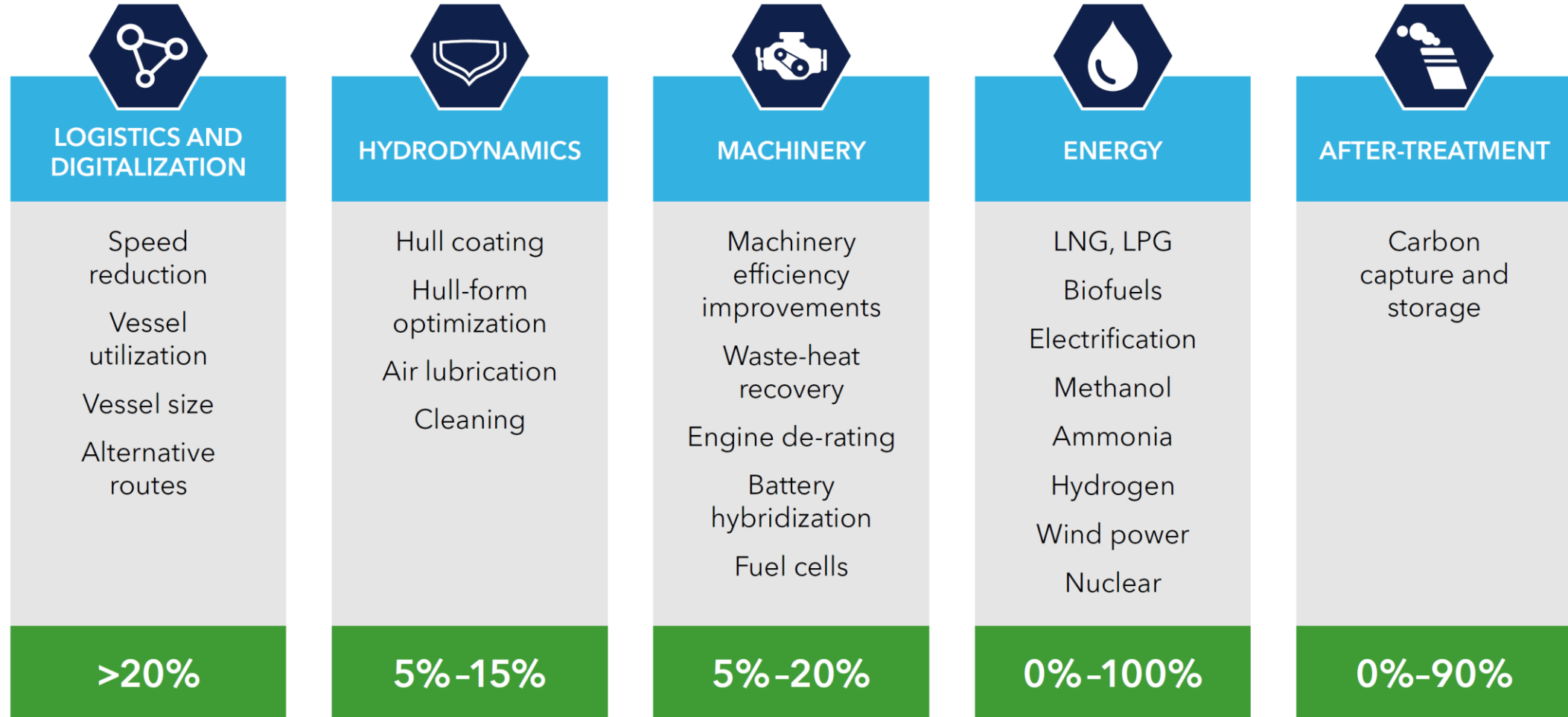
EU Green Deal & Revised IMO Strategy on GHGs in Maritime transport



<https://www.ivalua.com/blog/delivering-the-european-green-deal-the-decisive-decade/>

DNV: Maritime Forecast to 2050

Solutions that can Contribute Decarbonisation of the Shipping sector



Need for Education and Training to Support Decarbonization of Shipping

- The introduction of alternative fuel technologies is expected to have a significant impact on maritime operations on board ships and will require seafarers to develop and acquire new skills and competencies to ensure safe and efficient operations in the decades up to 2050 and beyond.
- This transition will lead to a need for new and additional education/training for current and future seafarers.

Montenegro seafarers facts:

- cca 6.000 seafarers cca 1% of total population, highest percentage in the world



Key finding:

- In the 'Carbon neutral scenario', the number of seafarers requiring additional until 2050 is 1,8 million, globally.
- By 2030 some 450,000 seafarers would require some additional training, while 800,000 seafarers by the mid-2030s.

Education to Support Decarbonization of Shipping @ UoM/PFK

- ❑ **Project title:** Enhancing knowledge and skills at WB HEIs in preparation for zero carbon maritime transport and logistics society
- ❑ **Acronym:** ZERO C
- ❑ **Program:** Erasmus + CBHE
- ❑ **Co-financed:** European Commission
- ❑ **Partners** Aleksander Moisiu University Durrës, University of Montenegro, University of Vlore, National Technical University of Athens, Hamburg University of Technology, ITS Logistica Puglia, Durrës Chamber of Commerce and Industry, General Maritime Directorate, Environmental Protection Agency, Chamber of Economy of Montenegro
- ❑ **Duration:** 36 months (1.11.2023 – 31.10.2026)
- ❑ **Grant:** 846,992.00 € (90% co-financed by European Commission)

ZeroC Overall Objective

- Enhanced industry-oriented skills of university students and professionals in Albania and Montenegro (Western Balkans WB) related to decarbonisation and increasing energy efficiency of the maritime transport and logistics sectors (MT&L).

ZeroC Specific Objectives

- Revised and modernised HND, BSc and MSc courses for students in accordance of industry needed knowledge and skills on decarbonisation, energy efficiency and port logistics optimisation in the MT&L sector at the WB Maritime HEIs.
- Developed new LLL programs for training of professionals in accordance of industry needed knowledge and skills on decarbonisation, energy efficiency and port logistics optimisation in the MT&L sector at the WB Maritime HEIs.
- Increased human and technical capacities of the WB Maritime HEIs in providing state of the art specific shipping industry-oriented knowledge and skills for students and professionals.
- Increased awareness in the private sector on new and increased skills for decarbonization and energy efficiency in the MT&L sector

Specific objective #1 - Revised and modernised courses

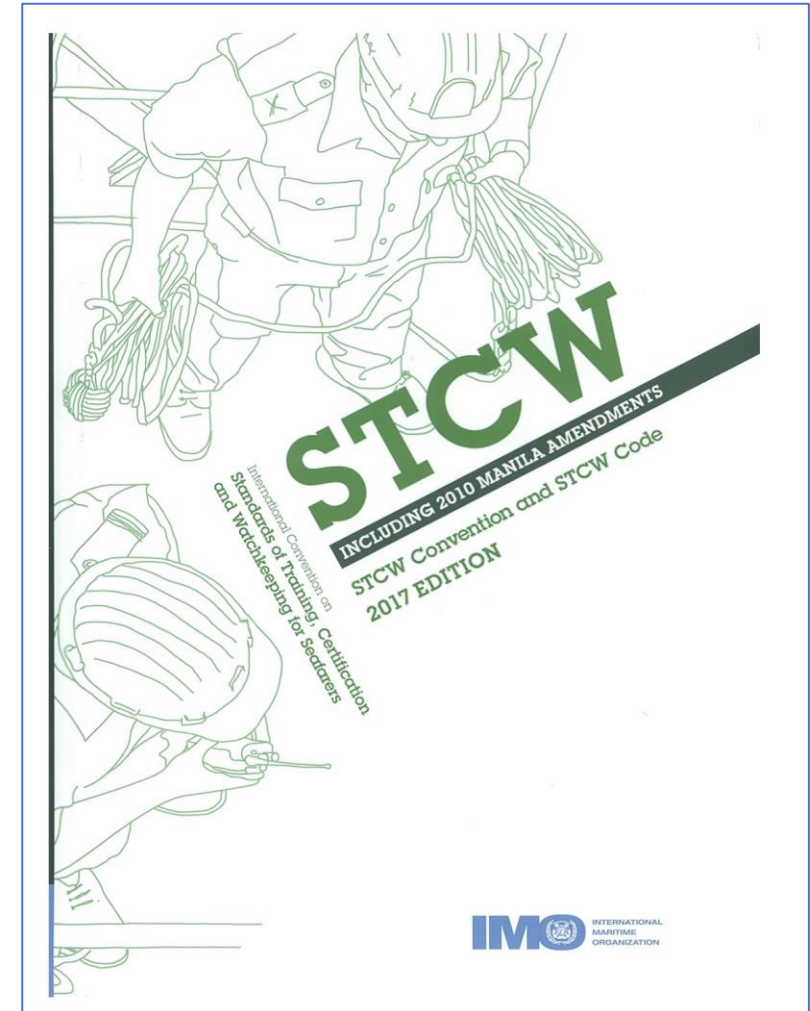
UoM will have:

- revised/modernised course catalogues at BSc programs
 - ✓ **Marine fuels, lubricants and water**, 3 ECTS;
 - ✓ **Marine engines I**, 5 ECTS;
 - ✓ **Marine engines II**, 5 ECTS,
 - ✓ **Environmental protection of the coast and sea from influence of ships** - part of IMO Marpol Annex VI, Chapter4, 4 ECTS
- revised/modernised course catalogues at MSc program
 - ✓ **Technologies for sustainable development in maritime transport**, 6 ECTS;
 - ✓ **Technologies for removing harmful substances from ships**, 5 ECTS
 - ✓ **Global strategies of marketing logistics**, 5 ECTS

Specific objective # 2 - Developed new LLL programs

UoM will have:

- developed and verified at university/faculty level minimum one **LLL training program** (with minimum 2 courses or subjects) for professionals in the field of Energy efficiency and decarbonization of maritime transport and logistics.
- The **IMO 1978 STCW Convention** prescribes minimum standards relating to training, certification and watchkeeping for seafarers which countries are obliged to meet or exceed.
- The **IMO 1978 STCW Convention** adopted a new set of amendments in Manila in 2010 called "The Manila Amendments".
- These amendments were necessary to keep training standards in line with new technological and operational requirements that require new shipboard competencies.
- New Amandmends expected in 2026



Specific objective # 3 - Increased human and technical capacities

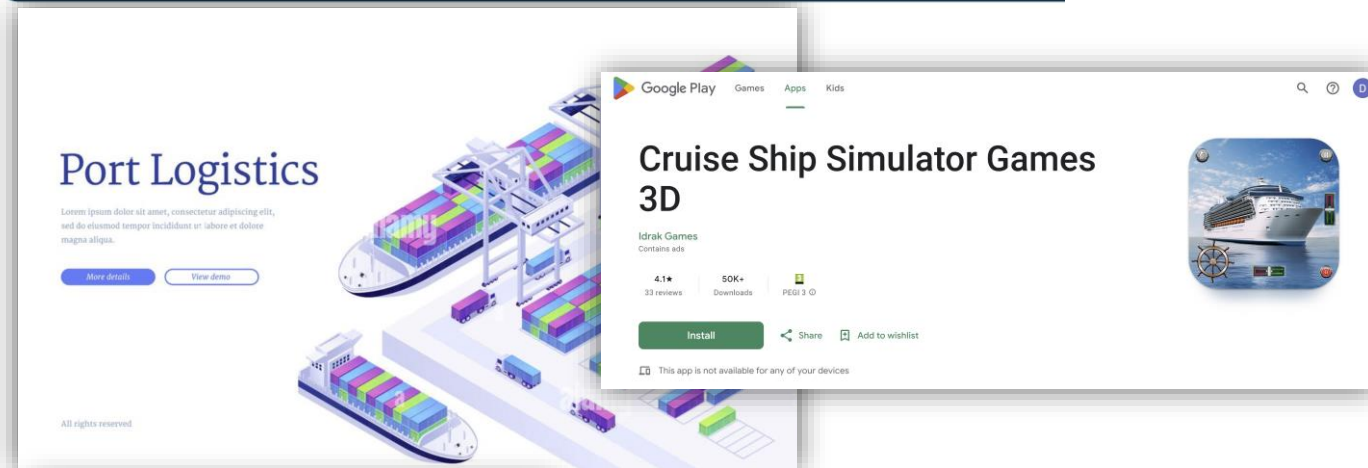
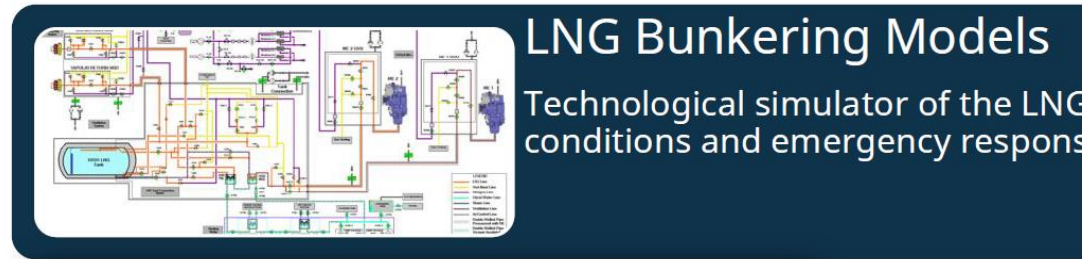
Know-how transfer from program to partner countries:

- International/EU legislation on climate change and strategies for reducing CO2 emission and toward zero carbon emission in maritime transport sector.
- Energy efficiency and decarbonisation in maritime transport – technical measures, operational measures, alternative fuels, alternative propulsion systems.
- Energy efficiency and decarbonisation in port operations and logistics optimisation - Technical measures, Operational measures in order to decrease energy consumption in logistics and port areas.
- IoT (digitalization) as support toward improved energy efficiency and zero carbon emission in maritime transport and logistics.
- Innovative teaching and learning methodology (train the trainer).

Specific objective # 3 - Increased human and technical capacities

UoM:

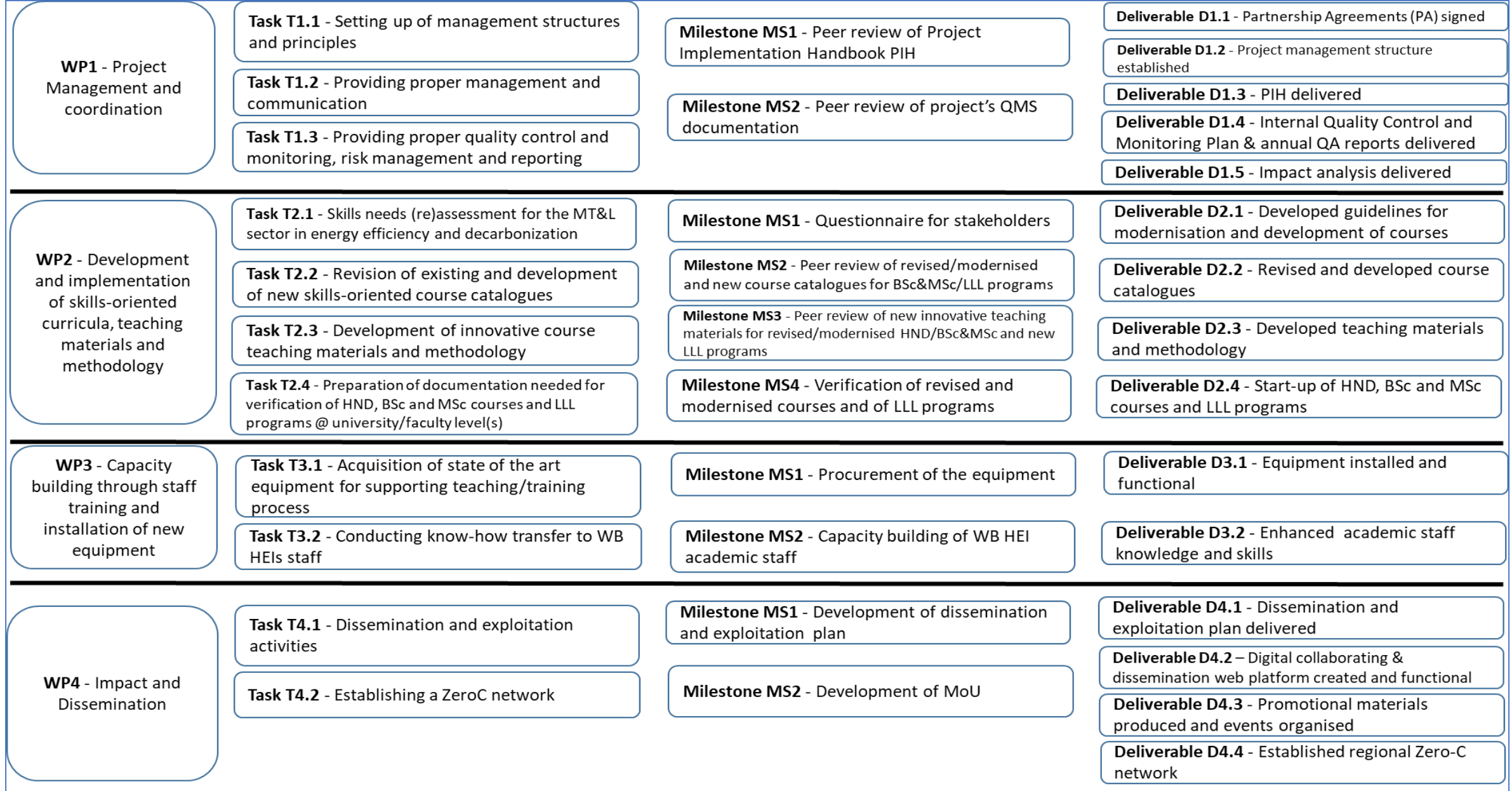
- Marine training simulator (software and hardware), classroom version, on alternative marine fuels bunkering and storage systems;
- Port logistics optimisation training simulator (software and hardware), classroom version;
- 4 sets (4 casings/positions) of low cost IoT sensors for air quality monitoring system upgrade in regard to carbon pollution and GHG emission (CO, CO₂, VOC, PM₁, PM_{2.5}, PM₁₀).
- In total max. 60,000 EUR



Specific objective # 4: Increased awareness in the private sector on new and increased skills

- Establishing a Zero-C network WB HEIs and stakeholders in maritime transport and logistic sector
- The main purpose of establishing the ZeroC network will be to invite the private and public stakeholders to support the project implementation more proactive and consider potentials of its exploitation.
- From a legal point of view, the Zero-C network of stakeholders will be established through signing of the Memorandum of Understanding. The MoU will be delivered by the coordinator and beneficiaries.

ZeroC Flow Chart



ZeroC aligns with the following Strategies:

Global strategies

- EU Green Deal – Carbon neutral society by 2050
- IMO Strategy on decarbonisation of shipping sector – Carbon neutral shipping by 2050

UoM strategies

- University of Montenegro, Strategy of development 2019 - 2024
- University of Montenegro, Strategy of Internationalisation 2021 - 2026
- Faculty of Maritime Studies Kotor, Strategy of development 2019 - 2024

**Additional projects @ UoM/PFK in topic of the
„Green transition in Montenegrin higher education landscape“**



[PROJECT INFO](#)

[CONSORTIUM](#)

[OUTCOMES](#)

[EVENTS](#)

[DISSEMINATION](#)

[MANAGEMENT](#)



Co-funded by the
Erasmus+ Programme
of the European Union

WELCOME TO THE OFFICIAL WEBSITE OF ERASMUS+ MEP&M PROJECT

This is the official website of Erasmus+ Capacity building in the field of Higher Education project: "Development of Regional Joint Master Program in Maritime Environmental Protection and Management (MEP&M)", project no. 619239-EPP-1-2020-1-ME-EPPKA2-CBHE-JP

26.02.2024

Pomorski fakultet Kotor će predvoditi međunarodni projektni konzorcijum za dekarbonizaciju pomorskog saobraćaja kroz razvoj strategije za uspostavljanje zelenih pomorskih koridora između putničkih luka u Jadransko-jonskoj regiji



European Regional Development Fund - Instrument for Pre-Accession II Fund

Univerzitet Crne Gore/Pomorski fakultet Kotor, Centar za istraživanje, inovacije i preduzetništvo će rukovoditi projektnim konzorcijumom pod nazivom “Uspostavljanje zelenih pomorskih koridora za ugljenično neutralni krizing i trajektni saobraćaj u Jadransko-jonskom regionu” (eng. *Green Corridors for Carbon-Neutral Cruise and Ferry Shipping in the ADRIAN Region - GREENROUTES*”).

Projekat GREENROUTES usmjeren je ka dekarbonizaciji pomorskog saobraćaja kroz razvoj strategije za uspostavljanje zelenih pomorskih



THANK YOU FOR YOUR ATTENTION!

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