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GREENPORT Alliances

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Greenport Alliances – One Step Further for a Greener Maritime Transport

GREENPORT *Alliances*

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Greenport Alliances

- concentrates on in-port services within the Green Deal's strategy to decarbonise the maritime industry.

- aims to create and implement innovative HEI, VET, TTT curricula targeting behavioural change and new skills development in port service operations, to reduce this sector's emissions.

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Project Partners

LABOUR MARKET ACTORS

European Tugowners Association (Belgium)

EMPA
European Maritime Pilots' Association (Belgium)

Porto de Aveiro
Administracao Do Porto De Aveiro Sa (Portugal)

MARTE sealand logistics
Aggregazione Pubblico Privata Sullalogistica Mare Terra Societa Consortile A Responsabilita Limit (Italy)

HIGHER EDUCATION INSTITUTES

T.C. Piri Reis Universitesi (Turkey)
COORDINATOR

Nikola Vaptsarov Naval Academy (Bulgaria)

Sveučilište u Rijeci, Pomorski fakultet
University of Rijeka, Faculty of Maritime Studies
Sveuciliste U Rijeci (Croatia)

VOCATIONAL EDUCATION & TRAINING PROVIDERS

acrosslimits
AcrossLimits Ltd (Malta)

Constanta Maritime University (Romania)

Antwerp Maritime Academy
Hogere Zeevaartschool (Belgium)

WP2 – Needs Analysis

Behavioural change is seen as a beneficial tool to enhance sustainability

WP3 – Analysis of Raw Data

17 Best Practices developed under:

- Emission Reduction Practices
- Operational Efficiency Improvements
- Engagement and Professional Development

WP4 – Development of Educational Material

Course content developed for:

- HEI
- VET
- TTT

WP4 – Development of Educational Material -HEI

Week	TOPICS	Learning Outcomes
1	An introduction to maritime sustainability and environmental regulations	2, 5
2	Industry Ecosystem and Technological Landscape	1, 3
3	Operational Strategies for Energy Saving and Emission Reduction	1, 3
4	Collection and analysis of emissions and sustainability data	2
5	Interpretation and use of data in operational decision-making	2
6	Use of simulation for Eco Navigation 1	2, 3
7	Use of simulation for Eco Navigation 2	1, 3
8	Security procedures and crisis management in a digitalized environment	1, 3
9	REVIEW & MIDTERM EXAM	
10	Application of biofuels and alternative propulsion technologies	4
11	Management and maintenance of environmentally friendly systems	2, 4
12	Reporting and document management according to ESG and regulatory requirements	1, 5
13	Communication and Stakeholder Engagement	6
14	Development and implementation of sustainable port and shipping strategies	2, 5, 6

WP4 – Development of Educational Material -VET

No	TOPICS
	Foundations & Practical Aspects
1	**Day 1/ Session 1** **Introduction to sustainable maritime operations (15 min)** • Scope of the training programme • Safety of navigation and ship handling is paramount
2	**Day 1/ Session 2** **Fostering understanding of emission reduction theory and regulations (45min)** • Understanding energy saving and emission reduction principles • Overview of EU and IMO regulations and their indirect impact on port services and our clients (Green Deal, Fit for 55, FuelEU, EU ETS/IMO NZF) • Port services not specifically falling within these regulations for the time being • The need to be proactive, energy saving and emission reduction theories and practices • Importance of aligning with client expectations and future-proofing operations
3	**Day 1/ Session 3** **Industry ecosystem and technological landscape (30min)** • Port requirements (e.g. Onshore Power Supply - OPS) • Trends in shipping: Alternative fuel vessels (e.g. LNG, methanol, ammonia) • Use of ShaPoli systems on client vessels and implications for port services • Emission monitoring tools and their usability for crews • Case examples: Different types of tug and pilot boats using cleaner fuels, including HVO • Challenges for their uptake: Limited availability and high cost of alternative fuels • Available funding and the cost of going green
4	**Day 1/ Session 4** **Operational strategies for energy saving and emission reduction (1.5 Hours)** • Techniques using existing resources • Eco Speed Steaming: Benefits and Implementation • Scheduling with tidal windows to optimise fuel use • Real-time fuel consumption visualisation for port service craft • Encouraging behavioural change through data-driven feedback • Tug energy saving, before and after a job
5	**Day 1/ Session 5** **Communication and stakeholder engagement (45 min)** • Roles of various stakeholders in sustainable port operations • Behavioural change: The role of training, leadership, and peer influence • Good planning of effective communication with all players involved • Eliciting the required information for smooth operations • Experiential communication exercises • Clarifying the role of digital aids (e.g. PPU, VR): aids, not solutions (bearing in mind GNSS spoofing, jamming, and cyber threats in navigation)
6	**Day 1/ Session 6** **Recap and reflections (15 min)** • Summary of key takeaways • Open discussion and Q&A
	Simulation Exercises
7	**Day 2/ Session 1** **Simulation exercises: Eco Navigation (4 hours)** • Joint simulations with tug masters and pilots • Scenarios: Large vessel approaching port, requiring tug assistance, with tide and wind. The vessel must be swung to face tide and placed safely alongside. • Focus areas: ○ Port-specific digital modelling ○ Using vessel momentum strategically ○ Prioritising safety in manoeuvering ○ Using elements to advantage ○ Monitoring for overuse of tugs and ship's engine by pilot ○ Elements which a tug master can do better to save energy ○ Post-operation pilot and tug master/s debrief. • Post-simulation debriefs for each scenario.
8	**Day 2/ Session 2** **Final reflections and course wrap-up (30 min)** • Group discussion on simulation insights • Consolidation of learning outcomes • Feedback and next steps

BEFORE vs. AFTER SUSTAINABLE OPERATIONS

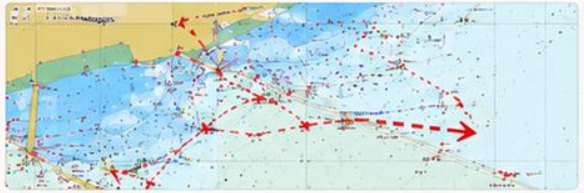
Simulator Results from VET Pilot Course – Greenport

⚠ BEFORE: INEFFICIENT OPERATIONS

Reactive manoeuvring, high fuel use, higher emissions

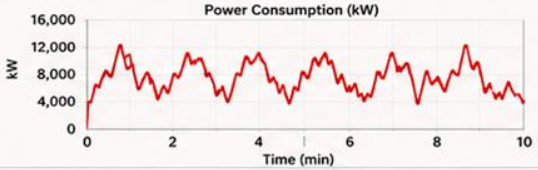
APPROACH & ROUTE

- Irregular approach path
- Frequent course corrections
- No route optimisation



POWER CONSUMPTION (DYNAMIC POSITIONING)

- High fluctuations
- Peak up to 12,000 kW
- Overuse of thrusters



OPERATIONS & COMMUNICATION

- Late engagement
- Room for improvement in pilot–port operator coordination
- High engine RPM variations

KEY RESULTS

Fuel Consumption	350.70 L
CO_2 Emissions	955.69 kg
NO_x + SO_2 Emissions	2.00 kg + 0.66 kg

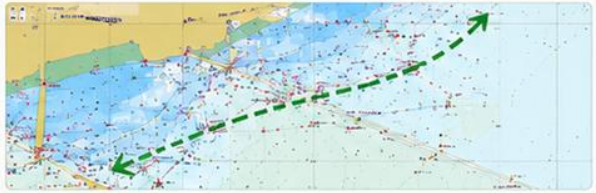
- Longer berthing time
- Higher engine workload
- Higher emissions
- Higher operational cost

✓ AFTER: ECO-NAVIGATION BEST PRACTICE

Planned manoeuvring, lower fuel use, reduced emissions

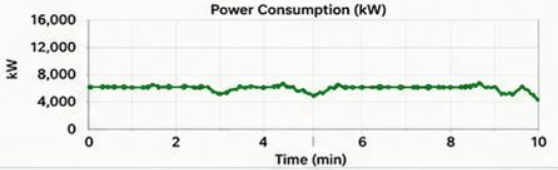
APPROACH & ROUTE

- Well-planned approach
- Smooth and efficient route
- Using wind & tide to advantage



POWER CONSUMPTION (DYNAMIC POSITIONING)

- Stable and steady power
- Lower peaks
- Optimised thruster use



OPERATIONS & COMMUNICATION

- Early coordination
- Steady thrust application
- Smooth teamwork and situational awareness

KEY RESULTS

Fuel Consumption	321.97 L
CO_2 Emissions	877.40 kg
NO_x + SO_2 Emissions	1.83 kg + 0.60 kg

- Shorter berthing time
- Lower engine workload
- Lower emissions
- Higher efficiency & sustainability

KEY TAKEAWAY

Applying eco-navigation principles—better planning, steady operations and effective teamwork—leads to lower fuel consumption, reduced emissions and more sustainable port operations.

FUEL SAVING	CO_2 REDUCTION	NO_x REDUCTION	SO_2 REDUCTION
28.73 L (8.2% less)	78.29 kg (8.2% less)	8.5% less	9.1% less

Small operational decisions. Big environmental impact. – Together for sustainable ports!

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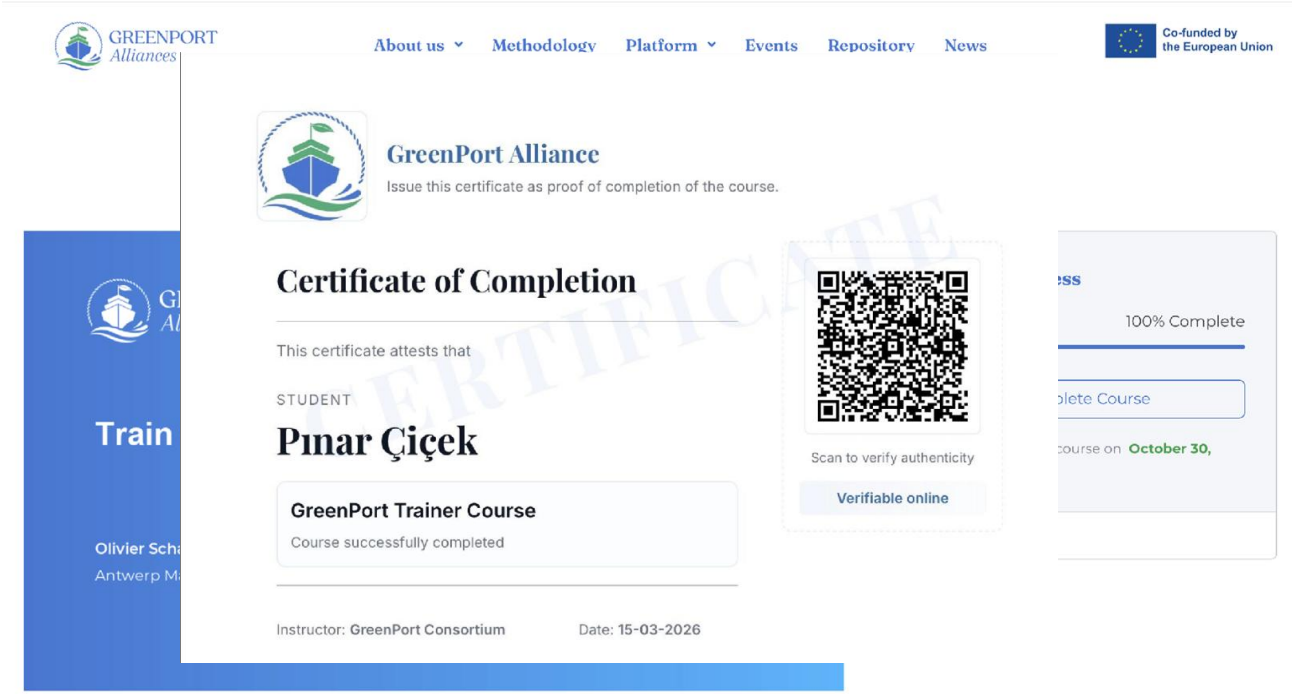
WP4 – Development of Educational Material -TTT



WP5 – Piloting, Evaluation and Curriculum Impact Analysis

Piloting ongoing for:

- HEI – PRU, NVNA, UNIRI
- VET – CMU, AMA
- TTT – AL

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Thank you for your attention

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