



GREENPORT
Alliances



Co-funded by
the European Union

Sustainable Maritime Operations and Green Port Technologies

Module number 1

Lecturer Name Surname

Lecturer contact info

Introduction to Sustainable Maritime Operations

Module number 1



GREENPORT
Alliances



Co-funded by
the European Union

Scope of the Training Programme

This 2-day course comprises of 8 course modules designed for: pilots, tug masters, port service operators and for professionals directly influencing port efficiency and environmental impact.

Purpose:

- Equip participants with knowledge, tools, and strategies for greener operations
- Support emission reduction through small but impactful operational changes
- Enhance operational efficiency without sacrificing reliability
- Ensure navigational safety remains the top priority

Approach:

- Classroom theory → foundations of sustainability & regulations
- Case studies → real-world examples of successful practices
- Simulator-based training → hands-on practice of eco-navigation and ship handling

Safety of navigation and ship handling

In sustainable maritime operations, environmental performance must never come at the expense of safety

Examples:

- Reducing engine RPM when safe to do so can save fuel, but this must be balanced against maintaining full control in challenging conditions.
- Timing arrivals and departures with favourable tides and currents can reduce fuel consumption, but should be planned in coordination with other port traffic.
- Efficient tug deployment can minimise idling and fuel use, but safety margins must be preserved for unexpected events.

A sustainable operation is, above all, a safe operation



Why sustainability matters



- ❑ Small operational decisions (such as approach speeds, tug positioning, or minimising idle time) can reduce a vessel's fuel use and emissions.
- ❑ Shipowners, charterers, and cargo owners must meet ambitious IMO and EU climate targets, and they may prefer low-emission partners.
- ❑ Service providers who demonstrate eco-efficient operations are more likely to retain and attract clients in a low-carbon market

Benefits

- Reduce emissions through operational choices
- Attract clients aligned with IMO/EU climate goals
- Build competitive advantage

Behavioural change & COM-B Framework

Sustainable operational change requires more than technical solutions — it demands a shift in daily behaviour

- **Capability** – having the skills and knowledge to operate efficiently. Example: Understanding optimal engine settings for different operational phases.
- **Opportunity** – having the tools, systems, and operational conditions to enable eco-friendly choices. Example: Access to real-time fuel monitoring dashboards or emissions data.
- **Motivation** – having the drive to act, supported by awareness of environmental impact, client expectations, and competitive advantages.



Looking ahead



In the next session, we will explore:

- Energy-saving and emission-reduction principles
- EU and IMO regulatory frameworks overview
- Examples of sustainable operations (e.g., alternative fuel, hybrid tugboats, onshore power supply)
- digital tools and techniques for observing the evolution of emissions levels and fuel use
- Operational strategies, including Eco Speed Steaming, scheduling with tidal windows, real time fuel consumption visualization
- Eco-navigation using simulators to understand the impact of operational choices on fuel consumption



Module number 1 | Course Name: Sustainable Maritime Operations and Green Port Technologies



**Co-funded by
the European Union**

Disclaimer:

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein. Project no. 101139879.