

ENMC POSITION PAPER

Blue Horizons : Position on Maritime Skills Development for the Future Blue Economy



ENMC

European Network
of Maritime Clusters



1. CURRENT SITUATION ANALYSIS

2. SKILLS GAP ANALYSIS

3. EDUCATIONAL FRAMEWORK RECOMMENDATIONS

4. INDUSTRY COLLABORATION INITIATIVES

5. REGULATORY AND EMPLOYMENT
FRAMEWORK CHALLENGES

6. IMPLEMENTATION STRATEGY

7. MARITIME CLUSTERS: DRIVING AND MONITORING
PROGRESS IN SKILLS DEVELOPMENT

EXECUTIVE SUMMARY

The maritime sector stands at a crucial turning point as it faces unprecedented transformation driven by technological advancement, environmental imperatives, and the evolution of the blue economy. Following the insights gathered during the ENMC seminar ***Blue Horizons: Innovating and Developing Sustainable Skills for the Future of the Blue Economy*** held on **May 15th, 2025**, this position paper presents **a comprehensive framework for addressing the growing skills gap in the maritime sector and ensuring sustainable growth for future generations.**

The **European Network of Maritime Clusters (ENMC)**, in its role as the leading voice for maritime clusters across Europe, carefully curated this strategic discussion by bringing together key stakeholders from various sectors of the maritime industry.

The event featured distinguished speakers including **Johan Klaps**, Vice Mayor for the Port and Economy of Antwerp, who provided valuable insights into local maritime innovation initiatives, alongside **Rowan Van Schaeren**, Director of the Antwerp Maritime Academy, who shared his vision for excellence in maritime education. The technical expertise was further enriched by **Claire Delahaye Panchout** from SOCATRA, who presented practical insights on crew adaptation to new technologies, while **Sylvain Faguet** from the Wind Ship Association contributed vital perspective on sustainable shipping solutions. The participation of **Gersende Le Dimna** from the French Maritime Academy (*Ecole Nationale Supérieure Maritime*, ENSM) and **Piet Opstaele** from De Blauwe Cluster ensured a comprehensive discussion of both educational and industry needs, with the roundtable expertly moderated by **Remke Willemen**.

This carefully selected panel of experts, representing different facets of the maritime sector, contributed to a holistic understanding of the challenges and opportunities in maritime skills development, reflecting ENMC's commitment to fostering collaboration and knowledge sharing at the European level.

1. CURRENT SITUATION ANALYSIS

The maritime industry is experiencing a revolutionary transformation through the integration of technologies and sustainable practices. **SOCATRA**, a French shipowner specializing in oil and chemical tankers, represents an exemplary case of how traditional shipping companies are **embracing innovation and sustainability** in their operations. Among the group's activities, Intershipping, based in Luxembourg, currently holds the presidency of the ENMC through the Luxembourg Maritime Cluster. SOCATRA's experience offers particularly relevant insights for the European maritime community. The company's forward-thinking approach is demonstrated through their implementation of **three distinct innovative propulsion systems**:

- a vessel equipped with rotter sails and advanced routing technology that achieves **8% fuel savings**;
- a small vessel utilizing **hybrid propulsion** specifically designed for operations in the Pacific Islands;
- and most recently, their pioneering deployment of **dual-fuel methanol propulsion technology**.

SOCATRA's experience highlights the industry's rapid evolution and the corresponding need for **workforce adaptation**, as shipping companies must now manage increasingly complex technological systems while maintaining traditional maritime expertise. Their case is particularly significant as it demonstrates how even relatively smaller shipping companies can successfully implement new technologies when supported by proper training frameworks and strategic partnerships with equipment manufacturers. The company's experience in managing this technological transition while **ensuring crew competency** provides valuable insights into the broader industry's challenges and opportunities in skills development. This transformation extends beyond individual companies, **affecting the entire maritime sector** through the integration of artificial intelligence, automation, and sustainable practices becoming integral components of maritime operations.

2. SKILLS GAP ANALYSIS

The rapid evolution of maritime technology has created a **significant skills gap** that must be addressed through coordinated effort between educational institutions, industry stakeholders, and regulatory bodies. The industry requires professionals who can **seamlessly integrate traditional seamanship with modern technological expertise**. This includes advanced knowledge of alternative fuel systems, data science capabilities, and comprehensive cybersecurity awareness. Furthermore, the sector demands professionals who can **adapt to cross-disciplinary challenges** and maintain a **strong focus on environmental sustainability**.



3. EDUCATIONAL FRAMEWORK RECOMMENDATIONS

Maritime educational institutions must evolve their curricula to meet the changing demands of the industry. The **ENSM** and **AMA** have already established a **strong foundation** for inter-institutional collaboration, demonstrating the power of shared knowledge and resources in maritime education. This existing partnership between these two prestigious institutions serves as a model for future collaborative efforts in maritime education and should be both **maintained** and **reinforced**.

Through their joint initiatives, these institutions have demonstrated successful approaches through the implementation of **digital training tools** and **simulation environments**. The ENSM has developed innovative educational tools such as their digital twin ships program, allowing students to explore various vessel types virtually, while the **AMA** contributes its expertise in delivering excellence-focused education for future **maritime leaders**.

These institutions have shown that combining traditional maritime education with innovative teaching methods, including digital twins and virtual reality training systems, can effectively prepare students for the challenges of modern maritime operations. The successful partnership between **ENSM** and **AMA** should be expanded to include more maritime academies across Europe, creating a robust network for knowledge sharing and educational excellence in the maritime sector.



4. INDUSTRY COLLABORATION INITIATIVES

Strong partnerships between industry stakeholders and educational institutions form the cornerstone of effective maritime education.

Maritime academies have established formal consultation processes, conducting annual meetings with their primary industry clients to ensure **educational programs remain aligned with market needs**. For example, ENSM has created a course on wind-fueled ships in collaboration with WindShip which finds its origins in the needs expressed during a Development Council, which is a social body constituted within ENSM.

These structured dialogues provide invaluable **opportunities for curriculum review** and adaptation to emerging industry requirements. Regular curriculum reviews, involving direct input from industry professionals, ensure that educational programs remain **relevant** and **practical**. The success of such collaboration has been demonstrated through various initiatives, including the partnership between SOCATRA and equipment manufacturers in **developing training programs for new propulsion systems**.

Furthermore, these annual consultations are complemented by ongoing collaborative projects between maritime clusters through EU project calls, demonstrating the industry's commitment to fostering innovation and knowledge sharing across borders. **The ENMC facilitates these connections through regular events, creating platforms for sustained dialogue between educational institutions and industry stakeholders.**

5. INDUSTRY COLLABORATION INITIATIVES

The regulatory framework must evolve at a pace that matches technological advancement in the maritime sector. **Current experiences with alternative fuels and wind propulsion systems have highlighted the need for more adaptive regulatory processes.**

Regulatory bodies must work closely with industry stakeholders and educational institutions to develop standards that ensure safety while promoting innovation. Beyond technological regulations, the maritime sector faces significant challenges in workforce management due to **complex international employment frameworks.**

The industry continues to navigate intricate regulations regarding flag state requirements, crew nationality restrictions, and varying social security systems across **different jurisdictions.** These employment-related regulatory challenges, combined with funding limitations for recruitment, create **additional complexity** in workforce development and mobility within the sector.

A more harmonized approach to maritime employment regulations at the European level would facilitate better workforce mobility and support the industry's growing need for skilled professionals across borders.



6. IMPLEMENTATION STRATEGY

Addressing the maritime skills gap requires a long-term, multi-layered strategy that integrates industry collaboration, educational innovation, and financial support.

Drawing inspiration from the dredging sector's successful recruitment model, as highlighted by **Piet Opstaele**, CEO of De Blauwe Cluster, the maritime industry can similarly attract new talent by emphasizing sustainability and career growth opportunities. Opstaele's example shows that by focusing on sustainability, the industry can appeal to the values of the next generation of workers.

Additionally, **Gersende Le Dimna** from ENSM underscored the importance of establishing solid partnerships between maritime academies to create a unified and high-quality educational approach. Above partnerships, it is absolutely necessary to develop a federative dynamics, and organisations such as IAMU not only are essential but also are the right stream for it.

In the context of emerging technologies, **Sylvain Faguet** from Wind Ship emphasized the need to ensure that personnel are properly trained to work with innovative propulsion systems, such as wind-assisted technologies.

Furthermore, as **Claire Delahaye-Panchout** demonstrated through her transition from Captain to Fleet Personnel Manager, the maritime sector offers a diverse range of career opportunities that highlight the sector's flexibility and adaptability.

Lastly, **Rowan Van Schaeren**, Director of the Antwerp Maritime Academy, emphasizes the critical need for strengthened financial mechanisms to support the educational initiatives that will drive the sector forward, ensuring that human capital remains the backbone of the industry.

Throughout the discussion, moderator **Remke Willemen** guided the conversation with insightful questions that elicited particularly valuable responses from the panelists.

6. IMPLEMENTATION STRATEGY

Immediate Actions (1–3 years):

- **Strengthen Partnerships:**

- Formalize partnerships between maritime academies and industry leaders to co-create specialized training programs.
- Focus on emerging technologies such as alternative fuel systems, hybrid propulsion, and digital maritime tools.

- **Develop Targeted Training Modules:**

- Create curriculum enhancements that address current technological demands, including data analytics, cybersecurity, and sustainable navigation.
- Launch digital simulation environments to bridge theoretical learning with practical skills.

- **Secure Financial Support:**

- Advocate for enhanced EU and industry funding to expand training facilities and update educational technologies.
- Prioritize investments in human capital, ensuring that maritime professionals are equipped with the latest skills to manage modern vessels and sustainable practices.

6. IMPLEMENTATION STRATEGY

Mid-Term Actions (3–5 years):

- **Mentorship and Knowledge Transfer:**

- Implement mentorship programs where experienced crew members guide new recruits, ensuring knowledge transfer and hands-on learning.
- Encourage career mobility by showcasing diverse maritime career paths, from engineering to fleet management.

- **Curriculum Modernization:**

- Maritime academies should integrate new technologies such as AI-driven navigation systems, automated maintenance, and digital twins for vessel operations.
- Promote cross-disciplinary learning to prepare students for multifaceted maritime roles.

- **Harmonize Industry Standards:**

- Work with regulatory bodies to align maritime education with international standards, ensuring seamless workforce mobility across Europe.

6. IMPLEMENTATION STRATEGY

Long-Term Vision (5+ years):

- **Industry-Academy Exchange Programs:**

- Establish structured exchange programs that allow students and educators to gain practical experience within maritime companies.
- Foster innovation through collaborative projects that address real-world challenges in sustainable shipping and digital transformation.

- **Expansion of the European Maritime Educational Network:**

- Scale the successful ENSM-AMA model to include other European maritime academies, enhancing knowledge sharing and academic consistency across borders.

- **Global Leadership in Maritime Skills Development:**

- Position Europe as a global leader in sustainable maritime skills development by continuously innovating training methodologies and industry partnerships.

The maritime sector's transformation depends on these strategic investments in education, mentorship, and cross-border cooperation. By embracing these initiatives — and drawing on the insights of leaders such as **Claire Delahaye-Panchout, Gersende Le Dimna, Piet Opstaele, Rowan Van Schaeren, and Sylvain Faguet** — the industry will cultivate a workforce capable of driving technological advancement and sustainable growth in the blue economy. These contributions underline the importance of partnerships, inspiration, funding, and high-quality training in securing the future of maritime professions across Europe.

7. MARITIME CLUSTERS: DRIVING AND MONITORING PROGRESS IN SKILLS DEVELOPMENT

The **ENMC** serves as a catalyst for skills development and innovation across the maritime sector. Representing the collective interests of Europe's blue economy, ENMC facilitates collaboration, knowledge sharing, and strategic alignment between national clusters, educational institutions, and industry stakeholders.

Role and Responsibilities

- **Facilitating Collaboration:**

- ENMC strengthens connections among maritime clusters, promoting best practices in alternative fuels, wind propulsion, and digital transformation.
- Regularly organizes forums and seminars that bridge educational institutions and industry leaders, fostering dialogue on emerging maritime technologies and sustainable practices.

- **Monitoring Progress:**

- Track industry satisfaction with graduate competencies and the effective integration of new technologies.
- Evaluate the impact of joint training initiatives on workforce readiness and adaptation to technological changes.

- **Knowledge Sharing and Best Practices:**

- Promote cross-sector learning through EU-backed projects and international cooperation.
- Ensure that knowledge transfer is not limited to maritime operations but extends to regulatory compliance, sustainability strategies, and global shipping standards.

- **Driving EU-wide Standards:**

- Advocate for harmonized training and certification across Europe to streamline workforce mobility and industry compliance.
- Support regulatory bodies in adapting policies that match technological advancements and sustainable innovations.

7. MARITIME CLUSTERS: DRIVING AND MONITORING PROGRESS IN SKILLS DEVELOPMENT

Success Indicators:

- **Competency Alignment:**

Graduates meet industry standards and demonstrate readiness for modern maritime challenges.

- **Technology Integration:**

New propulsion technologies, AI, and digital tools are seamlessly incorporated into vessel operations.

- **Cross-Border Mobility:**

Improved employment frameworks facilitate easier movement of skilled professionals across European waters.

- **Environmental Leadership:**

European maritime clusters lead in sustainable shipping practices and eco-friendly technology deployment.

ENMC's commitment to these strategic goals underscores its role to safeguard the maritime skills development , ensuring Europe's blue economy remains competitive , sustainable, and innovative.



CONCLUSION

The maritime sector is undergoing a profound transformation driven by technological innovation, sustainability imperatives, and the evolving blue economy. Addressing the skills gap requires a coordinated, long-term approach that unites educational institutions, industry stakeholders, and regulatory bodies. By implementing strategic initiatives outlined in this paper, the maritime community can develop a workforce capable of leading the sector into a sustainable and technologically advanced future.

The recommendations presented emphasize the need for strong partnerships, continuous curriculum modernization, and mentorship programs that foster both technical proficiency and leadership skills. Financial investment in education and training is essential to maintain industry competitiveness and to prepare maritime professionals for the challenges of modern seafaring.

The **ENMC** will play a pivotal role in guiding this transformation. By fostering collaboration among clusters, educational institutions, and industry partners, ENMC will ensure that maritime education remains relevant and aligned with market needs. Furthermore, by advocating for harmonized regulatory frameworks and promoting cross-sector knowledge sharing, ENMC supports the creation of a resilient, adaptable workforce.

As Fabrice Maire, Chairman of the ENMC, highlighted in his closing remarks, the future of maritime excellence is built on three pillars: **inspiration, passion, and commitment**. It is not just technological advancements but also human ambition and dedication that will propel the sector forward. Maritime professionals of tomorrow must be guided by mentors who exemplify these values, transforming their careers into a vocation driven by innovation and sustainability.

SPEAKERS

Ultimately, the spirit of the sea, as symbolized by Maire's parting words, "*Spirit of the sea may guide your journey*", reminds us that while the industry advances technologically, it is the human element — our passion for the maritime world and our commitment to mentorship — that will shape the future of the blue economy. Let us embrace this mission with determination and unity, ensuring that maritime careers continue to inspire and thrive in the decades to come.



Johan Klaps

Vice Mayor for the Port and Economy,
City of Antwerp and President of the
board of Port of Antwerp-Bruges



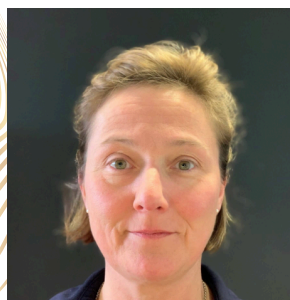
Claire Delahaye-Panchout

Fleet Personnel Manager at SOCATRA



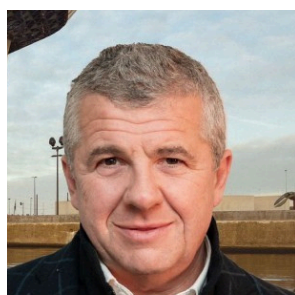
Sylvain Faguet

Member of the Board of the Wind Ship
Association



Gersende Le Dimna

Head of International Relations and
Academic Partnership, French Maritime
Academy



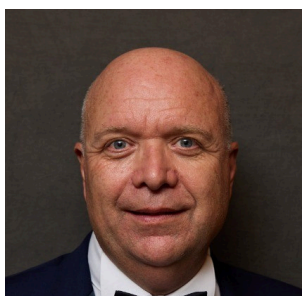
Piet Opstaele

CEO of De Blauwe Cluster



Rowan Van Schaeren

Director of the Antwerp Maritime
Academy



Fabrice Maire

Chairman of the ENMC & Chairman of
the CML



Remke Willemen

Head of Education at Antwerp
Maritime Academy

Key Message:

Emphasis on inspiration,
passion, and commitment in
mentoring future maritime
professionals.

Blue Horizons: Innovating and Developing Sustainable Skills for the Future of the Blue Economy

May 15, 2025, at 18:00, at the Antwerp Maritime Academy

18:00

WELCOMING REMARKS

- **Johan Klaps**, Vice Mayor for the Port and Economy – City of Antwerp and President of the board of Port of Antwerp-Bruges
- **Rowan Van Schaeren**, Director at the Antwerp Maritime Academy

18:15

BRIDGING TRADITION AND TRANSITION: NAVIGATING SKILLS GAPS IN MARITIME OPERATIONS

Claire Delahaye Panchout, Fleet Personnel Manager at SOCATRA

18:30

FROM CLASSROOM TO SHIP DECK: ALIGNING EDUCATION WITH INDUSTRY NEEDS IN THE BLUE ECONOMY

- **Claire Delahaye Panchout**, Fleet Personnel Manager at SOCATRA
- **Gersende Le Dimna**, Head of International Relations and Academic Partnership at the French Maritime Academy (ENSM)
- **Piet Opstaele**, CEO of De Blauwe Cluster
- **Rowan Van Schaeren**, Director at the Antwerp Maritime Academy
- **Sylvain Faguet**, Member of the Board of Wind Ship Association

Round table moderated by **Remke Willemen**, Head of Education at the Antwerp Maritime Academy

19:00

CLOSING REMARKS

Fabrice Maire, Chairman of the European Network of Maritime Cluster and Chairman of the Luxembourg Maritime Cluster

ENMC PRESENTATION

- The network emerged in 2005 as a platform for exchanging information and networking between the maritime Cluster organizations of European member states.
- The European Network of Maritime Clusters (ENMC) is a non-profit organization established on January 1st, 2023, in Luxembourg, after years of collaboration between the maritime Clusters part of the network.
- Since its foundation, the ENMC's main principle has been establishing an efficient framework for maritime sectorial cooperation, focused on vocalizing the unambiguous maritime interest to European policymakers towards a European maritime level playing field: a single European Maritime Cluster.

a single European Maritime Cluster

The ENMC represents the Blue Economy in Europe through 12 national maritime clusters from **Belgium, Bulgaria, France, Greece, Italy, Malta, Luxembourg, Poland, Portugal, Spain, and Ukraine.**



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