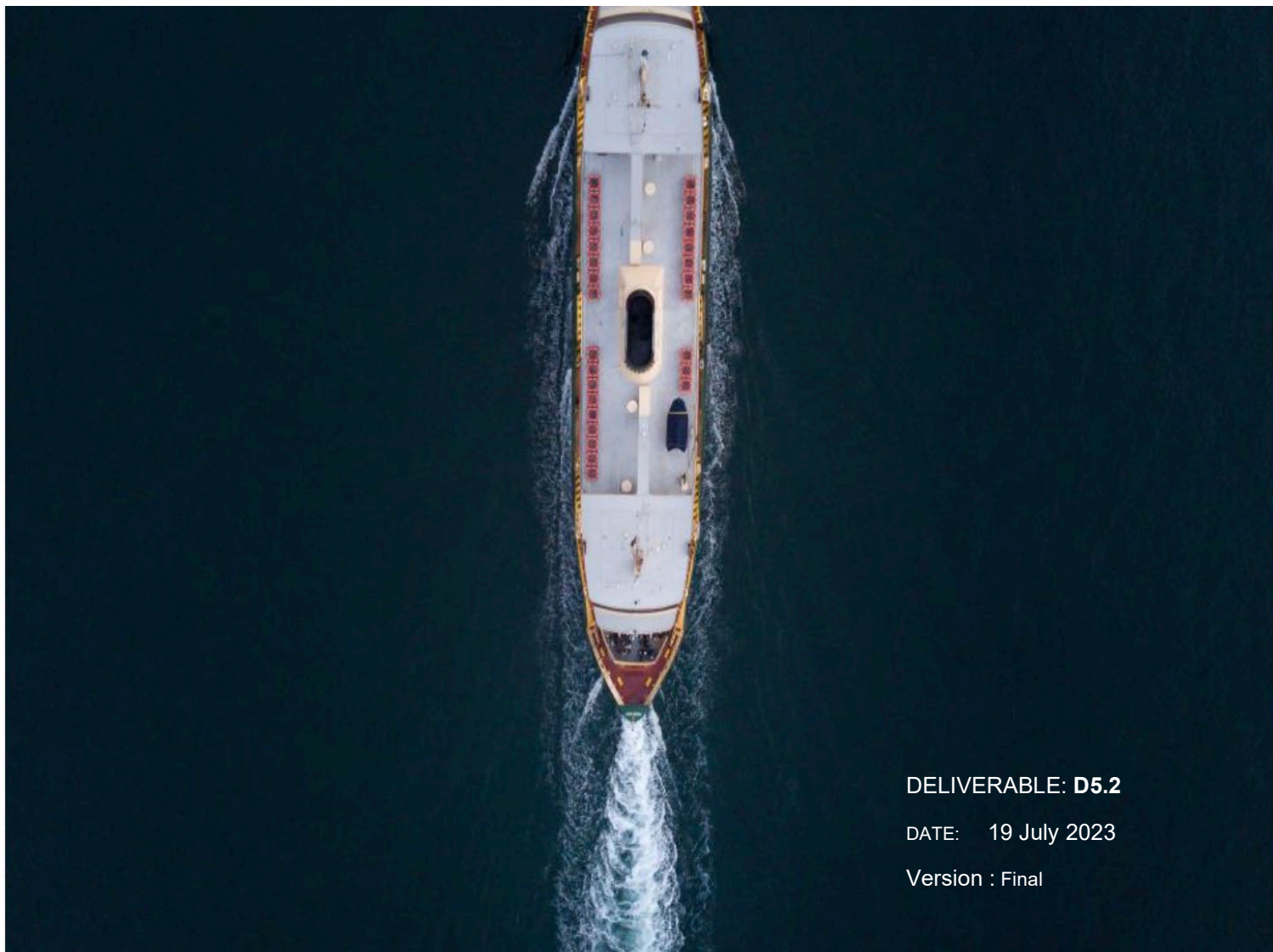


ROADMAP TOWARDS A SUSTAINABLE SKILLS STRATEGY



DELIVERABLE: **D5.2**

DATE: 19 July 2023

Version : Final

MAIN EDITOR(S) : SGMer, FORMARE
 Contributors : SGMer, FORMARE, EUGENIDES, SIMAC, STC, ECSA
 Reviewer(s) : STC
 Dissemination Level : Public

VERSION HISTORY			
VERSION	DATE	EDITOR	SUMMARY OF MODIFICATIONS
V0.1	10/12/2020	SGMer	Table of content : First draft
V0.2	23/12/2020	SGMer/FORMARE	Table of content : Final draft
V0.3	6/07/2021	SGMer	Draft and revision of content
V0.4	30/08/2021	SGMER/FORMARE	Revision of content
V0.5	15/09/2021	SGMER/FORMARE	Draft chapter 1, 2, 3
V0.6	08/10/2021	EUGENIDES	General comments
V0.7	01/12/2021	SGMer	Integration of SIMAC remarks
V0.8	17/01/2022	STC (A.Weeke)	Improvement of the content
V0.9	01/02/2022	STC (D.Jansen)	General comments
V0.10	28/9/2022	SGMer	Integration of first semester work (questionnaires, bilateral meetings, WPLs meeting, coordinator comments, intermediate report comments)
V0.11	28/10/2022	STC	Chapter on the grant programmes
V0.12	21/11/2022	SGMer	Integration of first semester work (focus groups). Review of the coherency
V0.13	05/12/2022	STC	Deep review and comments

VERSION HISTORY			
V0.14	30/12/2022	SGMer	Integration Project Coordinator remarks
V01.15	10/02/2023	SGMer	Integration of D3.7 main strategic results and recommendations
V0.16	22/02/2023	FORMARE	Revision of the document
V0.17	07/03/2023	STC	Deep review and comments
V0.18	23/03/2023	SGMer	Inclusion of the Roadmap and clarification regarding the last comments
V0.19	24/03/2023	STC	Corrections and updates
V0.20	24/03/2023	SGMer (Linda Bama Tandia)	Financial updates
V0.21	03/04/2023	SGMer (Alexis Blum)	Integration of last consortium meeting (consistency and clarification regarding the E-MSF)
V0.22	14/04/2023	STC (Diedrick Jansen)	Consistency of the document with regards to other deliverables
V0.23	28/04/2023	STC (Alco Weeke)	Update on the description of educational policies and structures in Europe (Annex 7)
V0.24	22/05/2023	ECSA	ECSA comments and modifications
V0.25	07/06/2023	SGMer (Alexis Blum)	Integration of Eugenides Foundation comments and recommendations
V0.26	14/06/2023	FORMARE	Revisions and Comments
V0.27	21/06/2023	Nautilus (Linnington)	Language check
V0.28	28/06/2023	STC (Ouwens)	Layout Check
Final	30/06/2023	STC (Weeke)	Final version

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Summary

A crucial part of SkillSea is to formulate recommendations for the future. However, between the current situation and the end state where the strategic recommendations are reached, there is a gap which is bridged with this deliverable. Indeed, deliverable D5.2 “Roadmap to a sustainable skills strategy” paves the way to operate SkillSea strategic recommendations in the long-term.

In support of other deliverables that are more concerned about the What (What is the problem? What is the desired end-state?), D5.2 responds to the How (How do we transition from the current unidealistic situation to the desired end state while operating the proposed solution).

This work aims to develop a long-term action plan that will secure the viability and the renewal of the skills governance system in the maritime transport sector. It is closely connected with:

- the effort of expanding the project to include more stakeholders and authorities
- to extend activities in more European countries
- to offer scalability and financial sustainability
- to promote attractiveness of the sector
- and to widely disseminate the outcomes of the project, beyond its lifetime

This WP5 report addresses both these issues, taking into account all other WP deliverables.

In order to assess the best way to implement the recommended evolution - and thus contribute to supporting the employability of future and current EU seafarers - and the changes needed to address current skills resilience and future skills dynamics, internal and external surveys were conducted. They were carried out among Maritime Education and Training providers (METs), shipping companies and authorities at the end of 2021 and in early 2022. The results were consolidated through internal focus groups.

After introducing the general context and need for a sustainable skills strategy (1), the deliverable explains the methodology used by WP5 to write this document and related recommendations (2). After that, it explores the actions recommended by the project to reach the expected sustainable skills strategy (3). Then, D5.2 provides a roadmap and guidelines for a long-term sustainable skills strategy (4). Finally, as proposed in D3.7, D5.2 formulates propositions to set up a European Maritime Skills Forum (E-MSF), a holistic measure that will contribute to sustain the SkillSea initiative.

Note that this document does not describe the other key findings and recommendations that are stated in various SkillSea deliverables. It will mainly focus on the E-MSF, giving a proposition for a timeline for its implementation from various perspectives:

- Participation and involvement
- Objectives
- Framework
- Networking
- Influence, dissemination and knowledge sharing
- Financial aspect
- Research projects

The key findings identified during WP5 work confirm the need to improve the flexibility of seafarers' employability (even out of the maritime market), better involvement or dialogue with authorities, and better advertising of maritime careers, interests and opportunities. The E-MSF will create the conditions to address those issues.

FUTURE-PROOF SKILLS FOR THE MARITIME TRANSPORT SECTOR

Project SkillSea is co-funded by the Erasmus+ Programme of the European Union

Technology and digitalisation are transforming the shipping industry. 'Smart' ships are coming into service, creating demand for a new generation of competent, highly-skilled maritime professionals. Europe is a traditional global source of maritime expertise and the four-year SKILLSEA project is and soft management skills for the rapidly-changing maritime labour market. It seeks to not only produce a sustainable skills strategy for European maritime professionals, but also to increase the number of these professionals - enhancing the safety and efficiency of this vital sector.

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LIST OF ABBREVIATIONS AND ACRONYMS

ABBREVIATION / ACRONYM	DEFINITION
ECSA	European Community Shipowners' Associations
EEZ	Exclusive Economic Zone
E-MSF	European Maritime Skills Forum
ESCO	European Skills, Competences, and Occupations
ETF	European Transport Workers' Federation
FORMARE	Polo Nazionale per lo Shipping (Italy)
HEI	Higher Education Institutions
ICS	International Chamber of Shipping
IMO	International Maritime Organization
MASS	maritime autonomous surface ships
MET	Maritime Education and Training providers
MET-NET	MET Network
NA	National Authorities
MoU	Memorandum of Understanding
OECD	The Organisation for Economic Co-operation and Development
SGMer	Secrétariat Général de la mer (General Secretary for the Sea (France))
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
UNCTAD	United Nations Conference on Trade and Development
WP	Work Package

1. Introduction

The oceans have always been at the heart of world trade. They represent two-thirds of our planet and 80% of global trade by volume is nowadays transported by ships¹, meaning shipping should be seen as the key ingredient in fostering globalisation. The geography of maritime trade has to be considered fundamental. According to the International Chamber of Shipping (ICS), 'some 11 billion tons of goods are transported by ship each year. This represents an impressive 1.5 tons per person based on the current global population. As of 2019, the total value of the annual world shipping trade had reached more than 14 trillion US Dollars'² because shipping companies offer the cheapest mode of transport per ton and the ability to transport goods with a minimal environmental footprint compared with any other mode of transportation³.

Facing an increasing amount of interconnection between countries, a maritime transport operation involves worldwide inputs. A ship may be 'built in the Republic of Korea, financed by a German bank, flying the flag of Panama, manned by Philippine seafarers who are employed via a crewing agent from Cyprus. [...] At the end of its life, this ship will likely be scrapped on a beach in Bangladesh or India'⁴.

If shipping is the backbone of global trade, decarbonisation has become a global imperative and a priority for governments. It requires all parties involved to prepare to meet the International Maritime Organization (IMO) goal to reduce international shipping carbon emissions per transport work⁵ by at least 40% by 2030 and 70% by 2050, of 2008 baseline. In addition, the technological changes occurring in the maritime sector (vessel automation, big data, robotics, use of sensors) emphasise the need for appropriate training.

¹ Hoffmann J, Impact: long term trends in maritime transport and the 50 most influential papers in maritime economics, 2019 - <https://ianhoffmann.live/2019/08/17/impact/>

²International Chamber of shipping, Shipping and world trade: driving prosperity - <https://www.ics-shipping.org/shipping-fact/shipping-and-world-trade-driving-prosperity/>

³ International Chamber of shipping, Shipping and world trade: driving prosperity - <https://www.ics-shipping.org/shipping-fact/shipping-and-world-trade-driving-prosperity/> - « *Over the last four decades, seaborne trade has quadrupled in size, bringing benefits for consumers worldwide through competitive freight rates* ».

⁴ Hoffmann J, Impact: long term trends in maritime transport and the 50 most influential papers in maritime economics, 2019 - <https://ianhoffmann.live/2019/08/17/impact/>

⁵ International Maritime Organization, Initial IMO strategy on reduction of GHG emissions from ships, Resolution MEPC.304(72) adopted on 13 April 2018

1.1 OVERVIEW OF NEW MARITIME CHALLENGES IN THE CONTEXT OF THE GLOBAL ECONOMY

Shipping has always been an important human activity, primarily when economic growth depended on international and interregional trade. In fact, according to the Organisation for Economic Co-operation and Development (OECD), 'transportation has been called one of the four cornerstones of globalisation, along with communications, international standardisation, and trade liberalisation'⁶. The maritime industry has to evolve to meet and serve the rising demands of globalisation by transforming its technologies, maintaining its labour resources and attracting international workforces and new generations.

The continuous technological changes occurring in the maritime sector are one of the maritime workforce's main challenges. Historically, innovation and technology have played a crucial role in increasing the economic efficiency of the shipping industry. More recently, and according to United Nations Conference on Trade and Development (UNCTAD), they have also become 'drivers and enablers of the improved environmental performance of this sector'⁷. It is expected that the sets of skills in demand and work routines will change, causing disruptions in the labour market. However, the impact on labour markets will not be similar between countries depending on their level of readiness and their ability to adopt new technologies and automation. Such readiness could be defined as 'the capability to capitalise on the future, mitigate risks and challenges, and be resilient and agile in responding to unknown future shocks'⁸.

In other words, the maritime sector is entering a new industrial revolution with technological changes and environmental footprint reduction, implying the need to constantly adapt the workforce skills requirements and needs in the maritime sector. Besides, technology will imply fewer jobs onboard ships and more onshore jobs, requiring a more adaptable workforce⁹.

The main challenges the maritime shipping sector will face are¹⁰:

- Current and future shortage of maritime professionals
- Changes within the maritime industry
- Mobility issues
- Communication issues
- Core skill sets
- Digital skills
- Green skills

⁶ James J. Corbett and James Winebrake, The Impacts of Globalisation on International Maritime Transport Activity : Past trends and future perspectives, Global Forum on Transport and Environment in a Globalising World 10-12 November 2008, Guadalajara, Mexico - <https://www.oecd.org/greengrowth/greening-transport/41380820.pdf>

⁷ UNCTAD, Review of maritime transport 2020, united nations conference on trade and development, 2020 - https://unctad.org/system/files/official-document/rmt2020_en.pdf

⁸ UNCTAD, Review of maritime transport 2020, united nations conference on trade and development, 2020 - https://unctad.org/system/files/official-document/rmt2020_en.pdf

⁹ International Transport Workers 'Federation report, 2019 - The report analyses several modes of transport and explores readiness based on 17 country case studies (Australia, Brazil, China, Denmark, France, Ghana, Japan, Nigeria, Norway, Panama, Peru, the Philippines, the Republic of Korea, South Africa, Sweden, Turkey and the United States): 'There will be less jobs onboard ships and more onshore jobs, requiring a more adaptable workforce'.

¹⁰ SKILLSEA deliverable D1.1.2 « Current skills needs (reality and mapping)

The COVID-19 crisis has highlighted the importance of the notion of self-sufficiency in the global trade as 'shipping is a global industry and therefore requires a global regime for governing the competence standards and certification requirements for the approximately two million seafarers employed throughout the world merchant fleet'¹¹. Over the last 40 years, the content of this global regime has been provided by the IMO Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW). Considering the rapid evolution of shipping activities, one of the first challenges that the sector has to face is how the current IMO STCW standards can meet the requirements of today's industry. The International Chamber of Shipping (ICS) members have concluded that 'a fully revised STCW regime would allow the industry to adapt much more effectively to fast-moving technological developments, including increased automation.

A revised Convention could provide a structure with sufficient flexibility to meet the demands of a rapidly evolving world fleet. It could permit a more modular approach to competency accumulation and certification than is possible under the current regime. Most importantly, ICS believes that a comprehensive revision of the STCW Convention should seek to improve transparency and the robustness of implementation oversight concerning the obligations of the IMO Member States responsible for the quality of their national training and certification systems. In particular, this includes ensuring strict adherence by individual training institutes to delivering IMO competence standards, and a tightening of the approval process by governments of training colleges, especially those engaged in operational level ships' officer training'¹².

Thus, the priority of the European Union will be preparing workers for the challenges that will arise by offering them the possibility to reskilling and upskilling through adequate training programmes as a result of technological changes and automation¹³. However, despite the evidence, most countries have still not elaborated long-term plans to be prepared for such changes in the maritime sector¹⁴. According to experts, the future maritime world's shape will mostly depend on tri-polar interactions (people, economies and natural resources), which will have different impacts in the maritime sector.

1.2 THE EUROPEAN UNION AND THE SEA: A STRATEGIC CHALLENGE FOR SUSTAINABLE DEVELOPMENT

Together, developed economies and economies in transition are generating '42 per cent of global merchandise exports by sea (goods loaded) and imported 35 per cent (goods unloaded) of such global trade'¹⁵ but maritime transport and trade are affected by various trends. The role of developing regions as a source and destination for maritime trade is significant even if developing economies are not a homogenous group. The grouping of regional trade blocks includes countries and economies in varying stages of development and degrees of integration in the world's manufacturing and trading networks. The main goal of regional trade blocks is to create the ideal condition for a competitive market between the member states. A built-in pressure for better coordination at the supranational level will emerge when this happens. Eventually, supranational institutions will define rules of exchange for the future. For example, 'intra- Europe trade accounted for 71% of total European trade in 2011. Intra-Asia trade contributes 53% of

¹¹ International Chamber of Shipping, Annual Review 2020, Heroes at sea, 2020: 'This is because the majority of seafarers serve on ships with a flag state that is different to the country responsible for overseeing their training and issuing certificates of competence'.

¹² International Chamber of Shipping, Annual Review 2020, Heroes at sea, 2020

¹³ SkillSea deliverable D1.1.2 stresses that such topics as safety, risk management, ships operations, crew management, marine operations or maintenance management for instance require upskilling.

¹⁴ International Transport Workers' Federation, 2019: 'Longer-term considerations are also necessary for potential shifts in supply-chain design, globalization patterns, consumption and spending habits and, in general, a growing focus on risk assessment and vulnerability reduction. Further, the sector will need to continue mitigating the impact of inward-looking policies on trade and protectionism and to carry forward the sustainability and low-carbon agenda'.

¹⁵ UNCTAD, Review of maritime transport 2020, UNCTAD, 2020 - https://unctad.org/system/files/official-document/rmt2020_en.pdf

the total Asia trade. 49% of North America's exports remain in the region. The rise of trade blocks within more regions may continue to promote intra-regional trade for the next 20 years if a rise in protectionism in many parts of the world would keep challenging their trade environment and make global trade and open markets under pressure'¹⁶.

In the European Union, 23 of the 27 countries have a seacoast stretching over five oceans and four seas, and 25 are flag states. If we add the overseas territories, the EU controls more than 29 million km² of EEZ. In 2016, the EU had 'more than 1,200 commercial ports, more than 8,100 flagged ships, 764 major ports and 3,800 port facilities, 4,300 registered shipping companies. 90% of the Union's foreign trade uses the sea and 40% of its internal trade. 20% of the world tonnage is registered under the flag of the Member States, and European companies control more than 40% of the world fleet. European freighters manage 30% of ships, 35% of maritime transport tonnage, 55% of container ships, or 42% of the value of maritime trade in the world. 42% is exactly what the weight of Europe in world trade represents'¹⁷. Thus, Europe remains the leading player in the maritime field.

To maintain a strategic position, the EU Commission report The EU Blue Economy¹⁸ has identified emerging sectors¹⁹ that are still in full development but hold significant potential for the future and could stimulate long-term growth and jobs in the blue economy. The blue economy represents '4.5 million people [directly employed by the blue economy] in 2018 and generated around €650 billion in turnover and €176 billion in gross value added'²⁰. With increasing awareness of the blue economy and blue careers and the fast economic development in different sea sectors, the EU has produced several strategic documents such as the Common Fisheries Policy²¹, Integrated Maritime Policy²² or the EU renewable energy strategy²³. The maritime dimension is essential in the EU's approach to global trade.

The 'maritimisation' of global trade and the importance of the shipping routes²⁴ have given greater resonance to the geopolitics of the seas with the rise of new maritime players such as China, alongside traditional powers such as the United States, France, India, Japan and Australia. Global trade cannot exist without an efficient shipping industry, and shipping needs global trade to exist. According to the ICS, 'the support from the EU to the EU shipping companies will have to increase to boost the competitiveness of the EU shipping industry, maintain and strengthen their trading opportunities and thereby their economic wellbeing and contribution to global economic growth and job creation'²⁵. In those terms, the EU shipping companies will face technological changes requiring appropriate skills.

¹⁶ <https://www.futurenaautics.com/wp-content/uploads/2013/10/GlobalMarineTrends2030Report.pdf>

¹⁷ Jean-Dominique Giuliani, 'L'Europe a-t-elle une stratégie maritime?', *Revue Défense Nationale*, vol. 789, no. 4, 2016, pp. 31-36.

¹⁸ <https://op.europa.eu/en/publication-detail/-/publication/0b0c5bfd-c737-11eb-a925-01aa75ed71a1>

¹⁹ Blue biotechnology - blue bioeconomy - Emerging marine renewable energy - maritime security and surveillance

²⁰ https://ec.europa.eu/oceans-and-fisheries/news/2021-eu-blue-economy-report-emerging-sectors-prepare-blue-economy-leading-part-eu-green_fr

²¹ Green Paper (2009) ; Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC : First of all, consisting in ensuring equal access to water and fish resources for Europeans and is now entirely geared towards the conservation of the resource.

²² *Blue Paper* (2007) REGULATION (EU) No 1255/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 November 2011 establishing a support program for the development of an integrated maritime policy: Series of measures involving all areas of activity (energy, transport, environment), designed and applied according to overall objectives.

²³ The objective is to increase European offshore wind production capacity from 12 GW currently to at least 60 GW by 2030 and to 300 GW by 2050, <https://eur-lex.europa.eu/legal-content/FR/TXT/HTML/?uri=CELEX:52020DC0741&from=EN>

²⁴ Especially of the Indo-Pacific.

²⁵ International Chamber of Shipping, Shipping and world trade: driving prosperity - <https://www.ics-shipping.org/shipping-fact/shipping-and-world-trade-driving-prosperity/>

1.3 LIFELONG CAREER OPPORTUNITIES IN THE SHIPPING INDUSTRY AND WORKFORCE ASPIRATIONS

The shipping industry and seafarers bring ‘prosperity to the world and are vital to the lives of Europeans and of high strategic importance to the European economy’²⁶.

Adequate seafarer training will play a crucial role in the future European maritime skills strategy to maintain the EU’s strategic position.

As the shipping industry offers a large scale of career paths within industries (onshore and ashore), the EU has to ensure the attractiveness of its training programmes by ensuring high-level quality training, which goes beyond the STCW standards, which set minimum qualification standards for seafarers.

Therefore, by giving them the opportunity of rewarding lifelong learning and a career pathway in the shipping industry²⁷, European and international students and experienced seafarers would benefit from their maritime employment. Career progression contributes to the attractiveness of a maritime career. It will help maintain the sustainability of this dynamic sector.

In a constantly adapting industry, seafarers’ knowledge and skills require constant updating²⁸, especially with the increasing use of digital technologies onboard vessels²⁹. The existing workforce also needs to be supported and equipped to adapt to the changing industry, using their experience and expertise to influence and make the best use of technological developments. For this reason, continuous learning is crucial for their career development³⁰, although lifelong learning remains partly voluntary³¹.

The skills strategy has to improve the current and future shipping workforce, employability, and competitiveness to be successful. Designing a maritime skills strategy needs to take into account four essential areas:

- Identifying the needs of workforce (onshore and ashore) in the shipping industry and bridges between jobs onshore and ashore³²
- Updating the skill sets of maritime professionals in line with the needs of the shipping industry³³
- Ensuring lifelong learning to constantly upskill current maritime professionals according to their aspirations³⁴

²⁶ OECD, 2007 as cited in Laal, M & Laal, A, Challenges for lifelong learning. *Procedia - Social and Behavioral Sciences*, 1539 – 1544, 2012, p. 937: ‘The objective turns to be continuous learning as a way of keeping themselves competitive and sharp in a dynamic marketplace’ ; ‘it is also quite natural for any seafarer to look for a shore jobs after they have spent a considerable period of time working at sea’.

²⁷ Jain, S., & Martindale, E. T, Facilitating Continuous Learning: A Review of Research and Practice on Individual Learning Capabilities and Organizational Learning Environments. Retrieved, 2012 – http://www.aect.org/pdf/proceedings12/2012/12_09.pdf

²⁸ Baruch, Y, Career development in organizations and beyond: Balancing traditional and contemporary viewpoints. *Human Resource Management Review*, 2006, p125–138.

²⁹ Khan, S. A., Rajasekar, J., & Al-Asfour, A, Organizational Career Development Practices: Learning from an Omani Company. *International Journal of Business and Management*; Vol. 10, No. 9, 2015: « technology which are becoming commonplace in the shipping industry ».

³⁰ European Commission, A Memorandum on Lifelong Learning, Commission staff working paper, 2000.

³¹ Fischer, G, Lifelong Learning: More than Training. *Interactive Learning Research*, 2000: ‘Seafarers have to be well motivated enough to ensure that they remain self-driven and understand the importance of continuous learning towards their career by ensuring those considering embarking on a maritime career or those already in the sector, to have knowledge and pathways to move to where they want to be and reach their potential’.

³² UK Department of Transport, *Maritime 2050: people route map*, 2019: ‘An important area is ensuring companies get the talent they need and those embarking on maritime training and careers have the skills needed to do the job and to progress’.

³³ UK Department of Transport, *Maritime 2050: people route map*, 2019: ‘The shipping industry requires constant skilled and able workforce to stay competitive’.

³⁴ UK Department of Transport, *Maritime 2050: people route map*, 2019 : ‘For those already in a maritime career, they need to have clearly defined their career progression pathways and the opportunities to progress’.

- Inspiring and attracting maritime professionals and students to fulfil the need for a variety of skills³⁵

To achieve this aim and to ensure a long-term employment and skills strategy, the shipping industry, education, and governments should cooperate to work on a shared sustainable skills plan to increase the competitiveness of maritime professionals.

1.4 EVOLUTION OF MARITIME ACTIVITIES AND SKILLS: CHALLENGES AND CHANGES

The ocean economy is facing rapid growth that will provide benefits but will also raise concerns about environmental and social risks³⁶. The high diversity of maritime activities in coastal areas combined with limited spaces³⁷ will impact the Blue Economy expansion, its opportunities, and challenges³⁸.

Europe's blue economy provides 4.5 million direct jobs, many in regions with few alternatives. It encompasses all industries and sectors related to oceans, seas and coasts, whether based in the marine environment (e.g. shipping, fisheries, energy generation) or on land (e.g. ports, shipyards, land-based aquaculture and algae production, coastal tourism). It is a broad, fast-moving segment of the European economy, which has taken significant steps to modernise and diversify over the past decade. Alongside traditional sectors, innovative sectors are evolving and growing, such as ocean renewable energy, the blue bio-economy, biotechnology and desalination, thus providing new prospects and creating jobs.³⁹ Workers in the shipping industry could seize the job opportunities offered by the blue economy. Shipping training and experience in the maritime sector enables cross-disciplinary skills, thus favouring professional mobility outside the sector. However, it seems that the youth and even seafarers themselves are not systematically aware of career paths between job ashore and at sea, nor of some shore-side career opportunities.

The COVID-19 pandemic has accelerated technological development, reaffirming the will of governments and companies to pursue the decarbonisation of the sector. These significant trends bring numerous challenges and changes.

As a result, ship operators have an even greater need for a specific set of management skills to provide them with an understanding of the landscape's current and future skills. The most significant gaps between current training and actual functional needs are maintenance, electrical, electronic and control engineering, and soft skills such as creative thinking and teamwork. Moreover, according to the shipping companies' business models and the context of constant development, the sector needs the best talents to meet the changes ahead and seize the opportunities. A critical challenge that the shipping industry is facing nowadays is that leaders need to ensure that staff are given the necessary training and upskilling needed to be familiar with new technologies in the industry⁴⁰. Shipping is an industry with a high ability to adjust. However, it must ensure that it improves the sector's attractiveness for current and future employees.

³⁵ UK Department of Transport, *Maritime 2050: people route map*, 2019: 'Considering that people are the heart of the maritime industry and given the wide range of roles that will be needed in the future maritime sector, it is vital that seafarers come from the widest talent pool, train to the highest standards with the latest technological advancements and create an environment in which people want to work and progress'.

³⁶ Jouffray JB, Blasiak R, Norström AV et al, The Blue Acceleration: the trajectory of human expansion into the ocean. *One Earth.*, 2020 - <https://doi.org/10.1016/j.oneear.2019.12.016>

³⁷ UN General Assembly Convention on the Law of the Sea, 1982 - <https://www.refworld.org/docid/3dd8fd1b4.html>.

³⁸ Novaglio, C et al, Deep aspirations: towards a sustainable offshore Blue Economy, Springer, 2020 - <https://link.springer.com/content/pdf/10.1007/s11160-020-09628-6.pdf>

³⁹ European Commission, Communication on a new approach for a sustainable blue economy in the EU: Transforming the EU's Blue Economy for a Sustainable Future

⁴⁰ European Community Shipowners' Association, Sailing ahead European shipping sets ambitious goals for its next chapter: strategic priorities for EU shipping policy 2019-2024 - <https://maritimecyprus.files.wordpress.com/2019/11/ecsa-priorities-2019-2025.pdf>

Regarding the fact that the shipping industry is evolving rapidly, it will likely soon see more changes than it has in the last one hundred years, with innovation around new propulsion technology and digital solutions. The maritime industry is going through its industrial revolution with the development of maritime autonomous surface ships (MASSs) and this may negatively impact several areas, one of which might be the potential loss of seafaring jobs. Thus, technology affects traditional maritime jobs and changes the set of skills needed in the maritime industry. However, the intuitive knowledge of an experienced industry worker is hard to replace, even with advanced technology. That is why even though the sector may need a lesser number of crew members working onboard a vessel with ‘smart’ shipping technologies, a larger group of skilled employees is still needed to work onshore to remotely manage what is happening out at sea. There will be a significant positive effect on the overall maritime industry in the form of new shore-based jobs.

Therefore, despite current jobs being redesigned and requiring new employees to survive by upgrading skills, a human workforce is still essential.

In the context of a changing labour market, the maritime industry needs to have the right people with the right skills to harness new technologies, while remaining sustainable and competitive. The EU needs to have a good understanding of the new skills needed in the industry to be competitive and to attract the next generation to work in the maritime sector. This is the very purpose of SkillSea D1.1.3.Future skills and competence needs. Based on the analysis of this deliverable plus another regarding the gaps between current and future needs⁴¹, SkillSea WP1 presented recommendations for education and training for maritime professionals⁴².

Also, WP3 has assessed potential forms and related challenges of internationalisation and transferability across Europe’s METs⁴³. However, in order to be able to sustain and enhance the employability of maritime professionals in the job market, SkillSea WP3 recommended several measures to monitor and anticipate future skills needs ⁴⁴.

More holistically, WP3 developed a SkillSea strategy with key findings which propose ‘a vision and an educational solution for future training of maritime professionals and for Maritime Education and Training (MET) continuous adaptation’⁴⁵.

⁴¹ Skillsea Deliverable D1.2.1. Skills and competence gap between current and future needs

⁴² Skillsea Deliverable D1.3. Recommendations for education and training

⁴³ SkillSea – D 3.4 Internationalised strategies in MET

⁴⁴ SkillSea – D 3.3 Employability, anticipating skills needs and gap measurement

⁴⁵ SkillSea - [D3.7 Strategy key findings](#)

2. Methods for roadmap towards sustainable skills strategy

2.1 STRATEGIC RECOMMENDATIONS LEADING THE ROADMAP

The roadmap towards a sustainable skills strategy paper has been built on three main strategic considerations:

- The need to extend maritime skills discussions to a broader audience than METs and the maritime transport sector, as stated in the set of recommendations and guidelines elaborated in D3.7
- Networking and consensus building, aiming at fostering synergies and decision-making processes
- Finances to sustain the potential to operate the recommended actions

It aims to positively respond to changes and challenges in the labour market in the EU in the framework of a European Sustainable Skills Strategy.

2.2 METHODS APPLIED

1.2.1 General description of the methodology followed

For the current deliverable D5.2, we further outline the methods employed to gather results and recommendations, and their justification. To complete the task of D5.2, we have followed the following process:

1. We summarised key insights of the SkillSea project with a focus on how to bridge the gap between the statement of the problem and the strategic end state elaborated by the project
2. We executed surveys focused on the sustainability of the strategic recommendations proposed by SkillSea
3. We exploited results of the WP5 surveys
4. We organised internal focus groups in order to consolidate these results.

For each part of the methods mentioned above, a short description is given below.

2.2.2 Key insights of the SkillSea project

The roadmap towards a sustainable skills strategy considers the main findings of the deliverables of other SkillSea work packages, with the aim of bridging the gap between the statements made on the future skills (D1.1.3.) and problems identified (D1.2.1. skills gap), and the strategy identified to solve these problems (D3.7).

2.2.3 WP5 survey to understand how to build a sustainable skills strategy

With this survey, the Secrétariat général de la mer (SGMer) and FORMARE aimed to ensure that the roadmap results from a broad consensus among identified maritime stakeholders. The target group comprises METs, shipping companies and competent authorities. Therefore, this survey sought to provide feedback on the needs and action proposals identified by the main maritime stakeholders. The 'internal' survey shared in the SkillSea consortium followed the structure below:

- a. Context of the survey
- b. SkillSea transnational meeting findings
- c. What is expected from this survey
- d. Survey questions
- e. Set of recommendations and guidelines
- f. Networking and consensus-building
- g. Financial sustainability

SGMer and FORMARE developed the questionnaire in collaboration with WP5 partners, then circulated with other WP leaders for refinement and validation. WP5 first addressed the questionnaire to all the partners of the SkillSea project, then to targeted stakeholders outside of the consortium. The questionnaire had been circulated to the contacts of the existing database, designed by the members of the SkillSea project and updated by WP3. The responses were then analysed, considering the background, prime line of business and expertise in the subject.

Stakeholders' categories: the questionnaire was actually targeted towards the audience, with very slight differences. One was purely targeted to the SkillSea partners, and the rest were targeted to three different groups: maritime authorities; maritime companies and industries; and METs. In the annexes are given:

- ANNEX 1: the questionnaires
- ANNEX 2: the respondents of the questionnaires
- ANNEX 3: the focus group organisation to sharpen the WP5 questionnaires
- ANNEX 4: synthesis of the questionnaires
- ANNEX 5: a table summary of the results from the questionnaires
- ANNEX 6: analysis of funds that could be used to sustain the E-MSF
- ANNEX 7: study: collaboration structures between industry, METs and competent authorities – SkillSea member states example.

2.2.4 Exploitation of the result of the questionnaire

To define the first draft of a sustainable skills strategy roadmap, we extracted the outcomes from the surveys presented above and integrated them with the main findings of the deliverable of other work packages. We organised, compared and concluded what the future roadmap should be to satisfy the needs of stakeholders and the expected goal of the European Union. In addition, document analysis was also included in this task to triangulate our comparison and conclusion.

Findings of the surveys are also used to develop D5.1 as part of the stakeholder engagement and consensus-building activities.

The general picture of the consolidated results is in Annex 5.

2.2.5 Internal working groups: consolidation of the results

After picturing this first draft of general trends sketching the roadmap, focus groups were set up to gain an in-depth understanding of the stakeholders. By re-uniting stakeholders to participate in the definition of the strategy, a more consolidated roadmap emerged based on a fruitful consensus for maritime sectors that will have to apply this roadmap. The organisation of the focus groups is in annex 3.

To write the final roadmap, we extracted the outcomes from the focus groups and challenged the result to propose a final version of the roadmap to the SkillSea board.

3. Definition of a roadmap for a long-term sustainable skills strategy

The four-and-a-half years SkillSea project, launched in January 2019 to ensure that maritime professionals possess key skills for the rapidly changing maritime labour market, has been investigating ways to constantly update maritime professionals' training to take account of new (environmental) regulations and rapid advances in technology, digitalisation and automation. This project focuses on European cooperation to guarantee a high-quality maritime education in Europe and create a Europe-wide level playing field for training standards for maritime professionals.

A sustainable skills strategy will aim to ensure long-term sustainability of the project's results. It will reflect a vision on objectives, expected impacts, collaboration and synergies for a lasting sustainable skills partnership among key players in the maritime sector. A model of cooperation will aim to set priorities in the maritime training field and establish a continuous stakeholder consultation process while developing the strategic activities for pan-European initiatives on skills in the maritime sector. An example of such model is the SkillSea MET cooperation and structure (MET-NET) described in the deliverable D.2.3.

A roadmap leading towards a long-term sustainable skills strategy aims to jointly address how to set up the solutions identified to address common challenges, by supporting national/EU maritime strategies for a sustainable and competitive Blue Skills strategy.

A strategic partnership in the long-term aims to build a common European interest, offering a high potential to align funding and maximise the coherence and impact of EU investments in blue skills and future qualifications and occupational profiles in the maritime field (e.g. EU funding opportunities such as European Structural Funds, European Fund for Strategic Investment, Erasmus+, sectoral programmes). The concept is that:

- A sustainable skills strategy and structural cooperation will undoubtedly represent an opportunity to boost post-COVID recovery in the maritime sector
- A valid model of cooperation will ensure a continuous dialogue with stakeholders (industry, authorities, educational providers) aligning European, national and regional efforts and acting as an 'incubator' of initiatives, promotion, and sharing of best practices. An agreed project mechanism to support a model of cooperation could also be transferable across Europe for promoting a skills strategy for upskilling and reskilling maritime professionals. This 'model of cooperation' should anticipate blue skills transition to make maritime knowledge and skills future-proof. Ad hoc tools (e.g. platforms, forums, workshops) should be used to support dialogue and sharing of information in a long-term cooperation process.

Overall key findings regarding SkillSea strategy are described in the deliverable D3.7.⁴⁶

⁴⁶ SkillSea deliverable D3.7. "strategy key findings".

3.1 THE GOALS OF THE SKILLSEA PROJECT AND ITS WORK PACKAGE 5

As stated in the SkillSea application, Europe needs to act fast to lead the new wave of innovations and set the standard for global competition in shipping. Building a future-proof maritime training and education system will require cooperation between many stakeholders⁴⁷. That is why SkillSea is a multilateral project engaging 25 partners from 16 European countries. .

SkillSea seeks to develop a sustainable skills strategy for European maritime professionals and increase the number of these professionals - enhancing the safety and efficiency of this vital sector. The industry's social partners, the European Community Shipowners' Associations (ECSA) and the European Transport Workers' Federation (ETF), developed the future-proof project which was comprised of a consortium of national maritime authorities, shipping companies, shipowners' associations, maritime trade unions and maritime education providers from 16 countries in Europe.

SkillSea aims at fostering the cooperation at EU-level between the industry, education and training providers and authorities to:

- develop a strategy to make the education and training for maritime professionals future-proof, adaptable, and attractive
- support maritime professionals to gain appropriate skills for the labour market
- promote the skills sustainability strategy in the framework of the European maritime industry

WP5 aims to develop a long-term action plan that secures the viability and the renewal of the skills governance system in the maritime shipping sector. Particularly, WP5 will deliver an action plan for long-term cooperation between the industry, education and training, and the competent authorities, and plans for scalability and financial sustainability. Guidelines, recommendations, and implementation activities will be included in the framework of a pan-European roadmap for a sustainable skills strategy⁴⁸.

3.2 EXPECTED RESULTS IN A LONG-TERM PERSPECTIVE

In conformity with the requirements of its application, the SkillSea project has identified ways to ensure that the project outcomes, results, tools⁴⁹ and cooperation structure⁵⁰ will remain in use and in the interest of the maritime community beyond the period of support by Erasmus+ and how the roll-out will be implemented national/regional level with relevant governmental and sectoral authorities.

The main expected result is to maintain Europe's leadership in maritime knowledge by making the sector more attractive, and to this end, to set the scene for the development of transnational partnerships in the maritime sector in order to establish a sustainable skills strategy for maritime and related activities, both at sea and on land. Such a strategy will ensure that training, shipping industries, maritime professionals and – most importantly – technology development and innovation will progress towards new achievements in a more structured, coordinated and collaborative manner.

⁴⁷ European Transport Workers' Federation, Future-proof skills for the Maritime Transport Sector: <https://www.etf-europe.org/activity/skillsea/>

⁴⁸ SkillSea website : <https://www.skillsea.eu>

⁴⁹ For instance: SkillSea D3.6. BLUEPRINT Maritime Shipping Portal and D2.2 Educational Packages for specified skills (M48)

⁵⁰ SkillSea D2.3. Structural cooperation

Additional expected outcomes also include:

- to ease the mobility of seafaring labour
- to improve cooperation and synergy between education providers, maritime authorities and the industry in order to attract greater numbers of Europeans into maritime employment and equip them with the skills necessary to meet the sector's changing needs
- to ensure that seafarers enjoy long and rewarding maritime careers, both onboard ships and in the shore-side clusters that support the seagoing industry
- to better match the industry's skills needs with educational programmes for training maritime professionals
- overcoming barriers to the mobility of maritime professionals
- to ensure that Europe retains world-leading access to maritime skills and experience for improved competitiveness

4. WP5 recommendations for a long-term sustainable skills strategy

Today, there is simply no platform or structure where the main maritime transport stakeholders (industry, trade unions, research, education and training institutes, competent national, regional and EU authorities) can gather and exchange on the topic of skills at a European level. Of course there are several organisations but they are not meeting in a multi stakeholder setting. In order to address this shortcoming, one of SkillSea's objectives is to establish such sustainable cooperation through a network of main stakeholders. This is the purpose of the European Maritime Skills Forum (E-MSF) proposition detailed in Chapter 5.

To understand the initial situation and the needs and drive towards what is assessed to be the most appropriate and effective tool, it was important to investigate whether such cooperation structures exist in some member states and in Europe. And, if yes, how they are organised, and what are their main objectives and activities. The whole picture is described in Annex 7 and provided some food for thoughts about the needs and objectives for an E-MSF.

Aside of this broad picture, as described in Chapter 2, WP5 conducted a survey and further discussions to draw the framework of such structure. The results are listed in the chapter below which explains all the aspects that were stressed as relevant to take into account for the development of the E-MSF and to be able to support the ambitions of the project.

4.1 NETWORKING AND CONSENSUS-BUILDING

4.1.1 Implementation of regular events based around employment and training

This topic is the basis to implement the roadmap. It is assessed as necessary for METs and industry to share on various items: skills; training; career paths and opportunities; new jobs; mobility; recycling; updates of competences; updates on regulations; etc.

4.1.2 Mechanism of cooperation between maritime education centres, competent authorities, and the shipping community: stakeholder engagement strategy

Our study concluded that a wide forum beyond METs themselves and including MET stakeholders is deemed necessary. The proposed name for it is the European Maritime Skills Forum (E-MSF) as mentioned earlier in this report. Several points were raised to take in consideration regarding the E-MSF:

- It aims to go beyond a METs membership only
- It was suggested to invite and actively involve EMSA
- Discussions within E-MSF should include topics related to the legislation for pan-European degrees and certificates
- The MET-NET network (D2.3) would support the E-MSF, and vice versa.

4.2 FINANCIAL SUSTAINABILITY

4.2.1 Maintain the ongoing SkillSea project after 2022

To be sure that the work done during the project keeps on going and generates effects as desired after its conclusion, several considerations were pointed out:

- The E-MSF initiative, to gather maritime clusters, industries, employers and employees and so on should be done at nil or minimum cost to ensure their full and entire collaboration and participation
- In the short term the organisation of E-MSF can be done by MET-NET, ECSA and ETF. In the long-term a coordinator or coordination structure would be necessary to drive the E-MSF
- Therefore, close attention on the financial aspect is considered necessary to make the MET-NET and E-MSF initiative sustainable

4.2.1 Beyond the term of the SkillSea project: which funding mechanisms and programmes could be used?

As stated previously, this topic is of big importance to support the sustainability of SkillSea results and legacy after the period of the project. However, it can't be done without taking into consideration the framework and purpose of what are the expected continuation of Skillsea initiatives after the project ends, as well as the conditions to apply for specific grant programmes. A description and explanation of the few potential funds – such as Erasmus+, Horizon Europe, etc. - to support the E-MSF initiative is given in annex 6.

4.3 MISCELLANEOUS SET OF RECOMMENDATIONS

4.3.1 With regards to maritime training programmes in the European Union

This section sets out the proposals related to educational and training programmes that we gathered and are relevant to get tangible results in terms of sustainable skills strategy:

- It seems necessary to offer training sessions throughout a career and not just at the beginning or for reskilling
- The STCW standards are a minimum regulation to respect, but may not be enough with regards to EU demands in areas such as leadership, communication, and English language skills
- Soft law could contribute to solving the issue of mobility inside the EU, for instance with regards STCW attestation. EU legislators and national authorities should be involved to perform necessary evaluation
- MET training sessions should be more developed in exchangeable modules to offer flexibility
- English skills should also be taken as a priority for development. It would foster mobility within METs for training sessions to be performed in a common language
- It would be dangerous to focus exclusively on future needs: the basics should not be set aside, as they underpin the quality of the EU seafarers.

4.3.2 With regards to sustainable maritime jobs

On this topic, several propositions were made in order to guarantee smart and safe jobs at sea:

- Mobility and flexibility are key factors to improve. This is valid for various areas: from sea to shore jobs, for mobility or recruiting out of the maritime sector, for instance
- A better understanding and transcription of the actual labour market and identification of equivalence and gateways to or from the maritime sector is necessary. This could also help to propose land-job-equivalent skills validation for the mobility of seafarers
- A better identification, knowledge and use of possible aids to integrate training or reskilling programmes is also important
- The European Commission should do more to promote and value maritime careers and opportunities

4.3.3 With regards to the improvement of the quality of education for upskilling and reskilling of seafarers

On that topic, the consultation performed led to the following statements:

- The cooperation between METs should be improved, for instance through MET-NET
- Also, the interaction and opportunities for young people to discover the maritime sector should be seriously emphasised (for instance through more proposition of stages, thesis, apprenticeship periods, testimonies from former alumni, etc).

5. European Maritime Skills Forum (E-MSF)

5.1 PURPOSE AND OBJECTIVES

5.1.1 Introduction

It is necessary to distinguish between the MET cooperation structure (MET-NET) set in place within SkillSea, and the European Maritime Skills Forum (E-MSF) which is another form of cooperation that will be launched after SkillSea project conclusion. A more detailed description of the differences between the two includes:

- MET-NET only links organisations involved in education on the different relevant levels and is focused on education. MET cooperation recognises that all members navigate the same seas and have a different background in various educational systems in Europe. It aims to develop more structured cooperation between METs to define learning objectives and outcomes on new skills needs and develop educational packages to assist in updating and upgrading all levels of maritime education, training and certification for maritime professionals to ensure the high quality of trained professionals onboard the vessels.
- The E-MSF would connect together all organisations involved in strategy, education and research. It has a broader perspective than just education and training. It will be launched after the SkillSea project, as described later in this chapter, as the main legacy and solution to endorse all the necessary efforts to develop a comprehensive scalable sustainable maritime skills strategy.

The descriptions and explanation in this chapter should be considered as a proposal for the E-MSF. Obviously, it is up to partners in the E-MSF to decide about aims, objectives, activities and all other issues regarding their cooperation.

5.1.2 Vision of the E-MSF

To sustain world-leading maritime skills and competencies.

5.1.3 Mission

To promote knowledge and experience sharing between all stakeholders of European maritime education and training, in order for them to promote excellence and innovation to sustain the skills and competencies required to meet the current and future needs of the maritime labour markets.

5.1.4 Objectives

Its core objectives derived from its mission are:

- To contribute to knowledge-transfer
- To provide a forum accessible to all stakeholders (maritime transport sector, trade unions, research, education and training institutes, public authorities) where they could easily share knowledge to create a dynamic wealth of information that could be exploited for educational and research purposes
- To be able to identify and track the new skills needed and imposed by technological and societal changes
- To bridge the gap between academia, training centres and schools, trade unions, maritime industry, private sector and (local, regional, national or European) public authorities
- To stimulate the sharing of expertise, knowledge, experiences, contents, tools, perspectives, methodology, procedures, best practices or constraints, restrictions between all stakeholders
- To disseminate maritime transport evolution and opportunities

- To foster SkillSea solutions for shipping and maritime industry problems related to the lack of skills of people

5.1.5 Role of the E-MSF

The E-MSF facilitates the dissemination of the flow of reciprocal knowledge crucial to maritime European competencies involving all stakeholders with a need for expedient and future-proofed maritime knowledge and skills.

Its scope covers local, regional and national levels for the benefit of the European Union.

The E-MSF has an important role for its members as it improves and enlarges their information sharing, knowledge capacity and awareness. It also enhances European cooperation through overcoming regional differences, transferring good practices from all over Europe and outside conventional corporate networks, and benchmarking for a better decision-making.

The E-MSF will be a unique forum for seafarers, governmental and non-governmental agencies, regulatory bodies and academic, education and industrial specialists in the maritime sector to share knowledge, analysis and best practices, to raise awareness, to create synergy, to improve educational systems and programmes for the sector, to match maritime transport needs and requirements, and to identify and set up adapted finances.

Major trends and impacts, like green technology and evolution of digitalisation, would be a significant part of the forum because of their critical role for shipping skills. Nevertheless, any topics related to the E-MSF objectives would offer a good opportunity (in line with the 'wheel' explained in D3.1).

More importantly, the E-MSF will have a critical role in assisting the MET-NET for skills gaps identification.

5.1.6 Expected activities and results for the E-MSF

Based on the previous framework, here are the activities the E-MSF could perform:

- **Networking and dissemination:**

Through the organisation of networking activities (i.e. conferences, seminars, workshops) as:

- The E-MSF would be a platform to connect different stakeholders
- It would enable a fluid communication between national authorities, regulators, industries and universities
- Through conferences, projects and networking activities, the E-MSF could provide a wide range of opportunities internally and externally for curriculum development, sharing of best practices, and cross-sectoral synergies
- The E-MSF could be used as a networking database. The development of a dedicated webpage on the SkillSea website would contribute to the dissemination of the events, networking, knowledge-sharing, and promotion.

- **Knowledge-sharing and reciprocal understanding**

Through the organised activities, the E-MSF intends to stimulate the sharing of understanding between all stakeholders. This includes expertise, experiences, contents, perspectives, constraints or restrictions.

While it improves the information, knowledge and awareness of its members, the E-MSF would therefore have an important role in their policy-making processes. Through the transfer of knowledge and good practices from all over Europe and outside conventional corporate networks, E-MSF will contribute to enhance European cooperation by overcoming regional differences.

- **Research projects and funding:**

- The E-MSF could help identify and provide experts (individuals or teams) for international projects and consultation on various sectors to support the interest of EU sustainable skills and jobs strategies and actions
- The E-MSF could be recognised as a means to exchange EU-funded research
- Contribute to the development of new grant proposals
- The creation of a common gateway website could support the completion and implementation of EU-funded (research) projects related to METs or maritime transport

5.2 EXPECTED OVERALL BENEFITS

The E-MSF would be a unique forum where members - as long as they have a strong focus on improving employability and competitiveness for European maritime professionals - can join for direct dialogue with key stakeholders, whether they are from industry, national and public authorities, social partners, interest organisations and higher education, training institutions, etc.

This forum for cooperation would provide easy access to each other, plus regular updates on new knowledge, fast feedback from members, holistic views on various topics, leading to possible synergies on multiple areas such as ad hoc projects, industry-education cooperation, support to authorities, legal work, etc.

The assessed benefits for involved stakeholders are detailed below.

5.2.1 Benefits for education institutions and students

- To build trust and to share with competent authorities, industry, NGOs, etc
- Possibility to work on improving employability and competitiveness for European maritime professionals
- Direct dialogue with a broad cross-section of industry regarding the need for skills upgrading and revision of training programmes and offerings (including upskilling, reskilling)
- Cross-border and cross-sectorial sharing of knowledge
- Connections with companies abroad
- Share comprehensive presentations on new trends and joint ideas
- Possibility to work on the removal of barriers to mobility (of ideas, staff, students) and to address transferability issues in order to increase learning and professional mobility as well as raising lowest educational level
- Increased opportunities for student mobility and direct cooperation projects with industry
- Facilitate cooperation with stakeholders, communication and exchanges of best practice through the use of adapted digital systems
- Shared voice for consultancy in relevant matters and appropriate committees
- Participation and contribution in revisions and adaptations of tools for maritime transport
- Development of a comprehensive strategy to improve attractiveness of maritime careers and labour mobility

5.2.2 Benefits for Higher Education Institutions (HEI) and for students

- Fostering knowledge development and MET cooperation
- Getting information on the necessary skills to be able to develop learning objectives and outcomes on the most needed subjects
- Validation of learning objectives and outcomes of educational packages within E-MSF
- Cooperation in developing possible project consortia

- Improving educational packages on relevant skills
- Facilitating and solving transferability and mobility issues (ideas, staff, students)

5.2.3 Benefits for the industry

- Direct dialogue with relevant stakeholders to understand regulatory frameworks on skills, sharing high-quality and state-of-the art knowledge, future-proof education and flexible upskilling and reskilling opportunities
- Fast track to implement relevant skills through needs-based training and reciprocal knowledge exchange
- Reinforcement of synergy and collaboration within research, projects and scientific articles
- Deep-dives into relevant areas of interest, providing expertise and time to work on problem-solving, innovation and developments, e.g. finding partners for projects or students/internships to solve located problems/areas of interest for which there is never time in everyday life...
- Closer ties between METs and the industry helping to overcome mismatches between trainings and market skills demand
- Possibility to reach out with universities directly to propose relevant educational packages and courses

5.2.4 Benefits for national authorities

- Working on the improvement of employability and competitiveness for European maritime professionals
- Direct dialogue and cooperation with industry and education institutions to understand the impact of legislation regarding relevant future-proof education, flexible upskilling and reskilling opportunities, transferability, mobility, etc
- One large-scale audience to consult
- Direct dialogue with peer authorities to share strategies and action plan recommendations depending on national context and priorities
- Real-time information on industry solutions
- Dialogue with transnational bodies
- Possible connection point to set up development or research projects
- Representation in national and European deliberations
- Possibility to follow work on new legislation at European and international level

5.2.5 Benefits for other organisations and stakeholders

- Coordinated lobby strategy - one large alliance to consult, intensified outreach, access to broader representation base, consultancy, strengthening of legitimacy
- Sharing knowledge across sectors
- Possibility to influence maritime education institutions for relevant education, and courses
- Possible connection point for development projects, research projects etc
- Direct dialogue with national authorities

5.3 SUGGESTIONS REGARDING THE POSSIBLE STRUCTURE AND ORGANISATION

5.3.1 General principles

The idea of the present deliverable is not to propose a complete structure but rather to offer general principles that could lead to the construct of such an organisation.

The E-MSF would be an open network for all relevant maritime stakeholders. To animate it and ensure that activities are initiated and conducted for the benefits of all members, a coordination body could be necessary. On a voluntary basis, and with the support of MET-NET, social partners could coordinate the run of the E-MSF and driving its development as necessary.

5.3.2 Finances/fees

In order to make the network attractive and inclusive, its membership and participation in events should be free of charge. Therefore, the need for funding the E-MSF will need to be thoroughly explored. As a suggestion here is a list of most relevant funds that were identified as a possibility to sustain the forum, obviously depending on the content of its activities:

- INTERREG EUROPE
- COST ACTIONS
- European Social Fund Plus (ESF+)
- Erasmus+
- Horizon Europe
- European Globalisation Adjustment Fund for Displaced workers (EGF)
- European Maritime Fisheries and Aquaculture (EMFAF)
- Digital Europe Programme
- REACT-EU
- European Fund for Regional Development (ERDF)
- Specific national grant programmes for innovation (such as the WBSO R&D tax credit scheme in the Netherlands, or the Research Tax Credit (IRB) in France,
- Specific national grant programmes for education (such as the SMarT funding in the UK, the Regional Development Fund in the Netherlands)

These are a wide variety of European, national, and in some cases regional grant programmes. They cover a large spectrum of areas such as research, innovation, training and education, social or regional development. A complete picture of the funds that could potentially contribute is provided in annex 6, which gives a detailed description of their purpose and explanation of their use.

6. Roadmap and sustainability measures

6.1 GENERAL COMMENTS

The E-MSF will not be established and implemented during the SkillSea project time life. It is a large undertaking that will need time to be set up because:

- The audience for this forum is much bigger than the SkillSea consortium and will need time to reach its full size
- The objectives and core activities must be clearly decided by the actual partners
- The organisation, structure and governance must be clearly decided and established
- As explained earlier, a direction and some finances will be required

Once launched and set-up, E-MSF will have to:

- Build trust among stakeholders from different backgrounds
- Increase information exchanges and sharing processes
- Inspire development in various sectors, with possible contributions from other parties, such as educational packages, evolution of the STCW standards, or mobility
- Enhance dissemination and promotion of maritime transport

6.2 STEPS

The first round should be organised at a central level. SkillSea partners could support the launch and the first steps to build the forum, inviting new members from their networks and clusters to join.

The forum would gather policy makers at European, regional, national, business and institutional level for developing and revising the most appropriate and effective policies, providing an accurate and rapid source of information for strategy input.

The general roadmap proposed to set up a running and functional E-MSF is as follows:

- **Short-term (1 year)**
 - Precise elaboration of the definition, framework and missions of the forum
 - Clarification of the financial aspects
 - Launch of the E-MSF
- **Mid-term (2-5 years)**
 - Test of the structure
 - Conduct of events
 - Building of the E-MSF community
 - Consolidation of the financial aspects and support
 - Accumulation of feedback on the organisation, interest, limits
- **Long-term (more than 5 years)**
 - Lessons learnt taken into account
 - E-MSF fully operational and running

Actions	2024	2025-2028	After 2028
SETTING THE BASICS FOR THE E-MSF			
Build up the structure and framework : <ul style="list-style-type: none"> - preliminary participants & stakeholders - main roles - clarification of the financial aspects 	X	Test and update accordingly →	
Set the objectives	X	Update →	
Set the planning of activities and battle rhythm	X	Update →	
Launch the E-MSF	X		
INFLUENCING			
Periodic events with ESCO		X	Periodic →
NETWORKING, DISSEMINATION, AND KNOWLEDGE SHARING			
Build up the community		X	Update →
Develop a dedicated website		X	Update →
RESEARCH PROJECTS & FUNDINGS			
The e-MSF provides experts for consultation		X	Continuous →
Evaluate EU grant programmes		X	Permanent →
Contribute to EU grant programmes		X	Permanent →
Webpage on MET-NET Website to support identification and implementation of EU projects.		X	Permanent →

Table 1: E-MSF Roadmap / timetable & enablers

ANNEX 1 - QUESTIONNAIRES

Except for the internal questionnaires, the survey for external participants was performed online. Here are the links:

- For external METs : <https://forms.gle/5Vm722ebfuW4Qj1A7>
- For external shipping companies : <https://forms.gle/LrDKAN5EDgaxQiTE9>
- For external competent authorities : <https://forms.gle/tLmnZRQw28wPnNee6>

ANNEX 2 - RESPONDENTS TO THE QUESTIONNAIRES

The questionnaires were preformed online.

- For external METs : <https://forms.gle/5Vm722ebfuW4Qj1A7>
- For external shipping companies : <https://forms.gle/LrDKAN5EDgaxQiTE9>
- For external competent authorities : <https://forms.gle/tLmnZRQw28wPnNec6>

Internal questionnaire (five responses)

All anonymous

Questionnaire for institutions responsible for training (METs)

There were 16 responses:

- CETMAR (Technology Centre of the Sea)
- German Federal maritime and hydrographic Agency
- Lycée professionnel maritime (Saint-Malo, France)
- Maritime Crew Management and Training
- Maritime Technology Cluster (FVG)
- STC Group
- University of Nantes (France)
- Université de Bretagne occidentale (western Brittany, France)
- Centre européen de formation continue maritime
- Center for the Study of Survival Practice (CEPS, France)
- La Touline (France)
- Five anonymous submissions

Questionnaire for companies

There have been five responses:

- A shipping training and consulting company
- A shipowner
- The Italian Shipowners' Association
- Two anonymous answers

Questionnaire for government authorities

Only one response from external stakeholders was collected:

- OPCO Motilities (Skills operator for mobility professions, France)

ANNEX 3 – FOCUS GROUP TO SHARPEN AND CONSOLIDATE THE WP5 QUESTIONNAIRE ANALYSIS.

Regarding the definition of a long-term sustainable skills strategy, three focus groups were organised on the following topics:

- Networking and consensus building
- Financial sustainability
- General set of recommendations and guidelines

These involved representatives from each WP in order to consolidate and refine the conclusions and recommendations.

Items to develop	WP1	WP2	WP3	WP4	WP5
1. Networking and consensus building					
1.1. Implementation of regular events based around employment and training	NTNU	SIMAC	EEF	MOMICE	FORMARE SGMER
1.2 Mechanism of cooperation between maritime education centres, competent authorities, shipping community: stakeholders engagement strategy					
2. Financial sustainability					
2.1 Maintain the ongoing SkillSea project after 2022	NTNU	SIMAC	EFF	STC	FORMARE / SGMER SGMER
2.2 Beyond the term of the SkillSea project: which funding mechanisms and programmes can be used?					
3. Set of recommendations and guidelines					
3.1. An overview of maritime training programmes in the European Union	NTNU	SIMAC	EFF	STC	FORMARE SGMER FORMARE / SGMER
3.2 Sustainable maritime jobs : how to guarantee smart and safe jobs at sea?					
3.3 Exchanges of good practices to improve the quality of education for upskilling and reskilling of seafarers					

Table 2: WP questionnaire analysis

ANNEX 4 – SYNTHESIS OF THE QUESTIONNAIRE RESULTS REGARDING THE DEFINITION OF A LONG-TERM SUSTAINABILITY STRATEGY

RESULT ANALYSIS

Internal questionnaire (five responses)

Respondents to the questionnaire believe that it is legitimate to promote a sustainable partnership between education, training providers and the main maritime industries. They are also all in favour of the evolution of training to better respond to future skills needs, especially digital ones. The possibility of achieving such a partnership remains less clear. Only 40% of respondents believe that such a partnership is possible in practice, while 60% of respondents remain neutral about such a possibility. This relative restraint can be explained by two main criteria:

- Respondents were sceptical that industry would be interested and emphasised that costs must be kept moderate to avoid driving industry away.
- Respondents also fear that industry will lose interest in the process because it is impossible to discern the added value of such training. It would then be a matter of making the approach known to industrialists by highlighting its added value. On the other hand, the respondents underline the need to involve the industrialists in the process by allowing them to identify the needs for skills upgrading and to transmit this information to the training centres.

The questionnaire highlights the fact that the most popular framework for defining a sustainable skills strategy is the European level (see graph below). Maritime professionals and shipping companies are unanimously designated as the most appropriate to define such a strategy. The institutions providing training programmes are next in line. There is no consensus on the role of European or national political authorities, trade unions and social partners in the development of such programmes. Respondents also stress that researchers, think-tanks and the prospective work of major institutions (IMO, BIMCO, etc.) should also be better taken into account.

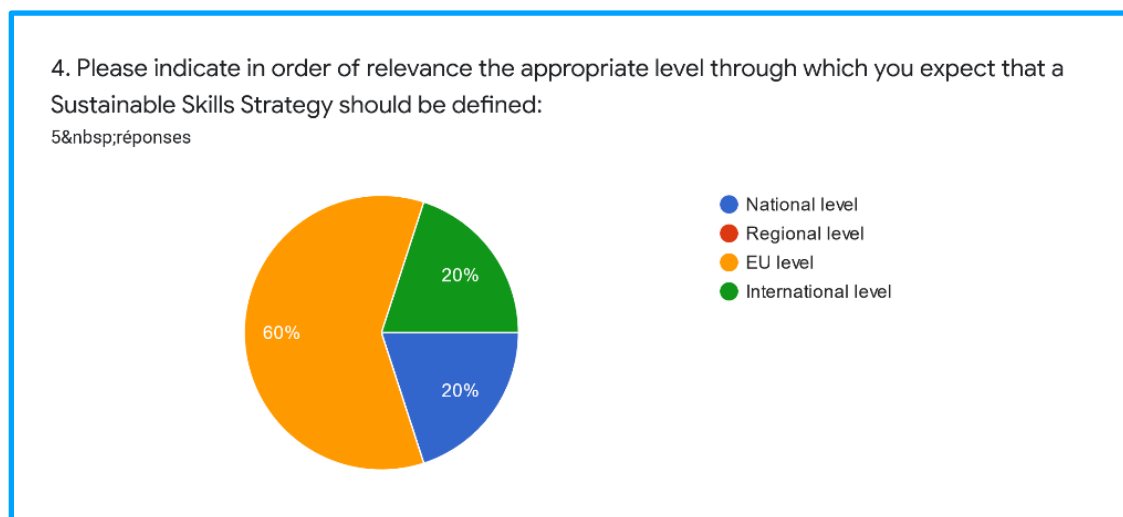


Figure 1: Relevance level

Regarding the expected changes in training programmes, the respondents believe that it is necessary to make the concept of lifelong learning effective. To reinforce this, the respondents insist on the need to use new technologies to enable additional training while remaining on the job/in service. This possibility of distance learning - off-line and on-line - is based on the Seably platform (www.seably.com).

To better orient young people towards maritime jobs, respondents suggest facilitating access to internships or training to acculturate young people to the maritime ecosystem, during their studies, by offering them the opportunity to meet people working in these industries. The use of apprenticeships is seen as a solution by respondents.

60% of the respondents consider it necessary to facilitate the transition from careers at sea to careers on land. To do so, the use of distance learning courses is once again requested. Respondents also suggest the implementation of career presentations on land, the use of alumni and the recognition of equivalence between skills on land and at sea. 80% of respondents are in favor of the internationalisation of non-compulsory training to reinforce the adaptability of personnel and improve their training. Respondents also indicated that mobility should not only be thought of as a simple return trip between sea and land, but also include people with non-maritime backgrounds.

The respondents were in favour of creating a consultation mechanism to adjust the sustainable skills strategy. The organisation of events, seminars or working groups with the actors of the sector seems to be important for the respondents, as well as mobility between the training centres. However, they are relatively sceptical about the possibility of real mobility between training centres. This is one of the reasons why they are not in favour of the specialisation of training centres. This would require that courses be available in one language for all, and not all students necessarily have a sufficient level of English. If some specialisation is possible, the training centres must be able to provide all the expected courses. The majority of the responses indicate that the cooperation mechanisms between the training centres are insufficient.

Respondents seem to indicate that there are already sufficient discussion arenas at the national level with the competent authorities. Nevertheless, they call for the creation of European arenas, notably in partnership with the European Maritime Safety Agency (EMSA), or in the framework of the E-MSF.

All the respondents stress the need for dialogue with the European Commission to promote maritime careers. They also stress the need for European funding to ensure the sustainability of the project. However, the need for funding from training institutions was also emphasised. Respondents unanimously suggest a coordinator to ensure sustainability. Among the suggestions mentioned by the respondents, the need for greater interaction with the IMO came up several times.

Questionnaire for institutions responsible for training (16 responses)

75% of respondents believe that it is very relevant to establish a sustainable partnership between education, training institutions and industry. In order to strengthen the cooperation between these different actors, the respondents suggest organising more regular meetings. Two methodologies are proposed in this regard: either to rely on specific institutions to organise these meetings (national coordination committee, economic and scientific strategic orientation council (COSES), ad hoc committees); or to organise bilateral or multilateral events (visits to training centres, creation of working groups).

According to the respondents, the actors most competent to establish the sustainable skills strategy are, in order: shipping industries; training institutions; government authorities; academics; social partners; and think-tanks. In general, almost 80% of the respondents believe that it is necessary or absolutely necessary to establish consultation mechanisms in order to establish a long-term training strategy. According to them, the mechanisms for lifelong learning are currently insufficient. The reason for this is that the programmes are aligned with the STCW Convention, which sets only minimum standards that may not be sufficient. Some respondents also emphasise the heterogeneity of training programmes from one organisation to another. More generally, in order to meet the demand for manpower from companies, the respondents call for the establishment of regular exchanges with industrialists in order to know their needs. The possibility of facilitating these through CIFRE ⁵¹ is also put forward.

62% of the respondents affirm that it is necessary to facilitate bridges to shore-based jobs and to encourage reconversions. Several responses also propose the introduction of regular shore time for seafarers to develop their skills. The respondents also underline the need to better inform seafarers of possible careers ashore, and to offer them additional training modules for this purpose and/or to create a platform for the deposit of CVs and offers (in connection with public and private job search organisations). In this area, 64% of respondents would like to strengthen the internationalisation of non-mandatory training programmes. Nearly two-thirds of respondents believe it is necessary to develop mobility between training programmes. The respondents particularly insisted on the need to match the two worlds, both in the model of the courses given during training, and by establishing places for dialogue between trainees and trainers (through internships, apprenticeships or simple meetings with professionals).

Questionnaire for companies (five responses)

- A shipping training and consulting company
- A shipowner
- The Italian Shipowners Association
- Two anonymous answers

Maritime companies are more reserved about the relevance of a sustainable partnership with training organisations (40% of respondents do not find it relevant). Companies would like to strengthen consultation mechanisms with training organisations through greater sharing of experience, which could take the form of thematic workshops, innovation platforms, MoUs or with the help of think-tanks.

Companies feel they are best placed to define the sustainable skills strategy. Training organisations and government authorities are the next most important. Companies also consider think-tanks to be more proficient than trade unions and social partners, which come last along with research organisations.

Questionnaire for government authorities (only one response):

According to the sole respondent, the sustainable skills strategy should be promoted primarily at the national level, then at the regional, European and international levels. The respondent sees little need to establish consultation mechanisms between stakeholders to develop a sustainable skills strategy.

⁵¹ Conventions Industrielles de Formation par la Recherche

According to the respondent, the continuous updating of the skills of flight crews is ensured by continuous training.

To facilitate dialogue between national and European institutions, the respondent suggests strengthening the work in collaboration with the CNPE⁵² Maritime. The respondent remains neutral regarding the proposal for more regular interaction with the EU to promote blue careers.

The respondent wishes to encourage the financing of training for French contracted seafarers and to accompany the promotion of the professions, without indicating a source of financing.

⁵² Centrale Nucléaire de Production d'Electricité

ANNEX 5 – TABLE SUMMARY OF THE QUESTIONNAIRE RESULTS

The unrefined summary of recommendations regarding options and recommendations for a long-term sustainable skills strategy is depicted in the table below.

Items to develop	Responses
1. Networking and consensus building	
1.1. Regular events based around employment and training	Assessed as necessary for METs and Industry to share on: skills, training, career paths and opportunities, new jobs, mobility, reskilling, updates of competences, updates on regulations, etc.
1.2 Mechanism of cooperation between maritime education centres, competent authorities, shipping community: stakeholders' engagement strategy	Assessed as necessary. Propositions are : <ul style="list-style-type: none"> - Forum or arenas at EU Level, that would include EMSA - Decline the training sessions in exchangeable modules - Work on the legislation to give pan-European degrees and certificates - Stakeholder forum (E-MSF) as a tool of the MET-NET)
2. Financial sustainability	
2.1 Maintain the ongoing SkillSea project after 2022	<ul style="list-style-type: none"> - Mandate a coordinator post-project (such as EMSA, even if it would be difficult as their mandate is different) - Make sure the involvement of industry and employers is requested at low cost for them (to be sure they join and contribute) <p>Remark: In addition (out of the questionnaire area), study the sustainability of MET-NET.</p>
2.2 Beyond the term of the SkillSea project: which funding mechanisms and programmes can be used?	<ul style="list-style-type: none"> - ERASMUS+ among others - Existing national funds to sustain training programmes and employment - It is necessary to analyse the essential minimum requirements that stakeholders would need to give in order to support MET-NET

3. Set of recommendations and guidelines	
3.1. An overview of maritime training programmes in the European Union	<ul style="list-style-type: none"> - Propose training sessions all along a career (not just at the beginning or for reskilling?). - STCW is OK but may not be enough in some areas - Training courses delivering STCW attestation do not guarantee mobility inside EU Legislators (EU/national authorities) must be involved in the necessary evolution - While focusing on future needs, we should not forget the basics (and what makes the quality of the EU seafarers) - - Mobility within METs or training sessions means common language i.e. English. English skills must also be taken into account in the skills to develop
3.2 Sustainable maritime jobs: how to guarantee smart and safe jobs at sea?	<ul style="list-style-type: none"> - Mobility and flexibility are key factors: sea/land jobs, mobility out of the maritime sector, recruiting out of the maritime sector (meaning to study the labour market and identify equivalence/gateways), propose 'land job equivalent skills' validation, financial aids to identify and help training/reskilling (reference Skills Beyond the Sea) - The EU Commission should promote and value more the maritime careers and opportunities
3.3 Exchanges of good practice to improve the quality of education for upskilling and reskilling of seafarers	<ul style="list-style-type: none"> - Improve the cooperation between METs - Create forums, around MET-NET - Consider also existing draft plans for the stakeholder forum - Improve the interaction and opportunities for young people to discover the maritime sector (stage, thesis, apprentice, testimonies from alumni, etc).

Table 3: Summary of the questionnaire results

ANNEX 6 – ANALYSIS OF FUNDS THAT COULD BE USED IN ORDER TO SUSTAIN THE E-MSF

This annex provides an overview of relevant grant programmes which could support realising the objectives of the E-MSF. As a reminder, the objectives of this forum are focused on research, education and training in maritime transport, as well as establishing an improved cooperation between stakeholders in maritime transport at a local, regional, national and European level. Those considerations were important to identify the potential funds to support the E-MSF initiative.

With regard to grant programmes, it is important to keep in mind that – in particular concerning education and training – the division of responsibilities for education between the European Union and the member states is very strict. EU member states are fully responsible for the organisation and the arrangement of education in their countries. As such, a European education policy is non-existent. Meanwhile, the EU supports member states in defining common goals, in particular concerning themes that are relevant for all member states. Examples of these themes are reduction of early school-leavers, transnational educational collaboration, student exchange and cooperation between European educational institutes and universities in other parts of the world.

A strong distinction in responsibilities between the EU and the member states as mentioned above does not exist in the field of research and innovation. The EU implements a common policy for research and innovation. The aim of this policy is to develop Europe into a dynamic and competitive knowledge economy.

The European Commission, EU member states, and in some cases regional or even local authorities have been developing grant programmes which aim to stimulate research and development, educational innovation, collaboration between education providers and companies, skills development of employees and employers, and so on.

In the following paragraphs, we describe a large number of European, national, and in some cases regional grant programmes. They cover a large spectrum of areas such as research, innovation, training, education, social or regional development. Obviously, the overview demonstrates large differences between specific grant programmes in the different member states. As much as possible, for the European grant programmes mentioned hereafter and that are well-known amongst research institutions, public and private training providers, government bodies, and other stakeholders in Europe, a reference to their website is added for further details about their content and condition to apply.

INTERREG EUROPE

The objective of this programme is to improve the effectiveness of public policies by facilitating the exchange of good practices between public partners throughout Europe.

Priorities below:

- **Smarter Europe:**
 - Research and innovation capacities, uptake of advanced technologies
 - Digitisation for citizens, companies, research organisations and public authorities
 - Sustainable growth and competitiveness of SMEs and job creation in SMEs, including by productive investments
 - Skills for smart specialisation, industrial transition and entrepreneurship
 - Digital connectivity
- **Greener Europe, all specific objectives:**
 - Energy efficiency and reduction of greenhouse gas emissions
 - Renewable energy
 - Smart energy systems, grids and storage
 - Climate change adaptation, disaster risk prevention, resilience
 - Access to water and sustainable water management

- Circular and resource efficient economy
- Protection and preservation of nature and biodiversity, green infrastructures, pollution reduction
- Sustainable urban mobility for zero carbon economy
- **More social Europe, the following selected specific objectives:**
 - Effectiveness and inclusiveness of labour market, access to quality employment, social economy
 - Equal access to health care, health systems resilience, family-based and community-based care
 - Culture and tourism for economic development, social inclusion and social innovation
 - More connected Europe
 - Climate resilient, intelligent, secure, sustainable and intermodal TEN-T
 - Sustainable, climate resilient, intelligent and intermodal national, regional and local mobility
- **More social Europe, the following selected specific objectives:**
 - Accesses to education, training and lifelong learning, distance and online education and training
 - Inclusion of marginalised communities, low-income households and disadvantaged groups
 - Socio-economic integration of third country nationals, including migrants
 - Europe closer to citizens
 - Sustainable integrated territorial development, culture, natural heritage, sustainable tourism and security (urban areas)
 - Sustainable integrated territorial development, culture, natural heritage, sustainable tourism and security (other than urban)

COST ACTIONS

The main goal of the COST Actions is to create networks that offer a space for collaboration among technical/research topics. COST does not finance research activities, but only networking activities to advance knowledge on the topic of the project.

There is no specific topic for this programme, any topics can be submitted.

EUROPEAN SOCIAL FUND PLUS (ESF+)

The European Social Fund Plus (ESF+) is the EU's main instrument for investing in people and supporting the implementation of the European Pillar of Social Rights. With a budget of almost €99.3 billion for the period 2021-2027, the ESF+ will continue to provide an important contribution to the EU's employment, social, education and skills policies, including structural reforms in these areas.

The Fund will also be one of the cornerstones of EU socio-economic recovery from the coronavirus pandemic. The pandemic has reversed gains in labour participation, challenged educational and health systems and increased inequalities. The ESF+ will be one of the key EU instruments helping Member States to address these challenges.

As part of cohesion policy, the ESF+ will also continue its mission to support economic, territorial and social cohesion in the EU – reducing disparities between member states and regions.

Support under the ESF+ is mainly managed by member states, with the Commission playing a supervisory role. For this reason, the specific support available is specified in national, and in larger countries sometimes regional, grant programmes, each of which having different priorities. Funding therefore takes place through:

- The shared management strand - implemented by member states in partnership with the Commission. These resources have a budget of roughly €98.5 billion for the programming period 2021-27
- The Employment and Social Innovation (EaSI) Strand - implemented by the Commission with a budget of close to €762 million for 2021-2027.

ERASMUS+

Through the years, the European Union has established large number of projects and grant programmes which support the developments in the themes mentioned. Since 2013, these grant programmes and projects have been united in the Erasmus programme. Since 2021, the programme is called Erasmus+.

Erasmus+ is the EU's programme to support education, training, youth and sport in Europe. It has an estimated budget of €26.2 billion. This is nearly double the funding compared to its predecessor programme (2014-2020). The 2021-2027 programme places a strong focus on social inclusion, the green and digital transitions, and promoting young people's participation in democratic life. It supports priorities and activities set out in the European Education Area, Digital Education Action Plan and the European Skills Agenda. The programme also supports the European Pillar of Social Rights, implements the EU Youth Strategy 2019-2027 and develops the European dimension in sport.

HORIZON EUROPE

Horizon Europe is the EU's key funding programme for research and innovation with a budget of €95.5 billion. It tackles climate change, helps to achieve the UN's Sustainable Development Goals and boosts the EU's competitiveness and growth. The programme facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges. It supports creating and better dispersing of excellent knowledge and technologies. It creates jobs, fully engages the EU's talent pool, boosts economic growth, promotes industrial competitiveness and optimises investment impact within a strengthened European Research Area. Legal entities from the EU and associated countries can participate.

Part of Horizon Europe are the Marie Skłodowska-Curie Actions (MSCA). MSCA focus on research and training but are not limited to higher research institutions. Several types of funding under MSCA exist (staff exchanges, PhD trainings, etc.). The MSCA staff exchange take place between organisations from the academic and non-academic sectors. The type of exchange can be inter-sectoral, international, interdisciplinary, etc. This action aims to help both research staff and administrative and technical staff involved in public research and innovation and private institutions to develop their knowledge, skills and career.

EGF – EUROPEAN GLOBALISATION ADJUSTMENT FUND FOR DISPLACED WORKERS

The EGF is a programme dedicated to the EU workforce. Its goal is to:

- help with looking for a job
- give career advice
- provide education, training and re-training
- provide mentoring and coaching
- promote entrepreneurship and business creation

This funding programme must be requested by individuals (not authorities).

EMFAF – EUROPEAN MARITIME, FISHERIES AND AQUACULTURE FUND

The EMFAF is the funding programme for maritime affairs and fisheries for the period 2021-2027. It is managed by member states (shared management) and the European Commission (direct management).

Some trainings can be funded. The priorities of the EMFAF managed by member states are different from a country to another.

DIGITAL EUROPE PROGRAMME

The goal of this programme is to foster digital transformation in Europe in companies, public administrations, and any area that accelerate the EU economy.

The priorities are:

- Specific objective 1 – High Performance Computing
- Specific objective 2 – Artificial Intelligence
- Specific objective 3 – Cybersecurity and Trust
- Specific objective 4 – Advanced Digital Skills
- Specific objective 5 – Deployment and Best Use of Digital Capacity and Interoperability

Several calls for proposals published per year on their [website](#).

EUROPEAN FUND FOR REGIONAL DEVELOPMENT

The European Regional Development Fund (ERDF) is outdated and already integrated in other funding programmes (https://ec.europa.eu/regional_policy/funding/react-eu_en). It aims at strengthening economic, social and territorial cohesion in the European Union by correcting imbalances between its regions. In 2021-2027 it will enable investments in a smarter, greener, more connected and more social Europe that is closer to its citizens.

The ERDF finances programmes in shared responsibility between the European Commission and national and regional authorities in member states. The member states' administrations decide about their specific priorities concerning which projects to finance and take responsibility for day-to-day management.

In 2021-2027, the fund will enable investments to make Europe and its regions:

- More competitive and smarter, through innovation and support to small and medium-sized businesses, as well as digitalisation and digital connectivity
- Greener, low-carbon and resilient
- More connected by enhancing mobility
- More social, supporting effective and inclusive employment, education, skills, social inclusion and equal access to healthcare, as well as enhancing the role of culture and sustainable tourism
- Closer to citizens, supporting locally-led development and sustainable urban development across the EU

NATIONAL GRANT PROGRAMMES IN RESEARCH AND INNOVATION

It is clear that the number of national grant programmes in research and innovation in all EU member states is huge. For this reason, only a small number of programmes are described in detail for example.

- **The Netherlands**

The WBSO R&D tax credit scheme is meant to stimulate innovation. With the WBSO, part of your costs and expenses for research and development (R&D) projects are compensated via your tax return.

For companies employing staff, the WBSO compensates part of the wage costs and expenses through the tax deduction for research and development (WBSO in Dutch). A self-employed entrepreneur can deduct an (annually set) fixed amount for R&D when filing his/her income tax return. Start-ups are given extra compensation for R&D work.

- **France**

The Research Tax Credit (IRB) is a generic measure to support business R&D activities, without sector or size restrictions. Undertakings which incur expenditure on basic research and experimental development may benefit from the IRB by deducting it from their tax under certain conditions. The IRB rate varies depending on the amount of the investment.

NATIONAL GRANT PROGRAMMES IN TRAINING AND EDUCATION

- **UNITED KINGDOM**

In the United Kingdom, there are also programmes that can finance projects or training.

- Free courses for jobs: this programme, managed at the national level, is designed to provide skills to individuals in domains like digital, engineering, manufacturing technologies, teaching, and lecturing, transportation operations and maintenance, etc.
- It is a great tool to access professional certificates. The main conditions to get this training are the age range, professional status, and the salary level.

- **THE NETHERLANDS – Regional Investment Fund**

The objective of the Regional Development Fund (in Dutch: *Regionaal Investeringsfonds*) is to improve the preparation of VET students for the current and the future demands on the labour market. This objective is realised by using state-of-the-art techniques and methods supplied by leading companies in the sector. During the years 2014-2021, 184 projects have been executed with a total investment of companies and government bodies of €350 million, and a grant in total of €175 million. Partnerships focuses mainly on three action lines, namely:

- Technology promotion (especially among young people): many children lose interest in technology after a certain age. In different events and activities (challenges, career events, assignments) business show how careers in technology look like and let them experience it as well. An important specific target group are girls, as they are under-represented in technological education programmes and careers. There are special events and programmes to also reach this big potential group.
- Attractive technology education: make sure that by working together closely as education providers and business, curricula stay up to date and entail enriched context of technology and innovation.
- Attractive jobs in technology is about recruitment (traineeships for instance) and how we are able to retain talent in our region by lifelong learning and development programmes and possibilities for mobility between companies in the region and keep upskilling our workforce in the region.

ANNEX 7 – STUDY: COLLABORATION STRUCTURES BETWEEN INDUSTRY, METs AND COMPETENT AUTHORITIES – SKILLSEA MEMBER STATES EXAMPLE

INTRODUCTION

The SkillSea application describes the need to influence government bodies with the results of the project. More concretely, the application describes the need to ‘install sustainable cooperation between industry, METs and competent authorities at a regional/national and European level’.

To develop the most appropriate and effective tools and instruments to achieve this result, it is vital to investigate whether such cooperation structures already exist in member states and in Europe, how they are organised, and which are their main objectives and activities.

A first inventory in the different SkillSea partner countries clearly indicated that collaboration structures between industries, METs and competent authorities exist and are active in most countries. Therefore, the assumption in the application that no such cooperation existed proved invalid. However, it also became clear that even though smaller groups of METs collaborate on European-funded projects, a structured (formalised) collaboration between European MET institutions is non-existent. A similar situation was observed regarding cooperation between research institutions in maritime transport. Perhaps due to the worldwide character of maritime transport regulations through IMO and others, the existence of a cooperation structure of national authorities on a European level is unclear.

Cooperation				
Stakeholder category	Industry	METs research	Authorities	Industry, METs, Authorities
Nationally	yes	yes	yes	yes
European	yes	no	?	no

Table 4: Cooperation structures

Considering these conclusions, it is obvious that an effective follow-up of SkillSea recommendations can only occur when member states' structures and operational policies are joined as much as possible.

OVERVIEW OF THE EDUCATIONAL STRUCTURES AND POLICIES IN EU MEMBER STATES

This section provides an overview of the national educational structures in the SkillSea partner countries regarding four essential subjects. VET education provides the largest portion of student education in maritime transport, so that the subjects will be described from the VET perspective. The overview specifies the following main subjects:

1. Involvement of national/regional/local authorities in VET
2. Innovation in education
3. Involvement of employers/employers
4. Lifelong learning

All SkillSea partners have contributed with a systematic description of the situation regarding several themes in VET in their country (for a complete overview, see annex). At the same time, STC conducted literature research to investigate the main differences and similarities in the VET landscape in Europe⁵³.

For an appropriate assessment of the following paragraphs, it is essential to remember that VET education is a responsibility of the European member states within the framework of several European arrangements. European ministers of Vocational Education and Training and the European Commission reached an agreement, known as the Copenhagen Process, to enhance cooperation to improve the quality of initial and continuing VET. This cooperation focuses on the professional development of teachers and trainers in the sector and making courses more relevant to the labour market. Developments in policies related to work-based learning can be supported by the exchange of experiences between member states. The development of a quality assurance framework (EQAVET) acts as a reference for member states to promote and monitor improvements and pave the way for the acceptance and recognition of skills and competencies acquired in a different member state or learning environment. The European Commission supports using the European credit system for vocational education and training, ECVET, for mobility purposes⁵⁴.

In the four chapters below, the findings of the surveys in the SkillSea partner countries and the STC research are combined.

INVOLVEMENT OF NATIONAL/REGIONAL/LOCAL AUTHORITIES IN VET

It is evident that the role of national/regional/local authorities in VET varies widely. Although in all European countries, national ministries (mostly of education) bear ultimate responsibility for VET education, in practice, that responsibility in many countries is delegated to other bodies. Below, the situation regarding the role of the government in several SkillSea partner countries is described.

In the Netherlands, the Minister of Education sets the framework (in law and other rules) in which individual schools should perform. There is no national curriculum, but there are attainment targets in general education. The school board is responsible for the school and the quality of education, including meeting the attainment targets. Funding of VET is based on a lumpsum amount per student.

In Norway, funding for tertiary vocational colleges is allocated to the county municipality by the Norwegian Directorate for Higher Education on behalf of the Ministry of Education. The respective county authorities may set their criteria as the basis for the distribution of grants. Still, the county municipalities shall contribute to meet the competence needs in the working life, in line with the objectives set out in the Ministry of Education's assignment letter for the operating funds. The Norwegian Maritime Administration oversees and approves the curriculum that complies with the STCW certificate requirements.

In Denmark, technical colleges and business colleges are independent institutions under the overall authority of the Ministry of Children and Education.

A solid central state presence in the organisation and funding of education characterises the French education system. The Department for National Education, Higher Education and Research regulates the French education system. The state defines the details of curricula at all education levels; it organises the teachers' admissions procedure, defines the content, recruits teachers who become civil servants, provides them with in-service training; it recruits and trains inspectors responsible for

⁵³ Vocational education and training in Europe, 1995-2035, Cedefop reference series 114, 2020; The importance of being vocational. Challenges and opportunities for VET in the next decade, Cedefop ETF, 2020.

⁵⁴ European Parliamentary research Service, 2021.

controlling the quality of the education system; it is the main funding body of the public education system.

In Greece, the central administrative body for the education system across all fields, agencies and levels is the Ministry of Education and Religious Affairs. It takes the key decisions related to long-term objectives. It regulates various issues, such as curricula content, staff recruitment and funding.

Finally, the national educational system in Romania includes authorised or certified public, private and confessional education units. The local authorities manage the educational institutions. The Law of National Education stipulates that only the textbooks approved by the Ministry of National Education may be used in the classroom.

INNOVATION OF EDUCATION

Concerning the innovation of VET curricula, the information from the SkillSea partners results in several observations, some of which relate to the position of the teacher. In some countries, the teacher's autonomy is considerable; in other countries, the teacher executes the prescribed education programme. In some countries, teachers are actively involved in curriculum innovation; in others, curriculum innovation is centrally organised by the government or specialised institutions. The following examples demonstrate these different policies.

In Greece, the Educational Policy Institute draws up the curricula of VET schools.

In Croatia, several projects are proposed by academic staff and supported by the governing university dealing with maritime education, mainly to improve it. An overall government-level programme that aims to stimulate education innovation does not exist.

In Norway, the University of Southeast Norway, NTNU, the Arctic University of Norway and Western Norway University of Applied Sciences merged their maritime academic communities to develop an education that will give seafarers attractive, up-to-date skills and expertise. All the country's maritime vocational colleges already joined the cooperation in 2012.

The Merchant Navy Training Board (MNTB) sets the policy for new entrant education and training arrangements and existing seafarer training requirements in the United Kingdom. The teaching methods in vocational and technical education are selected to lead to the attainment of the goals proposed for an education level/qualification level, the attainment of the objectives proposed for each module and, especially, to fit the student's age and individual characteristics. Teachers are fully responsible for the choice of methods, considering the structure of their class, the learning resources available in school and according the methodological guidance provided in the National Curriculum and the materials published for teachers. For practical training at the workplace, the teacher collaborates with the responsible person/tutor at the workplace to apply the most appropriate learning methods.

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INVOLVEMENT OF EMPLOYERS/EMPLOYEES

All partner countries have organised the involvement of the maritime transport sector with their educational system to optimally match the skills needs of the industry with the education offered by METs.

The *Berufsbildungsstelle Seeschifffahrt e.V.* (BBS) is responsible for vocational training in Germany. Its function is comparable to the tasks of chambers of industry and commerce or chambers of crafts. The main tasks of the BBS are advising the training shipping companies, monitoring vocational training, keeping a vocational training register, conducting examinations, and providing information and advice.

At a national level in Italy, an example of cooperation on matching skills needs of the industry with the education offered from METs is represented by Clusters (e.g. *the Blue Italian Growth Technology Cluster* (BIG), *Federazione del mare*, etc.) which promote the sustainability of the blue economy sector as well as skills and employment in the sector to support career opportunities. Clusters are usually composed by a strategic partnership that combines Universities, Educational Providers, Research Centres, Industry, stakeholders which play a key role in the dialogue with public Authorities at the national and regional levels.

In Norway, the industry programme for the maritime sector involves tripartite cooperation, where the Norwegian Seafarers' Association, NHO Shipping, the Norwegian Shipowners' Association, the Norwegian Maritime Officers' Association, the Norwegian Machinist Association, Nito, Tekna, Norwegian Industry, Industri Energi, the Norwegian Confederation of Trade Unions, cooperate with the Norwegian Confederation Norway of Trade Unions (NHO) to find targeted educational programmes for everyone working in the industry. Social partners in Norway have a certain influence on developing the content and organisation of vocational training.

The United Kingdom sees many multi-stakeholder collaboration structures:

- The Maritime & Coastguard Agency (MCA) is a UK government agency that oversees the maritime sector of the UK, including education and training. It produces legislation and guidance on maritime matters and provides certification to seafarers. MCA is an executive agency sponsored by the Department for Transport (Aviation, Maritime and Security Group).
- The Merchant Navy Training Board (MNTB) sets the policy for new entrant education and training arrangements and existing seafarer training requirements. They are housed within the UK Chamber of Shipping offices and work closely with shipping and ship management companies, nautical educational establishments and organisations, seafarer trade unions, the Maritime and Coastguard Agency and industry organisations with an interest in seafarer education and training. The Careers at Sea brand offers a wide range of career promotion activities.
- The UK Chamber of Shipping is the trade association and voice of the UK shipping industry. They work with Government, parliament, international organisations and others to champion and protect the industry on behalf of its members.
- The national maritime cluster of the UK is Maritime UK. The maritime industries come together through Maritime UK to make progress on key areas of shared interest. Members agreed on their five key national priorities for 2020-22: People, Innovation, Regional Growth, Environment and Competitiveness. Each priority corresponds to key ambitions within the government's Maritime 2050 strategy, published in 2019. Maritime UK works with members and government partners to deliver its recommendations and monitor delivery.
- Maritime UK and the Department for Transport have established a Maritime Skills Commission to lead the sector's work in ensuring the maritime sector has a pipeline of talented people to serve all parts of the sector, covering shipping, ports, leisure marine, engineering, science and professional services. Maritime UK plays no role in seafarer education and training.
- The role of the Maritime Skills Commission is to:
 1. Understand the skills needs of the sector, including the effects of technological change, and make recommendations for action

2. Ensure that no part of the sector suffers from severe skills shortages or skills gaps
3. Ensure that the sector has the apprenticeships and qualifications it needs
4. Ensure the sector has the training provision it needs (including the use of technology to engage learners and keep costs down)
5. Provide employers and individuals with clear information about career paths and re-training options
6. Ensuring that employers have good quality recruits for their vacancies through effective promotion of maritime careers
7. Increase exports of maritime education and training

In addition, the International Association of Maritime Institutions is a platform for exchanging views between colleges and the various national bodies involved in the training and certification process. It works closely with the Technical Committee of the Merchant Navy Training Board (MNTB), which is the body primarily responsible for coordinating Merchant Navy training in the UK and works closely with the industry and the MCA.

In the Netherlands, until 1 August 2015, the Centres of Expertise on Vocational Education, Training and the Labour Market (KBBs) formed the link between the vocational education sector and trade and industry associations. Organised by sector, their managing boards comprised representatives of employers and employees and, in most cases, educational institutions. As of 1 August 2015, the KBBs' statutory tasks and roles were transferred to the Foundation for Cooperation on Vocational Education, Training and the Labour Market (SBB). The Foundation is a collaborative venture between secondary vocational education and trade and industry associations. It is responsible for developing a clear qualification framework and ensuring that the knowledge and skills taught at MBO align with developments in the world of work. The SBB also monitors the quality of student assessment and ensures sufficient work placements.

LIFELONG LEARNING

While the organisation and content of education remain the sole responsibility of member states, the European Union supports lifelong learning by coordinating cooperation between them. SkillSea findings clearly show that the maritime transport sector does not foresee the emergence of entirely new occupational profiles in response to future trends and developments. On the contrary, the sector expects gradual changes in occupational profiles, obliging employees to acquire new knowledge and skills. This observation, visible in other economic sectors, explains the importance of lifelong learning for maritime transport employees to remain attractive to their employers.

It is important to mention that continuing vocational education and training is mainly funded by enterprises, possibly with some public contribution to back up policy priorities⁵⁵.

In the Netherlands, private institutions mostly execute and organise education and training for employees (lifelong learning). It is assumed that this is explained by the inflexibility of the current VET educational system, which does not offer good opportunities for the short courses employees require.

In Denmark, most VET schools provide both education programmes for adults and young people. All providers of adult vocational training, including the adult education centres, are associated with one of the 13 centres for adult education and continuing training, each coordinating guidance activities, contact to enterprises and employees etc., for a specific geographical area.

⁵⁵ European Parliamentary research Service, 2021.

In France, the objective is to develop the professional integration or reintegration of adults, to maintain them in employment, to encourage the development of their skills, to enable workers to adapt to changing techniques and working conditions, to promote their social advancement through access to the various levels of culture and professional qualification and their contribution to cultural, economic and social development. The responsibility for adult education is shared by all the economic and social partners involved (each of which can act independently). In this respect, the state does not have the same predominant position as it has in initial training. Adult continuing training has formed an open market where various service providers operate. This means that many training providers co-exist on the market – companies, public institutions, private organisations, and non-profit associations – for some of which training is their primary activity. In contrast, for others, it is secondary, i.e., activity on the side or to support the sale of a product.

In Greece, lifelong learning includes all organised learning activities addressed to adults that seek to:

- Enrich their knowledge
- Develop abilities and skills
- Grow their personality
- Develop active citizenship.

Many institutions, wholly or partly subsidised by the state, provide general adult education.

In Croatia, commercially operated entities provide short courses. More than 40 entities usually specialise in courses in particular segments (STCW, yachts, simulations, etc.) and provide very different courses.

In France, continuous maritime vocational training is open to young and old, employed adults in activity or looking for a job. It allows active employees (seafarers) to adapt to technical and technological changes and the conditions of their work and offers job seekers a recognised professional qualification. In all cases, it promotes social advancement by enabling everyone to reach the highest level of qualification, starting from a modest level. This training is provided by maritime vocational training organisations approved by the Minister of the Sea.

CONCLUSIONS

In the previous section, we have described the situation regarding some important aspects of VET in European member states. The description and the examples included clearly demonstrate the huge difference in VET policies, structures and involved government and other formal bodies throughout Europe. Without taking these differences into account, it is evident that the conclusions and recommendations formulated in SkillSea deliverable D3.7 will not easily become part of national VET policies and structures. However, this does not mean that actions proposed due to pan-European projects are useless. On the contrary, the SkillSea project has described when and where European cooperation will have a significant added value. In particular, this is the case for the different activities expected to occur in the Maritime Education and Training Network established in mid-2023 and the recommended European Maritime Skills Forum.