



Maritime Alliance for fostering the  
European Blue Economy through a  
Marine Technology Skilling Strategy



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

# MATES Legacy Brochure and Strategic Plan

March 2022



## About this Report

This document was developed within the framework of the **MATES** project, Maritime Alliance for Fostering the European Blue Economy through a Marine Technology Skilling Strategy. The objective of the project is to develop a skills strategy that addresses the main drivers of change to the maritime industry, in particular Shipbuilding and Offshore Renewable Energy. Both sectors are strongly linked and require new capacities to succeed in an increasingly digital, green and knowledge-driven economy.

### Project duration: 2018 – 2022 [projectmates.eu](http://projectmates.eu)

This Legacy Brochure and Strategy Plan describes the main outputs from the **MATES** project. These outputs are a result of the successful initiatives carried out by the **MATES** partnership to help address the mismatch between skills demand (market needs) and skills provision (training offer) in the Shipbuilding and Offshore Renewable Energy sectors. **MATES** achievements are highlighted as best practices in this brochure and priorities for the future are outlined as part of a Strategic Plan.

### Acknowledgements

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Developed and designed by AquaTT, March 2022

### Citation

Please cite this publication as:  
**MATES Legacy Brochure and Strategic Plan 2022**



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## Executive Summary

**MATES** is an Erasmus+ funded Blueprint project consisting of 17 partners from eight countries with an objective to develop a skills strategy that addresses the main drivers of change to the maritime industry, in particular the Shipbuilding and Offshore Renewable Energy sectors. These main drivers of change include the digitalisation of industrial processes and the rising demand for more sustainable practices. In addition, the maritime industry, like all Blue Economy sectors, is experiencing difficulties in terms of the mismatch between skills demand (market needs) and skills provision (training offer). From 2018, **MATES** addressed these challenges by bridging the skills gaps through several initiatives and best practices including:

### Engage & Identify

- ✓ Forming **sector-specific partnerships**, bringing together educational and scientific communities with industry, society, and administrations to **analyse skills and competencies** that workers need.
- ✓ **Identifying priority Lines of Actions and training needs for the Pilot Experiences**, through **extensive research and engagement** with key stakeholders in the maritime technologies value chain in the Shipbuilding and Offshore Renewable Energy sectors.
- ✓ Engaging in **open, transparent and participatory approaches** – the **MATES** network included **eight thematic groups of 221 experts** who validated the project's activities and results.
- ✓ **50 MATES-led workshops** whereby **over 1500 stakeholders identified industry and training needs**.
- ✓ The project was presented to **more than 8690 people at 75+ external events**.

### Create & Pilot

- ✓ In alignment with the new **European Skills Agenda**, implementing 11 Pilot Experience initiatives to **help businesses and individuals adapt to digitalised processes and new technologies** through **upskilling and reskilling**.
- ✓ **199 industry representatives and teachers** involved in the **design and delivery of the Pilot Experiences**.
- ✓ **Testing of educational resources and methodologies** through the **Pilot Experiences**. **183 companies, schools and training centres** involved. **1675 hours** of training carried out, **reaching 1405 participants across 24 countries**.
- ✓ **A learning outcomes approach** to the development of the Pilot Experience educational resources ensuring the resources can be **integrated into new and existing curricula and other sectors**.

### Disseminate & Promote

- ✓ **Extensive dissemination and communication activities**, including representation at **320+ events** across Europe, development of promotional material, a regular online

newsletter, production of 37 videos, over 70 news releases, and an active Twitter account @ERASMUSMATES.

- ✓ **Publicly available** reports and educational resources.
- ✓ Winner of the **2021 Atlantic Project Award** under the category "**Blue Skills and Ocean Literacy**".

### Transfer & Sustain

- ✓ Providing a **Maritime Technology Skills Strategy** with **32 key recommendations** for policy makers, standardisation bodies, social partners and professional bodies, education and training providers and employers to **address the main drivers of change** to the maritime industry.
- ✓ Identifying and transferring **14 skills and five occupations to the European Skills/Competences, Qualifications and Occupations (ESCO) classification**, which facilitates the exchange of data between employers, education providers and job seekers irrespective of language or country.
- ✓ **Transferring MATES outputs to the large-scale partnership launching the Pact for Skills in Shipbuilding** and also building and coordinating a **partnership to promote the Pact for Skills in Offshore Renewable Energy**. This partnership has produced **29 concrete Lines of Actions** correlated with **MATES** achievements, anticipated indicators and key enablers to achieve those actions, and is dedicated to securing **quality investment in skills**.
- ✓ **23 Knowledge Transfer Plans** to ensure the exploitation of identified Knowledge Outputs.
- ✓ **MATES Sustainability and Long-term Action Plan** to roll-out and exploit **MATES** outputs and Maritime Technology Skills Strategy recommendations. It also identifies key enablers as part of an Action Plan, the stakeholders that are best positioned to carry out strategic actions and when those actions are expected to be relevant.
- ✓ Open Access results including availability of the educational resources on the **Marine Training Platform**.

### MATES Strategic Plan

The **Sustainability Roadmap and Long-term Action Plan** consists of a **blueprint of actionable steps** for the **practical application of the Maritime Technologies Skills Strategy**. **MATES** is supporting its implementation with 23 Knowledge Transfer Plans addressed at boosting the capitalisation of results beyond the project duration at national, regional and EU level. Specific actions are being implemented to support the roll-out by the large-scale partnerships launching the Pact for Skills in the Shipbuilding and the Offshore Renewable Energies industrial ecosystems. The key principles of the Offshore Renewable Energy Pact for Skills have been correlated with **MATES** achievements in the Offshore Renewable Energy sector to produce 29 concrete Lines of Actions, anticipated indicators and key enablers to achieve those actions. Therefore, the Pact for Skills for Offshore Renewable Energy is providing **MATES** with an opportunity to directly transfer and upscale the project's outputs through a dedicated partnership committed to securing quality investment in skills.

# Introduction

**MATES** has carried out a number of successful initiatives to help bridge the skills gaps in the maritime industry with a focus on the Shipbuilding and Offshore Renewable Energy sectors. Furthermore, **MATES** activities have been in direct alignment with several maritime and Blue Economy sectoral programs and policies, in particular those related to employments and skills (Fig. 1).

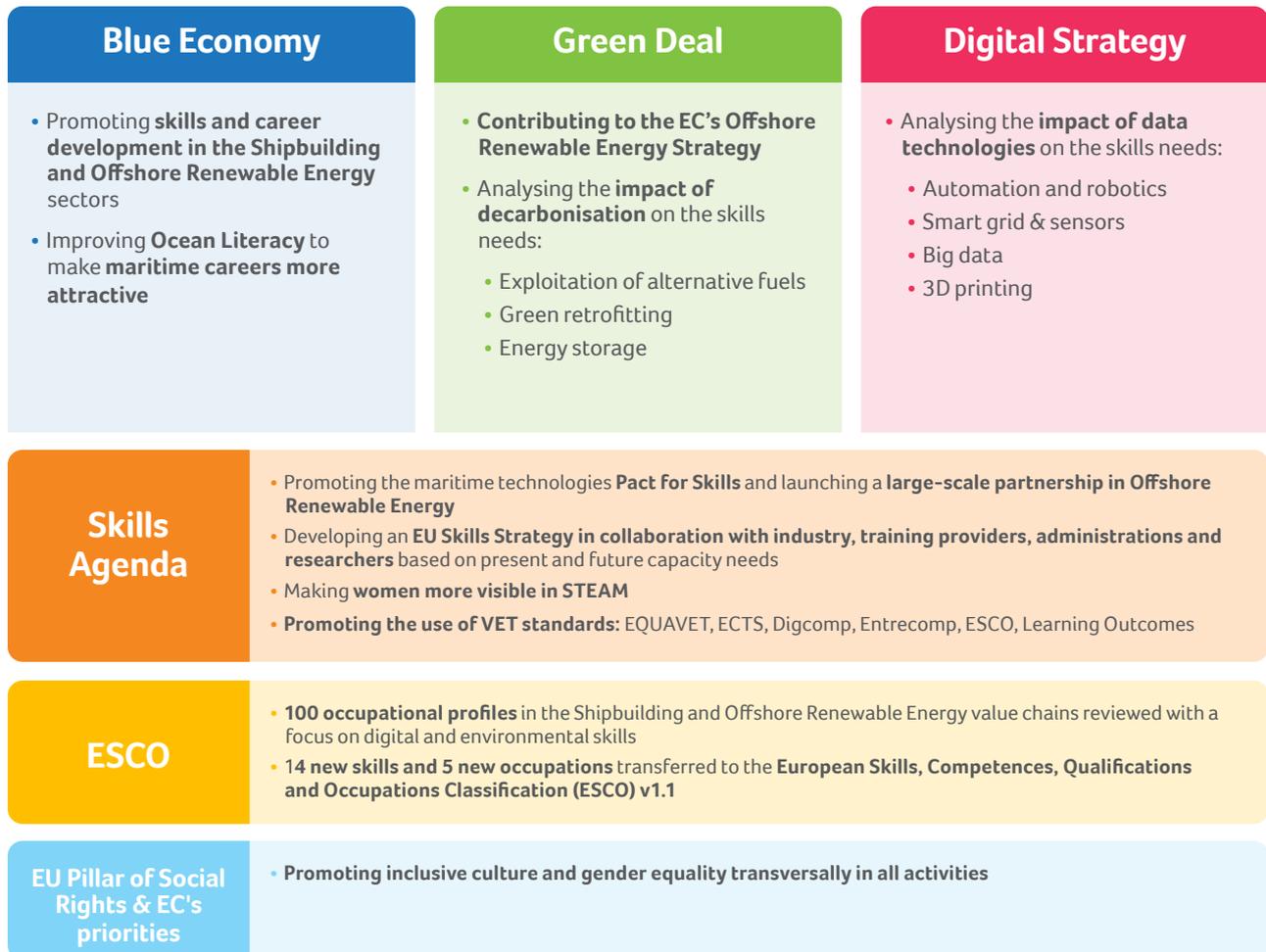


Figure 1. **MATES** activities aligned to EU Programs and Policies

**MATES** achievements visualised in Fig. 2 are detailed in this brochure under four groups:





**MATES** State of the Art Report with **629** resources reviewed & **55** resources in **MATES** digital repository



**11** Pilot Experiences Layman Reports addressing

**1675** hours of training delivered to **1405** participants

**22** Lines of Actions



Reached participants across **24** countries

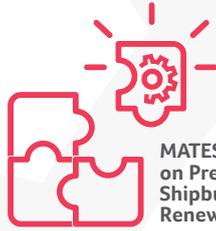


Learning Outcomes Approach



**482** & **551**  
(Shipbuilding) (Offshore Renewable Energy)

Educational & training programmes mapped



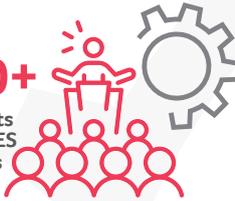
**MATES** Baseline Report on Present Skills Gaps in Shipbuilding and Offshore Renewable Value Chains

**MATES** presented at **75+** external events to **8690+** people



**1600+**

Participants at **54** **MATES** workshops & events



**221**

thematic experts consulted on a regular basis. All EU Sea basins represented

**100+**

best practises in **MATES** Ocean Literacy database



**17** Partners from **8** countries



**2 Sectors** Offshore Renewable Energy & Shipbuilding



**MATES** Report on Foresight Scenarios Identifying Future Skills Needs and Trends

**32** Maritime Technologies Sectoral Strategic Recommendations



**MATES** Baseline Strategy Report Identifying Priorities, Action Lines and How **MATES** Pilot Experiences will Contribute to the Strategy



**950+** Twitter followers  
**478,000** impressions  
@ErasmusMATES

**YouTube**  
**37** **MATES** videos



Ocean Literacy awareness raising



[www.projectmates.com](http://www.projectmates.com)  
Factsheets, posters, promotional material



Adaptations to online learning



**183** companies, schools & training centres reached



Results transferred to Atlantic Arc Commission

CPMR **ATLANTIC ARC COMMISSION**



**199** industry representatives and teachers involved in design & delivery



Transfer to Shipbuilding & Offshore Renewable Energy Pact For Skills



Free **MATES** Educational & Training Resources on Marine Training Platform



CREATE & PILOT

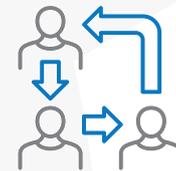
MATES

TRANSFER & SUSTAIN

DISSEMINATE & PROMOTE



**ESCO v1.1**  
18 new skills and 5 new occupations added



Successful Knowledge Transfer case studies



ResearchGate

MATES results openly available



Results included in the EC's The EU Blue Economy Report 2021



Results included in the EU Offshore Renewable Energy Strategy 2020



MATES Sustainability and Long-term Action Plan



MATES Legacy Brochure and Strategic Plan

Promotion of maritime careers



MATES represented at 320+ events attended by **39,600+** people



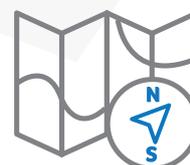
E-news

mailchimp

Atlantic Project Award



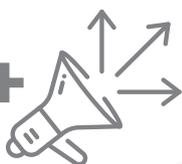
ATLANTIC ACTION PLAN

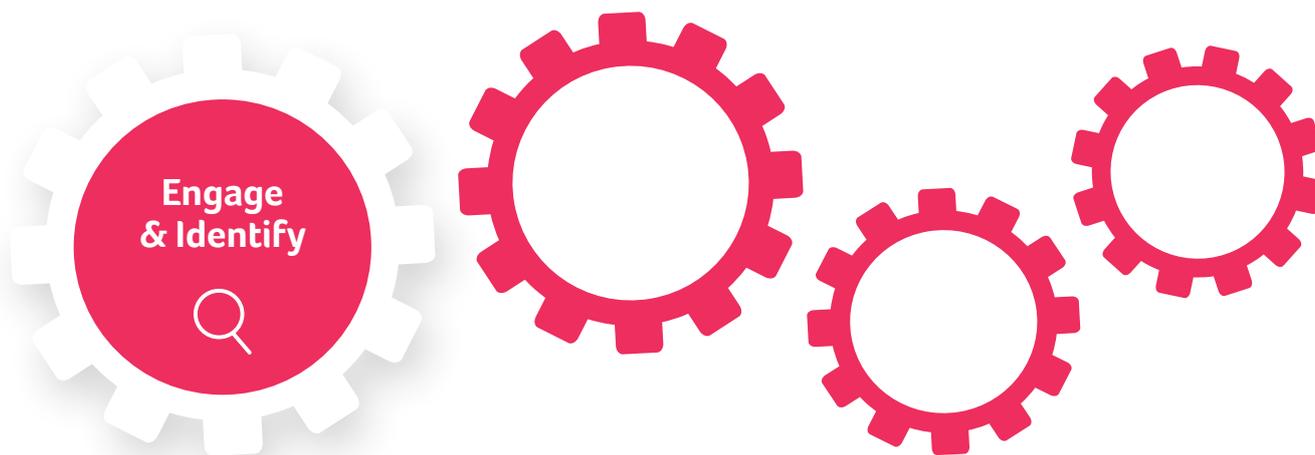


MATES Maritime Technologies Skills Strategy with

**32** recommendations

**70+** News releases





The **MATES** partnership developed sector-specific partnerships with educational and scientific communities, industry, society, and administrations. **MATES** engaged openly with these experts for feedback and advice during the development of several documents and reports which are important assets for the maritime sector. These experts form part of **MATES'** network of **221 experts** organised and databased<sup>1</sup> into **eight thematic groups**: Offshore Energy, Shipbuilding, Innovation Management, Gender Balance, Ocean Literacy, Green Technologies, Digital Technologies, Vocational Education Training Standards & Governance. Engagement consisted of over **54 MATES-led workshops** where over **1600** stakeholders were provided with opportunities to **identify industry and training needs** and provide feedback. **MATES** also presented at **75+ external events**, to over **8690 people**. The results fed into **MATES** reports and the Pilot Experiences. Some of the key reports are highlighted below.

### MATES State of the Art Report<sup>1</sup>

- ✓ List of the most relevant documents for **MATES** available as a Digital Repository<sup>2</sup>.
- ✓ Developed as a summary of the analysis of 453 publications and 176 projects.
- ✓ Describes the current situation and future prospects of the Shipbuilding and Offshore Renewable Energy sectors, as well as the challenges expected in the coming years. It establishes a vision of the different drivers that will affect the transformation and evolution of the sectors, and finally a perspective on the socio-demographic situation.
- ✓ Main findings were presented to the **MATES** network of experts during two rounds of regional workshops in five European countries.

### MATES Baseline Report on Present Skill Gaps<sup>3</sup> (Executive report<sup>4</sup>)

- ✓ Outlines current status of Shipbuilding and Offshore Renewable Energy sectors, focusing on aspects most affected by skills gaps including current technological trends, economic growth, and sector's potential for further development.
- ✓ Specifies and describes the phases/segments of the sectors' value chains.
- ✓ Maps the existing occupational profiles that are involved in the main sectors' activities and their corresponding skills and competences, based on European Skills/Competences, Qualifications and Occupations (ESCO) classification.
- ✓ Examines skills supply by identifying educational and training offers for the 2018-2019 academic year relevant to these sectors and assesses their curricula and the qualifications they provide.
- ✓ Investigates skills demand through consultation with industry.
- ✓ Identifies skills gaps of the sectors' workforce and skills mismatch between education and training providers and the industries' relevant requirements.
- ✓ Provides a solid foundation upon which other **MATES** activities were based; the building of future scenarios for forecasting skills requirements in the short, medium and long-term as well as the development of relevant Lines of Actions and best practices for effectively addressing these skills gaps through the **MATES** Pilot Experiences.

<sup>1</sup>projectmates.eu/wp-content/uploads/2019/10/MATES-D1.2\_State-of-the-Art-Compilation.pdf

<sup>2</sup>projectmates.eu/references

<sup>3</sup>projectmates.eu/wp-content/uploads/2020/10/MATES\_D2.1\_Final\_Oct-2020.pdf

<sup>4</sup>projectmates.eu/wp-content/uploads/2021/01/MATES-D2.1-Baseline-Executive-Report-Jan-2021-1.pdf

### MATES Foresight Scenarios Identifying Future Skills Needs and Trends<sup>5</sup>

- ✓ A Delphi consultation with 147 experts to identify the relevant trends and paradigm shifters in Shipbuilding and Offshore Renewable Energy.
- ✓ Deals with the identification and analysis of emerging trends in the Shipbuilding and Offshore Renewable Energy sectors with respect to new technologies, new skills, training programs and other associated parameters. The key technologies considered are those for which the maritime industry is not prepared for in terms of technical capabilities nor in terms of technological service and research offer.
- ✓ Aim of the report is the clustering of the key technologies in three time-horizons and the description of future scenarios of skills and competences, as well as gaps in the current and foreseen levels sectors at the short, medium and long term.

### MATES Identification of Priorities and Lines of Actions<sup>6</sup>

- ✓ Describes the reference framework used to establish priorities and Lines of Actions within the **MATES** project.
- ✓ Includes the Lines of Actions identified during the first year of the project, their prioritisation criteria, and the instructions for the voting process (workshop with 51 experts).
- ✓ Prioritisation system was defined so that the Lines of Actions, within which the most important training needs and skills gaps fit, are addressed through the Pilot Experiences and are included in the **MATES** Maritime Technologies Skills Strategy.

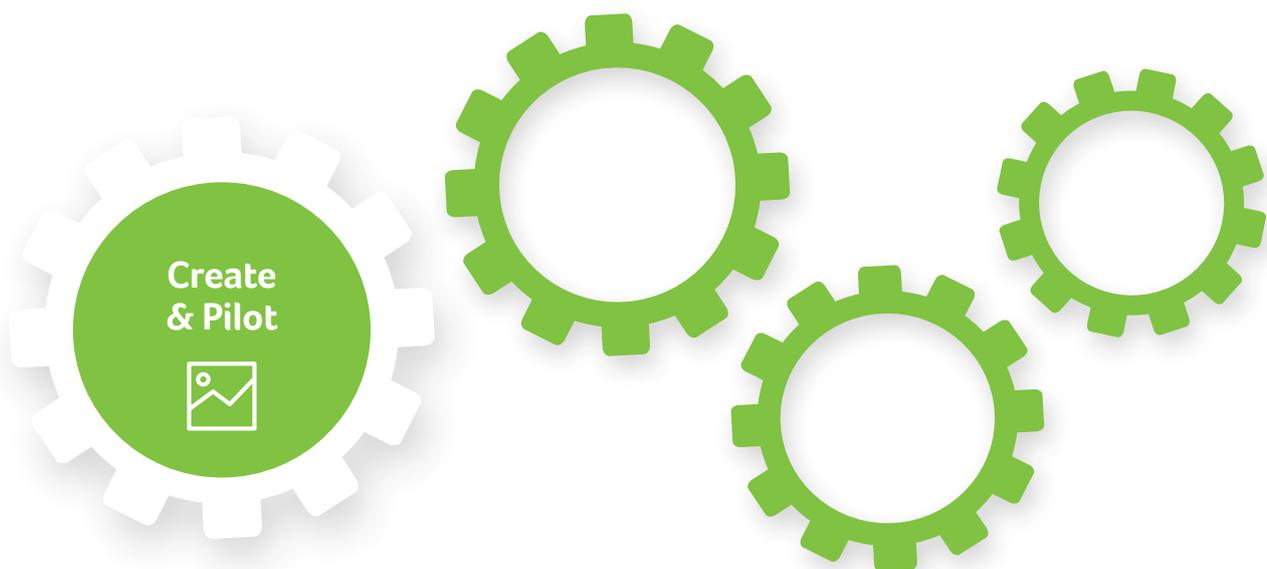
### MATES Baseline Strategy: Identifying Priorities, Action Lines and How MATES Pilot Experiences will Contribute to the Strategy<sup>7</sup>

- ✓ The main objectives of this report are: 1) Prioritisation of the actions needed and selection of those most relevant to the Shipbuilding and Offshore Renewable Energy sectors; 2) Clear definition of the actions needed to address the top-rated priorities and 3) A cross-linking of the Prioritised Lines of Actions with **MATES** Pilot Experiences to identify how best to maximise their strategic alignment and impact.
- ✓ Three different sets of information were collected and analysed: 1) Results of the online voting process set up during a workshop with over 50 experts; 2) Results from the Delphi questionnaire to identify and assess the Paradigm Shifters relevant to each sector and 3) Pilot Experiences draft proposals.
- ✓ A total of **11 Lines of Actions were prioritised** from an original 22. The Pilot Experiences were then designed to align with these, while detailed planning of the Pilot Experiences was then carried out to ensure a strong alignment with the results of the Delphi questionnaire.
- ✓ A strong correlation was found between the Paradigm Shifters identified through the Delphi Questionnaire and the prioritised Lines of Action delivered through the Pilot Experiences. Overall, the results of this process have been clearly integrated into the design and development of the Pilot Experiences.

<sup>5</sup>projectmates.eu/wp-content/uploads/2021/01/MATES-D2.3-Foresight-scenarios-Jan-2020.pdf

<sup>6</sup>projectmates.eu/wp-content/uploads/2021/03/D3.1-Prioritisation-system\_January-2020.pdf

<sup>7</sup>projectmates.eu/wp-content/uploads/2021/06/D3.2-MATES-Baseline-Strategy\_Final.pdf



**MATES** designed, developed and tested a total of **11 Pilot Experiences**. These were composed of a series of activities which **align with the priority Lines of Actions and training needs** which were identified by **MATES** through **extensive research and engagement** with stakeholders from the Shipbuilding and Offshore Renewable sectors.

- ✓ The Pilot Experiences were used as opportunities to **test new educational resources and methodologies** that were developed by the **MATES** partnership with the **support from 183 companies, schools and training centres**. Involvement of companies ensured that the Pilot Experiences were industry-led.
- ✓ **1675 hours of upskilling and reskilling** was carried out, **reaching 1405 participants across 24 countries**. **Participants included students, teachers, trainers, skilled workers** and those who have recently joined the workforce.
- ✓ **199 industry representatives and teachers** were involved in the design and **delivery of the Pilot Experiences**.
- ✓ In **response to the Covid crisis**, several **adaptations** ensured that the affected **Pilot Experiences took place online**.
- ✓ The Pilot Experiences were developed using a **learning outcomes approach**.
- ✓ All **MATES educational resources** developed and tested through the Pilot Experiences are available on the **Marine Training Platform**.<sup>8</sup>
- ✓ The educational resources consist of curricula, **guidelines and methodologies (videos, PowerPoints, and documents)** which can be **transferred to other organisations and potentially other sectors**.

Lessons learned and recommendations from the Pilot Experiences are captured in the **MATES** Maritime Technology Skills Strategy. The Pilot Experience **innovative elements and best practices will support the transfer of the Maritime Technology Skills Strategy to other regions and possibly other sectors**.

The outcomes of the Pilot Experiences provide **indispensable know-how for bridging the maritime skills gap and increasing both sectors' overall competitiveness and attractiveness**. The insights gained from these activities also **feed directly into the MATES Sustainability and Long-term Action Plan**.

Further information on all Pilot Experiences activities and success are provided in the **MATES** Pilot Experience Layman Reports, Pilot Experience Learning Outcomes documents and Pilot Experience videos<sup>9</sup>. The Layman Reports provide a summary of the results from each Pilot Experience including the main activities and achievements, impact and European added value.

<sup>8</sup>marinettraining.eu

<sup>9</sup>projectmates.eu/pilot-experiences

### Learning Outcomes Approach

**MATES** took a learning outcomes approach as an integral component of the educational resources which were developed and tested as part of the **MATES** Pilot Experiences. Learning Outcomes (statements of what a learner knows, understands and is able to do on completion of a learning process, defined in terms of knowledge, skills and competences) are an essential part of the European Qualifications Framework (EQF) and other EU education tools used in European Vocational Education such as the new EUROPASS and the European Digital Credentials System. Learning outcomes are therefore of significance in EU education and training policy agendas.

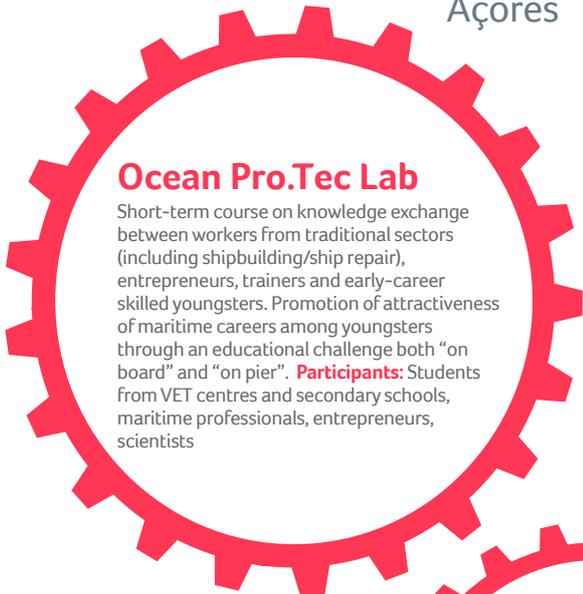
The EQF is an 8-level common European Reference Framework whose function is to make qualifications more easily understood across different countries and systems. In parallel, National Qualifications Frameworks (NQF) also describe what learners need to know, understand and be

able to do in order to gain a national qualification. Learners can use National Frameworks to compare a given range of qualifications so that they can make informed decisions regarding choice of programmes or courses. Qualification Frameworks and Learning Outcomes thus provide a basis for improving the quality, accessibility and recognition of qualifications both nationally and internationally, allowing people to move more easily between different national education systems.

Using a learning outcomes approach therefore ensures that the **MATES** educational resources are in line and comply with national and EU standards. This enables **MATES** educational resources to be embedded into both existing and new curricula. The transparency provided by the learning outcomes approach supports the potential integration of the **MATES** educational resources not only in the maritime sector but in other sectors also.



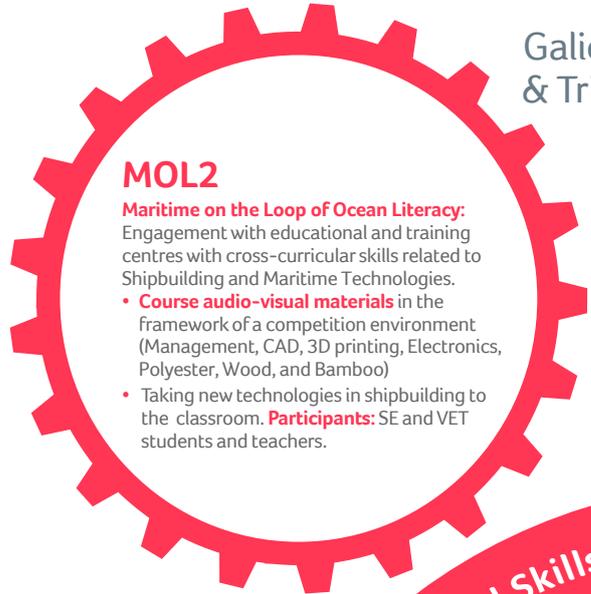
Açores



**Ocean Pro.Tec Lab**

Short-term course on knowledge exchange between workers from traditional sectors (including shipbuilding/ship repair), entrepreneurs, trainers and early-career skilled youngsters. Promotion of attractiveness of maritime careers among youngsters through an educational challenge both “on board” and “on pier”. **Participants:** Students from VET centres and secondary schools, maritime professionals, entrepreneurs, scientists

Galicia & Trieste



**MOL2**

**Maritime on the Loop of Ocean Literacy:** Engagement with educational and training centres with cross-curricular skills related to Shipbuilding and Maritime Technologies.

- **Course audio-visual materials** in the framework of a competition environment (Management, CAD, 3D printing, Electronics, Polyester, Wood, and Bamboo)
- Taking new technologies in shipbuilding to the classroom. **Participants:** SE and VET students and teachers.

Across Europe & UK



**Green Move**

Exchanges related to green technologies in the maritime sector in order to develop a methodology adapted to the strategic needs of the organisations. **Participants:** VET and HE students and teachers.

Promoting Transversal Skills



- Attractiveness of maritime career
- Visibility of the maritime industry recommendations
- Knowledge, skills and competences relevant to a range of occupations and economic sectors

DOP

- Recognise and identify skills and professional competences



**Innovation Manager Course**

Specialisation course on innovation management for shipbuilding addressed to recently graduated university students. **Participants:** HE students.

GOALS



Training Programmes

- Enhancing collaboration between academy & industry
- Innovation in training
- Improving trainers curricula
- Seeking for technical solutions

Galicia



**Additive Manufacturing & Risk Management in Shipbuilding & Ship Repair**

Training seminar to support the sectors’ workforce through upskilling and reskilling in green technologies. Growth and employment in the maritime sector are enhanced through focusing on the environmental and digital dimension of the sector. **Participants:** Industry, HE and VET students.

Greece



**ORE Short Courses**

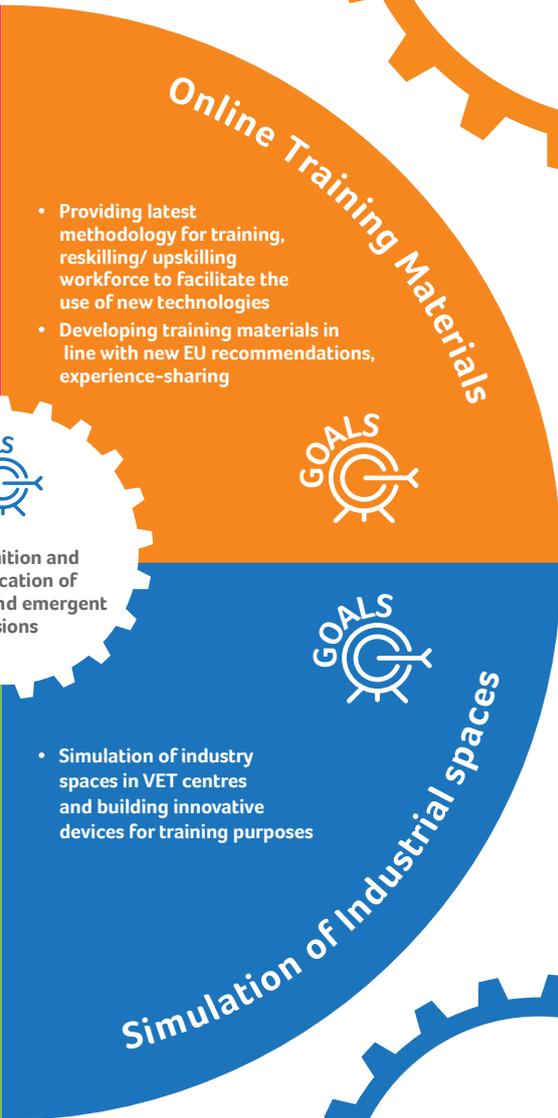
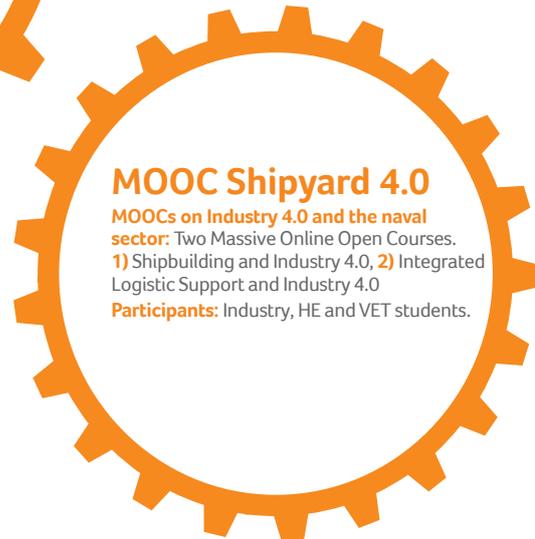
One course focused on **marine renewable energy** (wave and tide), while the other was a **Training Of Trainers** in offshore wind energy. **Participants:** Industry, HE students and VET teachers

UK & Galicia

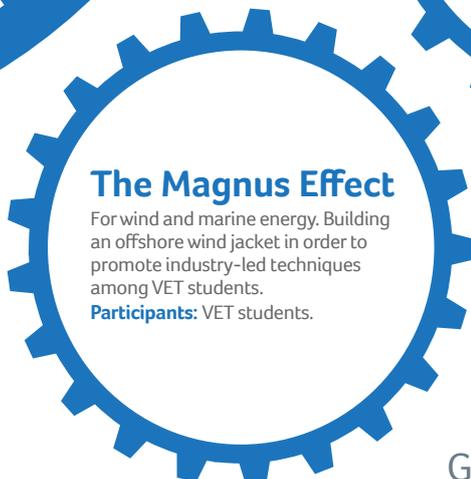
\*SE: Secondary school / HE: Higher Education  
 VET: Vocational Education and Training  
 SB: Shipbuilding / ORE: Offshore Renewable Energy  
 ESCO: European Skills, Competences, Qualifications and Occupations



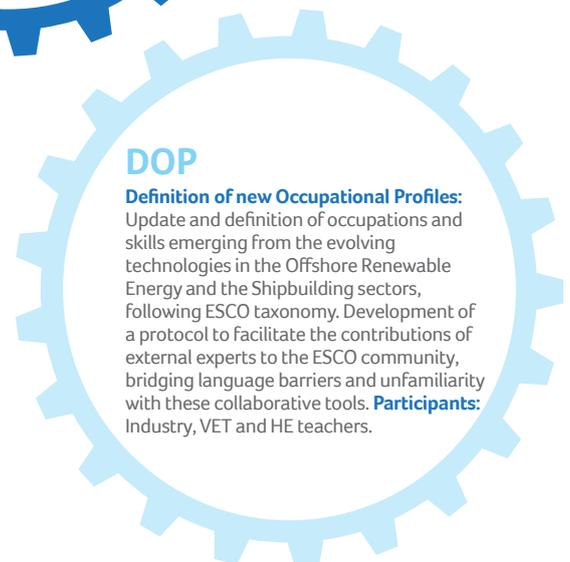
Worldwide

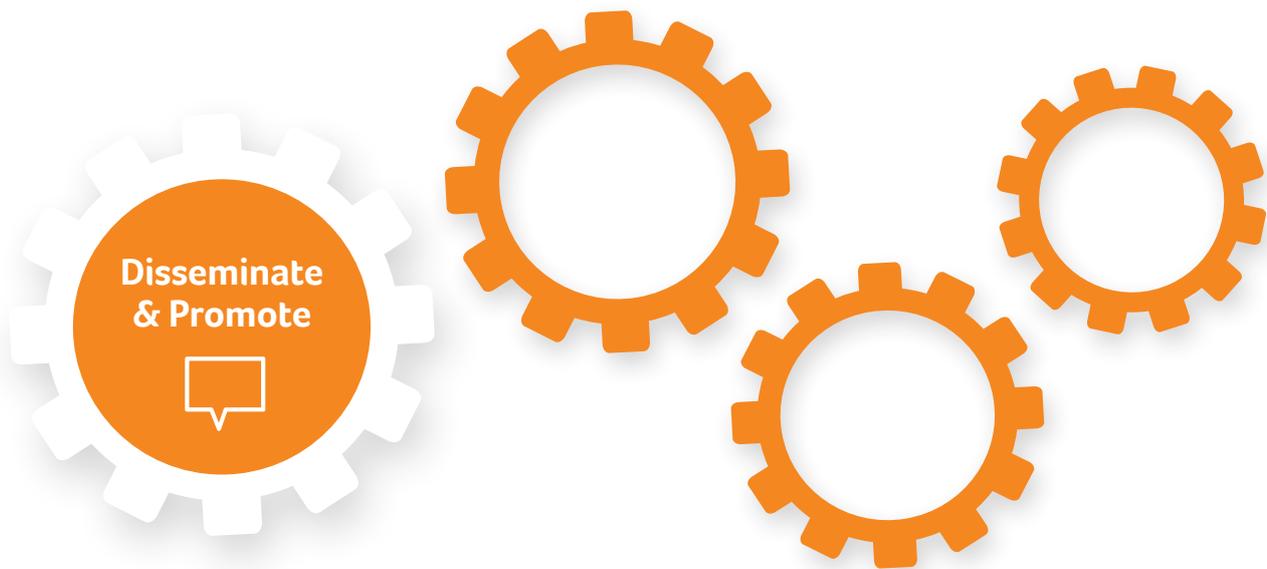


Galicia



Galicia





**MATES was represented at 320 conferences and meetings, attended by 39,600+ people. Presentations were made at 75+ external events to 8,690+ people. Dissemination activities also included development of posters, factsheets and promotional material, e-news subscription service, a YouTube channel, over 70 news releases and over 478,000 impressions on Twitter (@ErasmusMATES).**

### MATES Videos

A central aspect of **MATES** promotion was the development of inspiring videos<sup>10</sup>. In total the partnership **produced 37 videos**, including **one promotional video per Pilot Experience** showcasing the activities and achievements. Three of the main project videos cover:

**“Ocean Literacy”** – This video **promotes maritime career opportunities**, particularly in the Offshore Renewable Energy and Shipbuilding industries. It highlights the need for incorporating the concept of ocean literacy from an industrial perspective and how marine technology industries can contribute to a sustainable environment. The video includes footage from the Shipbuilding and Offshore Renewable Energy sectors in Galicia (Spain) and Orkney (Scotland) respectively, with representation from people working along the value chain in both sectors. In addition, the video emphasises the role of women in these industries and highlights the diverse career opportunities available for graduates and early-career skilled workers in these two sectors.

**“Shipbuilding industry for a healthier ocean”** – Jose Ramon Regueira, Commercial Manager at NODOSA shipyard in Spain, explains how they rely on technology to build safer vessels, with more automation, while being more respectful towards the marine environment.

**“Occupations in technological services for the Shipbuilding industries”** – Isolina Perez Engineer and Head of Commercial at MAIN SOLUTIONS in Spain, presents her experience as a provider of specialised services to the Shipbuilding industry. Though acknowledging the barriers that can be met by women engineers in a traditionally male-dominated industry, she shows how to overcome these and develop an exciting career in the Shipbuilding industry.

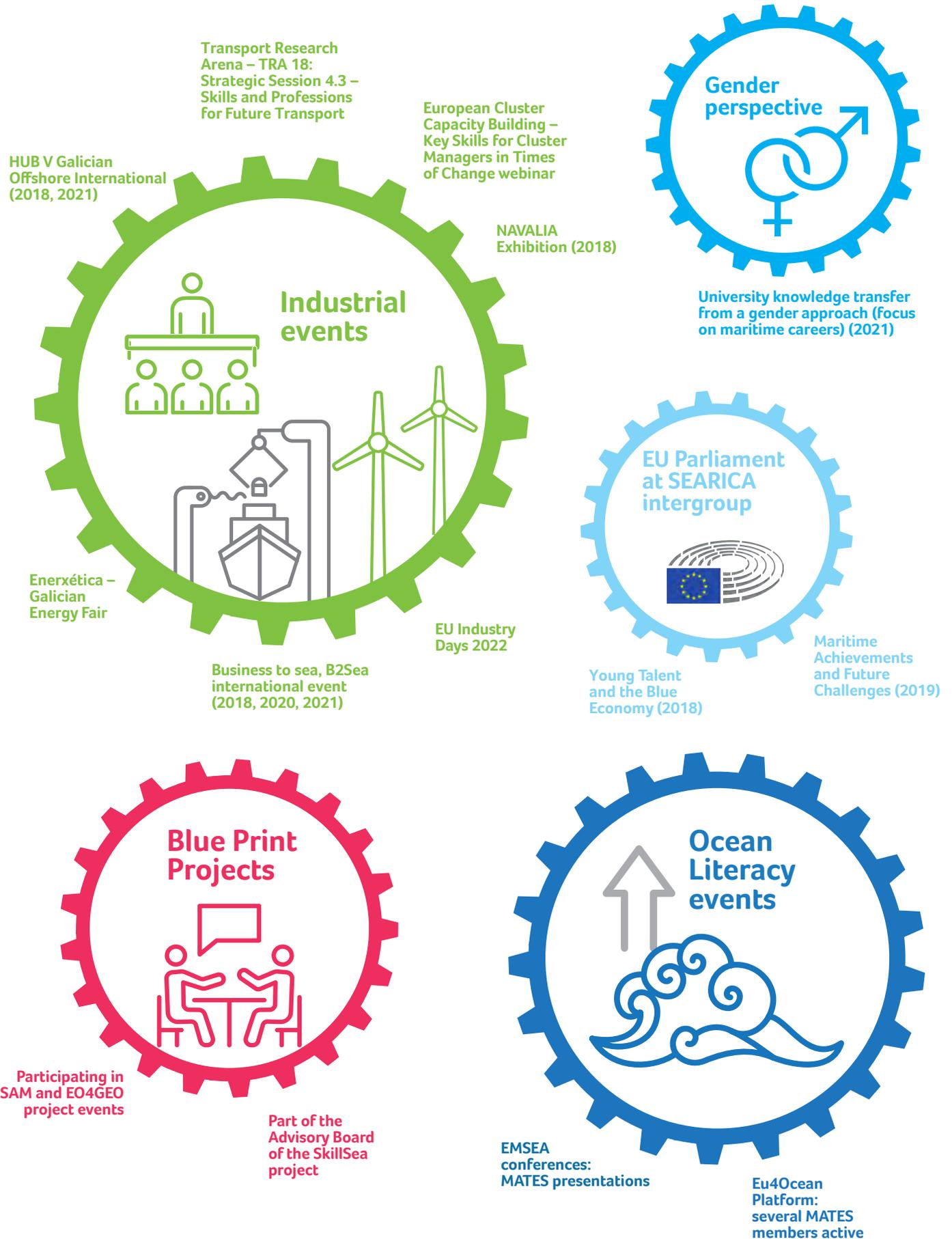
### Blue Skills and Ocean Literacy Atlantic Award

**MATES** won the Atlantic Project Award under the category “Blue Skills and Ocean Literacy” and accepted the award at the 8th Atlantic Stakeholders Platform Conference in 2021. The Atlantic project awards are presented to outstanding initiatives, successful collaborations and achievements which **further the implementation of the Atlantic Action Plan 2.0**. These projects showcase **best practices and partnership models** that could be scaled up at the regional, national, European and international level. The award is a tribute to the immense amount of work that the **MATES** partnership has undertaken.

<sup>10</sup>projectmates.eu/media



# Events and projects MATES engaged with





Promotion of MATES at University of Strathclyde

Presentation of MATES project at the ZERO Ship conference

Pact for Skills for the Renewable Energies Ecosystem – Round table with Commissioners Sinkevičius, Schmit, and Breton

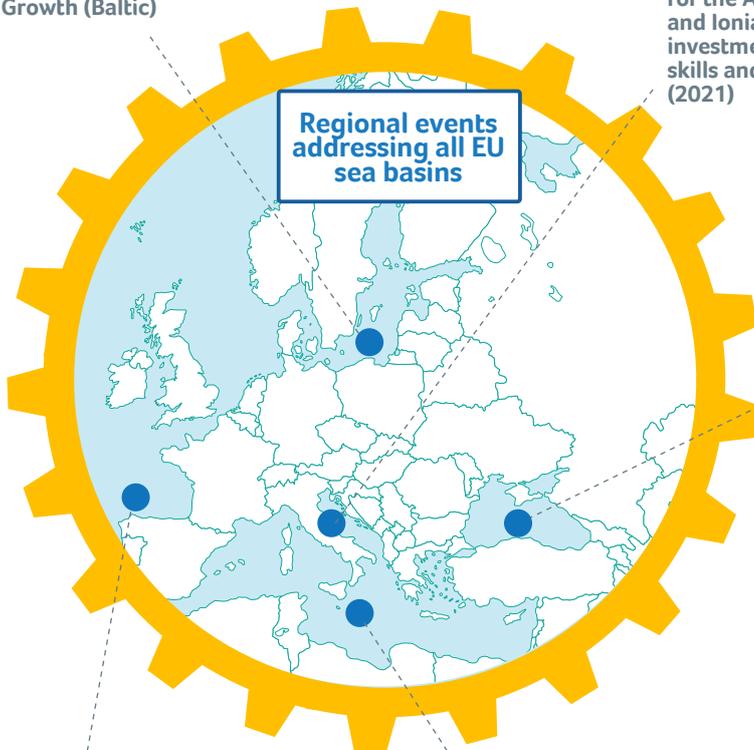
Towards a pact for skills in the maritime technology industry (part of the official European Vocational Skills Week 2020)



CRPMM Atlantic Arc Commission Hub Meeting (2021)

Smart Blue Regions conference: The role of regions in fostering Blue Growth (Baltic)

## European Maritime Day



EUSAIR (EU Strategy for the Adriatic and Ionian Region) investments in blue skills and education (2021)

European conference on developments in vocational training: the French experience of Campus des métiers et des qualifications. MATES workshop addressing Offshore Renewable Eenergys in the session "Pact for Skills: upskilling and reskilling, what are the major projects which are expected at the European level?"

Regional Stakeholder Seminar – Towards a Common Maritime Agenda for the Black Sea (2019)

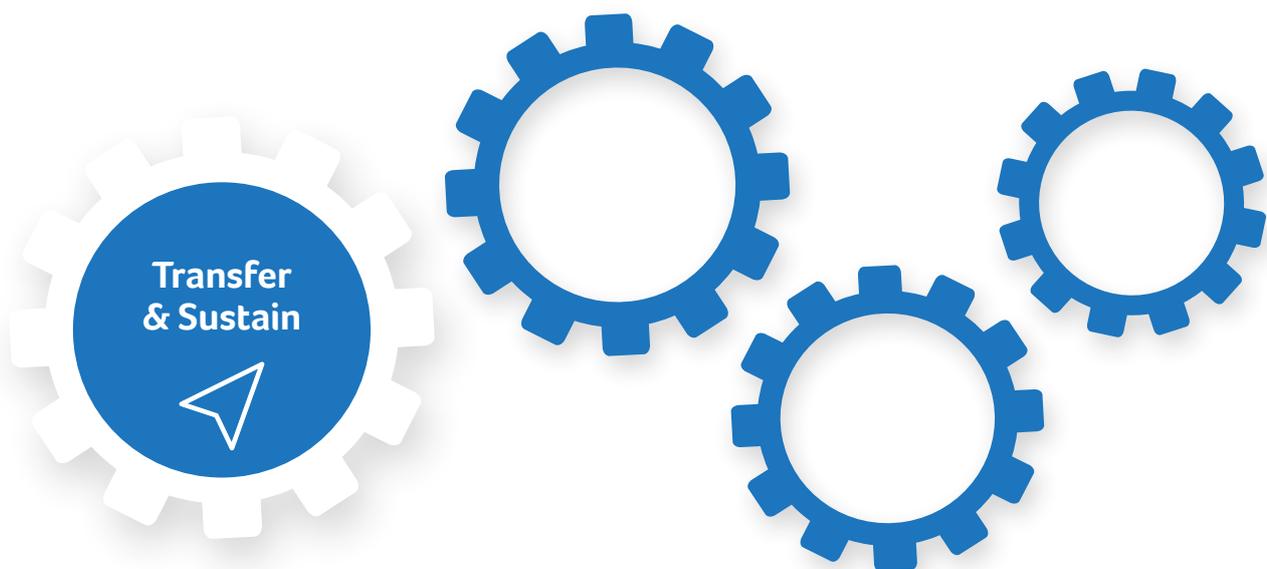
5th Atlantic Stakeholder Conference (2018)  
First meeting of the Outermost Regions Forum (2018)

Union for the Mediterranean Regional Seminar on Blue skills, careers and jobs (2019)



OCEANS2018 Conference USA

All Atlantic 2021: Ocean Protec Lab presentation in the side event of All Atlantic 2021 conference



In this section, the Maritime Technologies Skills Strategy and **MATES Sustainability and Long-term Action Plan** reports are highlighted. Some of **MATES** most impactful knowledge transfer activities are presented; firstly, three of the **MATES** Pilot Experiences are presented as case studies. Further information on all Pilot Experiences activities and success are provided in the **MATES** Pilot Experience Layman Reports, Pilot Experience Learning Outcomes and Pilot Experience videos<sup>11</sup>. The case studies are followed by a variety of knowledge transfer activities which the **MATES** partnership undertook to ensure the transfer and sustainability of the project's outputs.

### **MATES Maritime Technologies Skills Strategy**

The objective of this report is to provide recommendations<sup>12</sup> to **better align educational opportunities and labour market needs by closing the skill gaps and anticipating future skills needs**. These recommendations help to **enhance the industry's competitiveness** in all European sea basins and increase the **attractiveness of maritime careers**. It is the result of the culmination of over four years' research where the **MATES** partnership undertook a collaborative approach engaging with industry, the education and research communities and public administrations. The Strategy recaps the most relevant results from the analysis on current skills gaps for the Shipbuilding and Offshore Renewable value chains; pinpoints current trends in the maritime industry and their impact on the capacity needs for the most affected occupations; and presents the identified Lines of Actions and how they have been launched in the 11 **MATES** Pilot Experiences. Finally, a list of **32 key recommendations** for the most relevant groups of stakeholders in the ecosystem proposes how to address the **main drivers of change to the maritime industry**. The Strategy was presented at an international workshop attended by 75 participants and provided an opportunity for key stakeholders to provide feedback and validate the work done to date.

### **MATES Sustainability and Long-term Action Plan<sup>13</sup>**

**MATES** has developed a **Sustainability and Long-Term Action Plan** which presents 23 project outputs and 32 recommendations to re-arm the maritime technologies ecosystem with the necessary capacities and skill sets to enable continued EU competitiveness in an increasingly digital, green and knowledge-driven economic context. The report identifies **MATES** partners' commitments to sustain and exploit relevant project outputs and consists of a **blueprint of actionable steps for the practical application of the Maritime Technology Skills Strategy**. It outlines a Long-term Action Plan to implement the **MATES** strategic recommendations, addressing the main stakeholders in the maritime industry, the priorities that will require more efforts in the coming periods, and identifies the key enablers to undertake them. It also provides an overview of **EU funding opportunities** which can support further investment in capacity building, and therefore contribute to the Action Plan.

<sup>11</sup>[projectmates.eu/pilot-experiences](https://projectmates.eu/pilot-experiences)

<sup>12</sup>[projectmates.eu/results](https://projectmates.eu/results)

<sup>13</sup>[projectmates.eu/wp-content/uploads/2022/03/D5.3-MATES-Sustainability-and-Long-term-Action-Plan.pdf](https://projectmates.eu/wp-content/uploads/2022/03/D5.3-MATES-Sustainability-and-Long-term-Action-Plan.pdf)

# Knowledge Transfer Case Studies

## Pilot Experience Case Study 1 – Maritime on the Loop of Ocean Literacy (MOL<sup>2</sup>)

### At a Glance

**MOL<sup>2</sup> is being replicated by the Spanish company Marine Instruments as part of its annual competition. MOL<sup>2</sup> video tutorials have been promoted by the company and will also be included in a database for the continuous training of secondary school teachers at Xunta de Galicia.**

The purpose of the MOL<sup>2</sup> Pilot Experience was to **improve young peoples' Ocean Literacy by increasing their understanding and awareness of the marine environment and related industries**. The initiative promoted youth involvement in marine protection by encouraging them to reflect on the best ways to reduce their environmental impact on the ocean and by providing tools to help them to make informed and responsible decisions regarding the ocean and its resources.

The initiative, conducted in two quite separate locations: Galicia (Spain) and Trieste (Italy), piloted two ways of approaching secondary school students and teachers to promote Ocean Literacy and technologies and skills linked to the maritime sector. In Italy, industry partners conducted classroom visits to engage students with practical examples of some of the technologies used in the maritime industry, with a focus on the 3D Laser Scan. Ocean Literacy was also introduced to the students.

In Spain, technical workshops were conducted as part of a larger competitive raft-racing event – the *Regata Solar*. This is an annual raft building competition based in Galicia and is organised by Marine Instruments Ltd, a maritime technical company that develops and manufactures electronic equipment. Teams entering the regatta must build a radio-controlled electric vehicle powered only by solar energy. Teams develop their entries throughout the academic year and the competition takes place at the end of

June. The regatta provides a good opportunity to challenge students' skills. However, success is largely dependent on the level of commitment and engagement of their respective Technology teachers. The Spanish media lab, A Industriosa, provides provides some technical support to the teams but this is limited, and participants usually find the project quite demanding.

CETMAR identified an opportunity in this context to provide Ocean Literacy education and practical skills training to secondary school teachers and students in a fun and engaging way. From January to April 2020, the CETMAR team conducted six workshops with regatta participants covering topics such as management of priorities, CAD and 3D printing, boatbuilding with polyester, wood and bamboo, as well as electronics, remote control and telemetry. While the competition was unable to run due to Covid, the success of the workshops and the positive feedback received from the participants has resulted in **Marine Instruments committing to continued collaboration with CETMAR and the MOL<sup>2</sup> Pilot Experience**. The MOL<sup>2</sup> Pilot Experience produced **valuable training materials** including **six video tutorials which are being promoted by Marine Instruments**. Marine Instruments are also interested in **continuing to use the workshop approach, replicating MOL<sup>2</sup> in future editions of the regatta**. At Xunta de Galicia (The Regional Ministry of Culture, Education and University Organisation), the **video tutorials will also be included in a database for the continuous training of secondary school teachers**.

## Pilot Experience Case Study 2 – Freeboard

### At a Glance

**Freeboard has resulted in dual training programme agreements between CIFP Ferrolterra and Spanish companies Navantia, CT Ingenieros, Gabadi and Windar and an agreement is under negotiation with the Portuguese company Terral Wind. A new course on naval qualification and ship services will be provided together with Gabadi during 2022-2023.**

Led by CIFP Ferrolterra VET school, the aim of Freeboard was to **build a to-scale part of a ship's hull using a block assembly process**, in order to reproduce conditions that students will face in real work environments. This hands-on training was carried out under controlled plant conditions with the same materials and design standards as conventional built facilities. The methodology for developing the ship's hull using the block assembly process is a common methodology in the Shipbuilding sector. However, prior to Freeboard, this methodology had never been used in a VET school.

The hull model has enabled CIFP Ferrolterra to provide training to new students and to further align the training methodology to the labour market needs. Due to the success of Freeboard with 138 students, CIFP Ferrolterra invited companies, authorities and media to visit the completed hull. As a result, Spanish companies **Navantia and CT Ingenieros offered dual programmes** during the 2021-2022 academic school year. Dual programmes are a collaborative training model involving a signed agreement between a VET provider and a company. Students participating in the programme

carry out their first academic year at the VET centre and the second academic year doing an internship at the company. Additional dual programmes agreements focusing on welding have been made for the 2022-2023 academic year with the **Spanish companies Gabadi and Windar. A new course on naval qualification and ship services** will be provided together with Gabadi during 2022-2023. The **Portuguese company Terral Wind** is also currently negotiating a dual training agreement with CIFP Ferrolterra. All the companies mentioned consider the **Freeboard hull as a highly valuable resource for training students**. The hull can provide a real working environment to experience operating in a confined space as renewable energy students must regularly train in wind turbine nacelles (casing on top of a wind turbine that contains the necessary generating components).

CIFP Ferrolterra will **continue to offer the hull model as a training environment to other VET schools and companies** and has plans to provide it as a learning environment which **crosscuts several subject areas** in various departments of CIFP Ferrolterra.

## Pilot Experience Case Study 3 – Green Move

### At a Glance

**The mobility guidelines have been transferred to the BRIDGE-BS project to create a guide for blue mobility in the Black Sea. In addition, the organisations that participated in Green Move have expressed interest in continuing to use the guidelines: the Spanish VET providers CIFP Someso, Ferrolterra and U Laboral; Aquatera, UK (environmental services and products company) and Coruña University, Spain.**

The aim of Green Move was to promote professional mobility (including exchanges and technical visits) of students and workers and to encourage the use of green technologies to reduce the environmental impact of the Shipbuilding industry, maritime transport and maritime/offshore operations.

Through Green Move, 13 activities were carried out with more than 450 participants. Not only have these participants improved their knowledge and skills but also created networks with other institutions (during three online conferences, two hybrid events, eight workshops and visits for students and teachers).

The success of the exchanges has resulted in Green Move identifying key recommendations, based on lessons learnt, that could contribute to upgrading existing and new mobility programmes in maritime sectors. These guidelines help bring

together academia and industry through the provision of mobilities between students and workers.

The guidelines have been **transferred to the BRIDGE-BS<sup>14</sup> H2020 project in the Black Sea, resulting in an adapted guide for blue mobility** "Good Practices on Blue Move Activity". This guide promotes mobility and knowledge transfer to bring together students with the scientific community and industry to better match current training and skills' needs and labour-market demands in the Blue Economy context of the Black Sea.

In addition, the organisations that participated in Green Move have expressed interest in continuing to use the guidelines: the Spanish VET providers CIFP Someso, Ferrolterra and U Laboral; Aquatera, UK (environmental services and products company) and Coruña University, Spain.

<sup>14</sup>bridgeblacksea.org

## European Skills, Competences, Qualifications and Occupations (ESCO) Classification

### At a Glance

The MATES partnership reviewed 100 occupational profiles in the Shipbuilding and Offshore Renewable Energy value chains which has resulted in 14 new skills and five new occupations being identified, described and included in the latest ESCO v1.1.

ESCO is the multilingual classification of European Skills, Competences, Qualifications and Occupations, run by the European Commission and is part of the Europe 2020 strategy. The ESCO classification identifies and categorises skills, competences, qualifications and occupations relevant for the EU labour market and education and training.

For ESCO to remain useful in the labour market and in education and training, it needs to be updated regularly in line with trends of new and changing occupations and skills. **MATES has been an active contributor to this process, reviewing 100 occupational profiles in the Shipbuilding and Offshore Renewable Energy value chains** with the purpose of identifying changes due to emerging trends in the maritime technologies sector. The impacts of these trends, which were identified by the MATES partnership, have **resulted in 14 new skills and five new occupations being identified, described and included in ESCO v1.1.** MATES has also developed a protocol to assist the involvement of experts in the review process.

The transfer of the MATES results to ESCO is an important achievement as ESCO facilitates the exchange of data between employers, education providers and job seekers irrespective of language or country. ESCO has many benefits for various stakeholders including:

- **Jobseekers:** can document and describe their knowledge, skills, and competences to match job openings more accurately and it can also support geographical and occupational mobility in Europe
- **Education/training institutions:** can use the terminology to describe the learning outcomes of their qualifications, providing transparency and helping them to adapt their programmes to meet labour market needs
- **Employers:** can more accurately state the skills and qualifications they require from employees
- **Policy makers:** can use ESCO for skills intelligence enabling analysis of skills supply and demand

## European Commission Pact for Skills

### At a Glance

The MATES partnership transferred project outputs to the Shipbuilding Pact for Skills consortium and is coordinating a partnership to promote the Pact for Skills in Offshore Renewable Energy.

The Pact for Skills was launched by the European Commission in 2020 and is a **shared approach to skills development** in the European Union. It is one of the 12 flagship actions of the **European Skills Agenda**. It is also anchored in the principles of the **European Pillar of Social Rights** and supports the goals of the **Green Deal** and the **digital transformation** as set out in the European Commission communication “A strong Social Europe for Just Transitions”. The Pact aims to **mobilise and incentivise private and public stakeholders to take concrete action for the upskilling and reskilling of people of working age and when relevant, pool efforts in the partnerships.** The members of the Pact for Skills have all committed to a Charter of key principles and to launching concrete upskilling and reskilling actions.

MATES partners have invested a remarkable amount of time and resources engaging with and contributing to the **Pact for Skills**. This has resulted in **MATES not only transferring MATES outputs to the Shipbuilding Pact for Skills**

**consortium (coordinated by Sea Europe) but also building and coordinating a partnership to promote the Pact for Skills in Offshore Renewable Energy.**

The Offshore Renewable Energy Pact for Skills partnership has the ambition to strengthen the success of the EU Strategy for Offshore Renewable Energy (COM/2020/741 final<sup>15</sup>) by **building capacity for the provision of training for the re-skilling and upskilling of the workforce and attracting talent to the sector.** The key principles of the Offshore Renewable Energy Pact for Skills have been **correlated with MATES achievements in the Offshore Renewable Energy sector** to produce **29 concrete Lines of Actions, anticipated indicators and key enablers to achieve those actions.** Therefore, the Pact for Skills for Offshore Renewable Energy is providing **MATES** with an opportunity to **directly transfer and upscale the project's outputs through a dedicated partnership committed to securing quality investment in skills.**

## Open Access Results

MATES publicly available reports are accessible on the **project website**<sup>16</sup>, Research Gate<sup>17</sup>, **ZENODO and Open Aire** and all MATES educational resources developed and tested through the Pilot Experiences are available on the **Marine Training Platform**<sup>18</sup>, a service platform dedicated to marine education and training.

<sup>15</sup>eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2020%3A741%3AFIN&qid=1605792629666

<sup>16</sup>projectmates.eu

<sup>17</sup>researchgate.net/project/MATES-Maritime-Alliance-for-fostering-the-European-Blue-Economy-through-a-Marine-Technology-Skilling-Strategy

<sup>18</sup>marinetraining.eu

# MATES Strategic Plan

## Objective for the Future

**MATES**, as one of the first Blueprint projects launched by the EU Skills Agenda, has paved the way for a more collaborative approach to better align educational opportunities and labour market needs in all European sea basins, while also increasing the attractiveness of maritime careers. The project plans to expand its influence to all stakeholders in the industrial ecosystem. This will be done through active engagement of stakeholders, in particular the two large-scale Pact for Skills partnerships addressing Shipbuilding and Offshore Renewable Energies, with the **MATES** Sustainability and Long-term Action Plan.

## Priorities Going Forward

✓ One year on, 450 organisations have pledged through the Pact for Skills to reskill over 1.5 million people in Europe. **MATES** partners look forward to **continuing our work through the Pact for Skills and building upon strong alliances with stakeholders while contributing to a concerted effort for quality investment in skills.** The Offshore Renewable Energy Pact has committed to:

- Designing and developing an observatory on training needs and offers in the Offshore Renewable Energy sector
- Promoting Lifelong Learning in the Offshore Renewable Energy for all
- Promoting careers in the Offshore Renewable Energy sector
- Building durable skills partnerships for the Offshore Renewable Energy sector using a sea-basin approach

- ✓ The key principles of the Offshore Renewable Energy Pact for Skills have been correlated with **MATES** achievements in the Offshore Renewable Energy sector to produce **29 concrete Lines of Actions, anticipated indicators and key enablers to achieve those actions.** Therefore, the Pact for Skills for Offshore Renewable Energy is providing **MATES** with an opportunity to directly transfer and upscale the **MATES** outputs through a dedicated partnership committed to securing quality investment in skills.
- ✓ All **MATES** project partners have committed to **sustaining and/or exploiting the 23 identified MATES outputs** for the next five years, as outlined in the **MATES** Sustainability and Long-Term Action Plan.
- ✓ The **MATES** Sustainability and Long-Term Action Plan **identifies key enablers as part of an Action Plan**, the stakeholders that are best positioned to carry out those actions and when those actions are expected to be relevant in the future.
- ✓ **MATES** has developed 23 Knowledge Transfer Plans to **ensure the exploitation of identified Knowledge Outputs.** Exploitation is already underway and, in some cases, has had successful outcomes as outlined in this brochure. The partners will continue to carry out the exploitation plans and record any outcomes. Learnings and insights from these knowledge transfer case studies can be applied to future transfer activities.
- ✓ Each of the Pilot Experiences have been **assessed for their Knowledge Transfer Readiness Level**, which will be included in the Compilation of Pilot Experience Results and Impacts, one of the final project deliverables. The Knowledge Transfer Readiness Level provides valuable insights in terms of replicability, for local, national and international stakeholders.

**“Learning today is the development of tomorrow. The methods and concepts of ILS explained in the MATES Pilot Experience training course will allow learners to feel passionate about this constantly evolving engineering field. Having relied on this content to develop the internal training of our department assures us that in the future we will have skilled engineers who are not only prepared in the field but also passionate about their job.”**

Moisés Vergara Villarovo,  
Safety Project Manager – CT Ingenieros  
(MOOC Pilot Experience)

**“Congratulations for this training seminar. Innovative ideas, technological achievements as well as exchange, creation and transmission of know-how are platforms that enable the development of key actions aiming to revitalise the shipbuilding and ship repair sectors. Piraeus Chamber of Commerce and Industry will always support such initiatives.”**

Vassilis Korkidis, President of Piraeus Chamber of Commerce and Industry  
(Additive Manufacturing Pilot Experience)

**“This MATES experience was well received by the students. So much that we are thinking of repeating and expanding it by scanning the school training ship. In this way, more naval design students of the upcoming years can be involved, making them more actively engaged”**

Martina Vascotto,  
Naval Architecture Teacher  
(MOL<sup>2</sup> Pilot Experience, Italy)

**“I think that what I am learning today will last a lifetime, both in terms of priority management and social relationships of almost any kind. It could help me in many situations.”**

David Domínguez, Vocational Education Student in Electronic Maintenance (MOL<sup>2</sup> Spain Pilot Experience)

**“I must congratulate you for this initiative and emphasise that the existing framework of cooperation between research, industry and public actors constitutes a key enabler that can further support several economic activities in the maritime domain. We are glad to participate in this effort together with industry representatives which support the great deal of knowledge we hold in the shipbuilding and ship repair sectors.”**

Konstantinos Katsafados,  
Deputy Minister of Shipping of Greece  
(Additive Manufacturing Pilot Experience)



