Friday
9th
JULY
09:30 – 12:30
CEST

EUSAIR INVESTMENT IN SKILLS AND EDUCATION: WHICH ROADMAP FOR A MORE SUSTAINABLE BLUE ECONOMY IN THEADRIATIC-IONIAN REGION?

Facts and Figures from the MATES Skills Strategy for the Maritime Technologies

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In cooperation with

RELEVANT COMPETENCES OF HIT/CERTH

- MoU with key maritime education and training institutes in Greece (Univ. of Piraeus & Exantas Institute)
- Supporting the Greek Ministry of Maritime Affairs and Insular Policy in developing actions for the revitalization of the shipbuilding and repair sector
- Supporting the Greek Ministry of Labour in devising programmes for the upskilling / reskilling of workers and unemployed in the logistics sector
- Branch of HIT/CERTH is being hosted at the premises of the Piraeus Chamber of Commerce and Industry (founder of the Maritime Hellas Cluster) for maintaining a direct communication channel with the industry
- Sustaining research activities exploiting the work of the SKILLFUL and EU-PORTRAITS projects in the MATES project

THE MATES PROJECT IDENTITY

Skills Agenda for Europe 2016

Skills intelligence

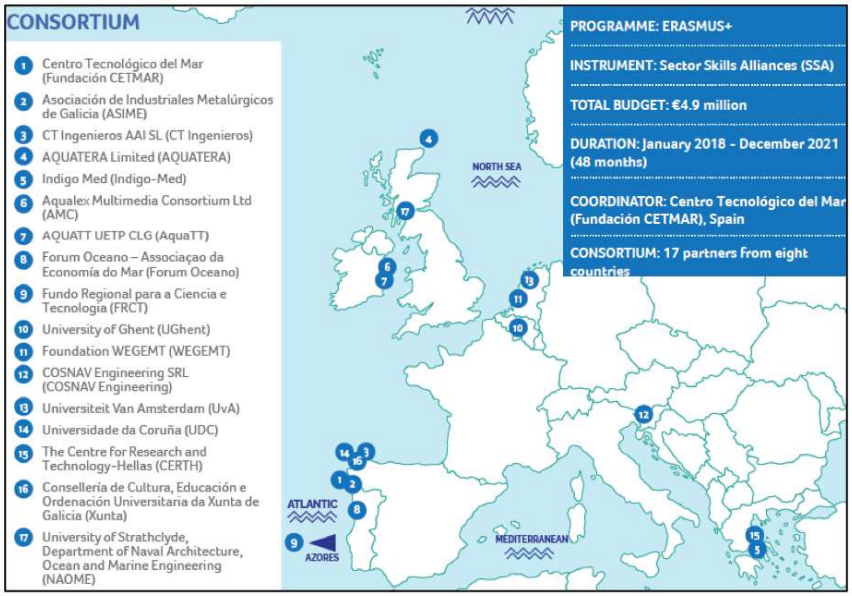
- Revision of EUROPASS
- Analysis of brain drain
- **BLUEPRINT FOR SECTORIAL COOPERATION ON SKILLS** → MARITIME TECHNOLOGY
- Initiative on graduate tracking

Improve skills intelligence & address skills shortages in key economic sectors

mates

CONSORTIUM

1. Centro Tecnológico del Mar (Fundación CETMAR)
2. Asociación de Industriales Metalúrgicos de Galicia (ASIME)
3. CT Ingenieros AAI SL (CT Ingenieros)
4. AQUATERA Limited (AQUATERA)
5. Indigo Med (Indigo-Med)
6. Aqualex Multimedia Consortium Ltd (AMC)
7. AQUATT UETP CLG (AquaTT)
8. Forum Oceano – Associaçao da Economía do Mar (Forum Oceano)
9. Fundo Regional para a Ciencia e Tecnologia (FRCT)
10. University of Ghent (UGhent)
11. Foundation WEGEMT (WEGEMT)
12. COSNAV Engineering SRL (COSNAV Engineering)
13. Universiteit Van Amsterdam (UvA)
14. Universidade da Coruña (UDC)
15. The Centre for Research and Technology-Hellas (CERTH)
16. Consellería de Cultura, Educación e Ordenación Universitaria da Xunta de Galicia (Xunta)
17. University of Strathclyde, Department of Naval Architecture, Ocean and Marine Engineering (NAOME)



PROGRAMME: ERASMUS+

INSTRUMENT: Sector Skills Alliances (SSA)

TOTAL BUDGET: €4.9 million

DURATION: January 2018 – December 2021 (48 months)

COORDINATOR: Centro Tecnológico del Mar (Fundación CETMAR), Spain

CONSORTIUM: 17 partners from eight countries

Main objective

Develop a **Skills Strategy** that addresses the main drivers of change to the maritime industry

The two sectors addressed are strongly linked and require **new capacities** in order to succeed in today's increasingly *digital*, *green* and k*nowledge-driven* economy

THE PROJECT'S METHODOLOGY

Skills intelligence to great align educational opportunities and labour market by closing present and future skills gaps: **22 proposed Action Lines**

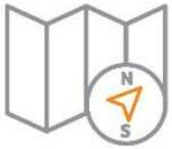
- Identified skills gaps
- Identified training offer
- Paradigm changes and future scenarios with most effective training methods
- Shortlisted Lines of Action

Validate actions and priorities suggested by the skills strategy **through 11 pilot case studies involving both education providers and industry**

- Stakeholder feedback/assessment of the implementation

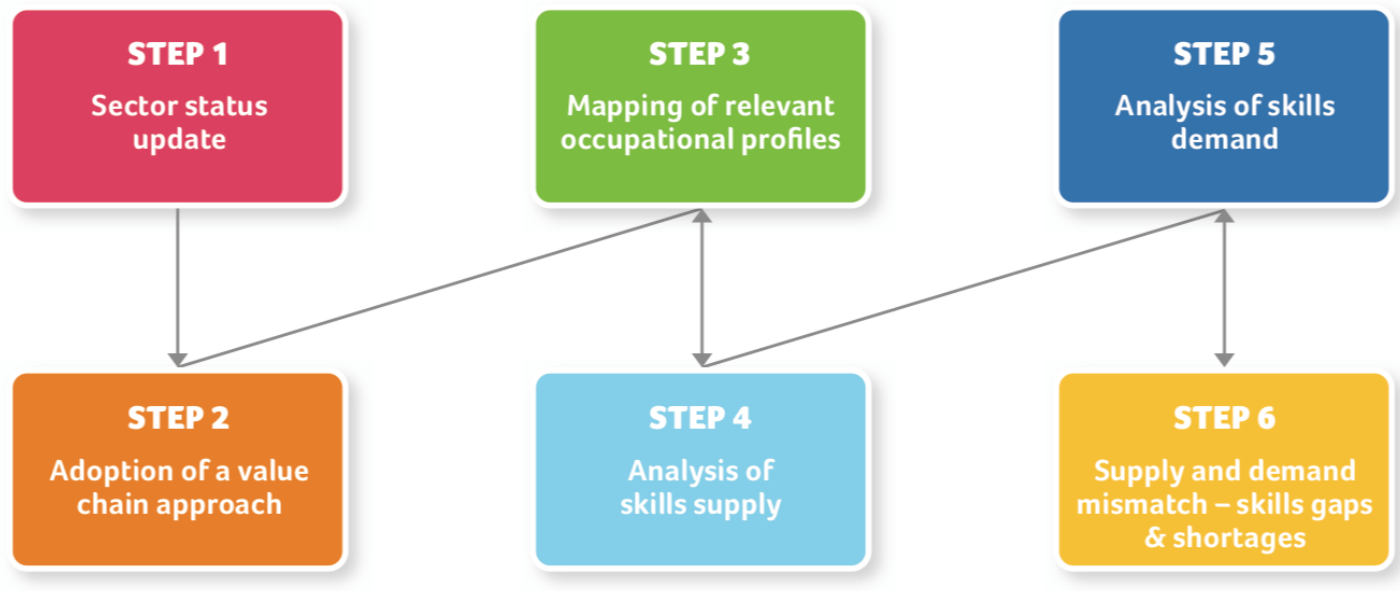
Critical review.
Feedback to the Strategy

VALIDATED Strategy and Ation Plan



2017 | 2018 – 2019 | 2020 – 2021 | 2021 | 2021

ANALYSIS OF THE PRESENT SKILLS GAPS



MAIN ACTIVITIES UNDERTAKEN

Desk research

Reference layers

- Value chains
- Occupational profiles (ESCO classification) – primary and supporting
- EQF levels

Skills supply

- Extended review and analysis of relevant E&T programs:
  - Type and EQF level
  - Name and responsible institutions
  - Duration and language
  - Curriculum and occupational profiles addressed

Regional workshops and validation workshop

5 regional workshops held in Greece, Portugal, Netherlands, UK and Spain

Discussing:

- Primary occupational profiles
- Needs in terms of both hard and soft skills
- Gaps in existing E&T programs
- New technologies and emerging trends impacting each sector

Validation workshop in Belgium

- Validation of skills supply results and of initial expert consultation

Extended industry consultation

Skills demand

Job vacancies analysis

- Occupational profiles addressed
- Knowledge and education requirements

Questionnaire survey

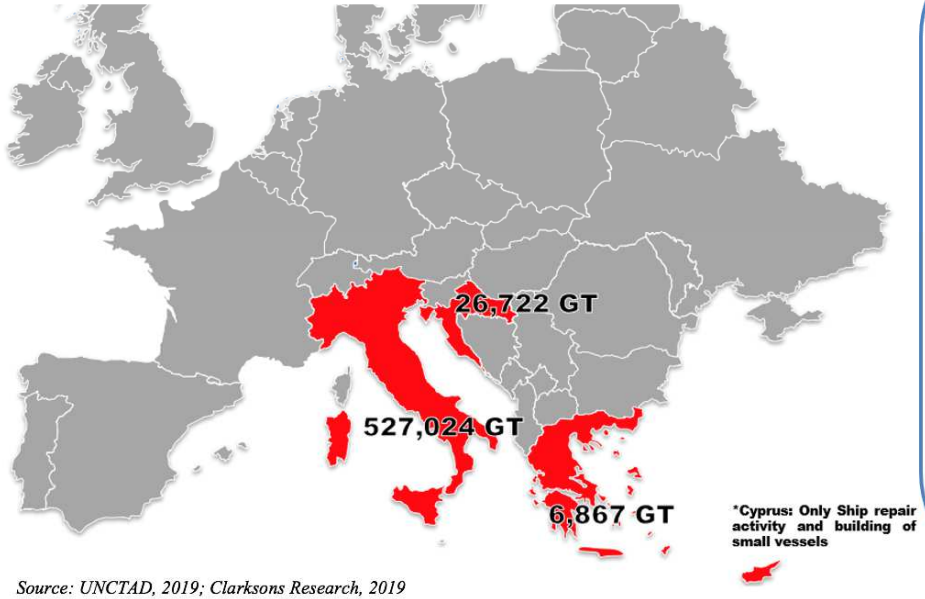
- Skills review process of companies
- Knowledge and education requirements they set
- Difficulty in finding well-qualified employees
- Skills gaps and shortages (hard and soft skills)
- Methods to address those gaps

Interviews with experts and Focus Group meetings

- Elaboration of questionnaire results

STATUS UPDATE IN THE ADRIATIC-IONIAN REGION

Productivity levels in 2019

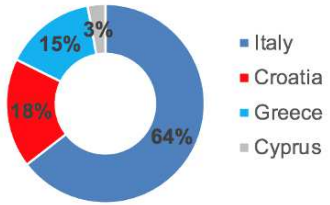


Source: UNCTAD, 2019; Clarksons Research, 2019

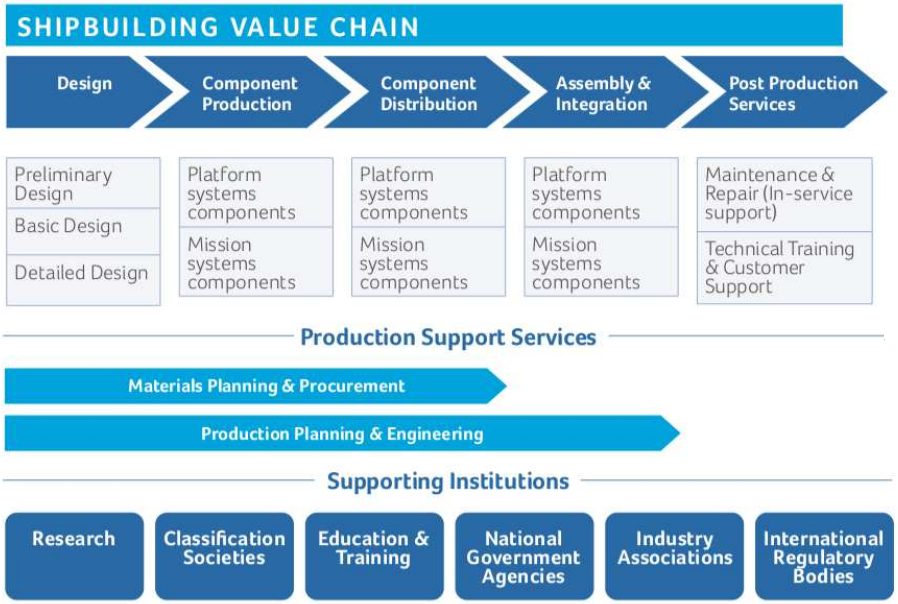
Key facts

- In all 4 countries, there are approximately 25 shipyards employing (directly and indirectly) about 56.000 people
- Cruise vessels and yachts account for the largest share of relevant activities

Persons employed by Member State (2019)



OCCUPATIONAL PROFILES

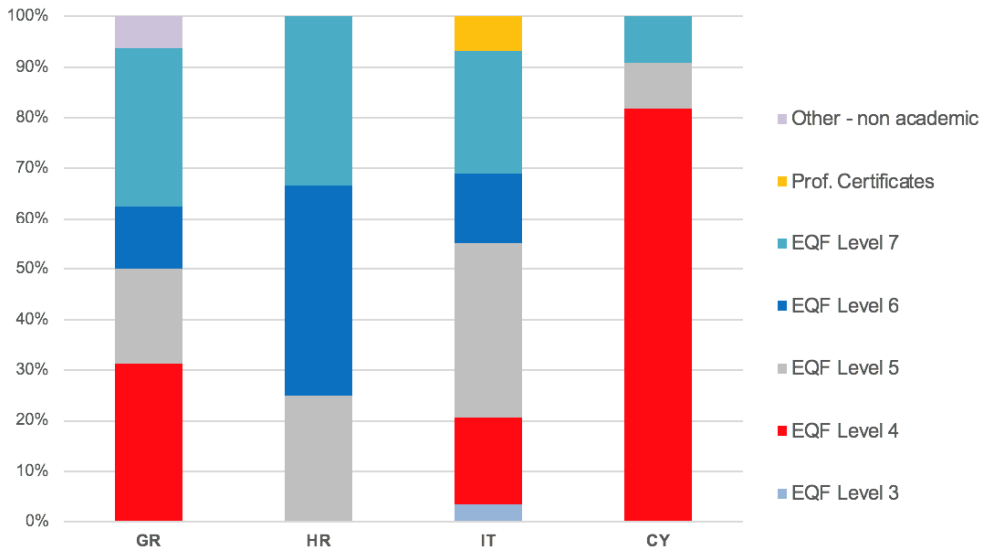


35 primary
25 secondary

ESCO European Classification of Skills/Competences, Qualifications and Occupations

Occupational group	Occupational profile
Engineers	Naval architect, Marine engineer, Electro-mechanical engineer
Engineering technicians	Marine engineering technician, Electro-mechanical engineering technician, Electronics engineering technician
Draughtpersons	Marine engineering drafter, Electro-mechanical drafter
Metalworkers	Welding inspector, Welder, Shipwright, Boilermaker, Pipe welder (pipefitter), Sheet metal worker
Electricians & Electronics Technicians	Marine electrician, Marine electronics technician, Electro-mechanical equipment assembler, Electronic equipment assembler
Mechanics	Vessel engine assembler
Surface Treatment	Surface treatment operator, Transport equipment painter, Abrasive blasting operator (sandblasting)
Boat artisans	Marine upholsterer, Boat rigger, Fiberglass laminator, Made-up textile articles manufacturer (sail maker)
Machinists	Computer numerical control (CNC) machine operator
Carpenters	Marine Carpenter
Other	Vessel assembly inspector, Marine surveyor, Construction scaffolder, Construction scaffolding supervisor, Mobile crane operator, Production plant crane operator

SKILLS SUPPLY ANALYSIS: OVERVIEW



68 E&T programs were identified in the 4 countries for the 2018-2019 academic year

- 59% of them were VET programs specializing on metalworking
- Programs of higher education were mostly engineering-related
- Only few programs proved to be sector-specific. The majority provides broader qualifications applicable to different business sectors
- There is a spatial concentration of programs (e.g. Friuli Venezia Giulia)
- 23% of programs are offered in English or are bilingual

SKILLS SUPPLY ANALYSIS: COUNTRY INSIGHTS

ITALY	
Specialization	Only **26%** of the identified occupational profiles prove to be targeted by the available programs, with most of them specializing in **marine engineering**, **naval architecture** and **marine drafting**. Several programs are concentrated in the Friuli-Venezia Giulia region where a large and very active shipbuilding community is established.
Occupational profiles	**Marine engineers, naval architects, marine engineering technicians, marine engineering drafters and shipwrights** are the occupations addressed by the majority of available programs. **Electromechanical engineering technicians and marine engineers** are also being targeted by a lower but considerable number of programs. There prove to be however **major gaps on all other occupational profiles identified (74%)** since no program address them providing the required knowledge and skills.
Value chain	There are major gaps in current E&T offers, highlighting important shortages mainly in the **production** and **port-production** phases of the shipbuilding value chain. More specifically, **89% of occupations that are involved in these phases are not being addressed by any E&T program currently available.**
Language	Out of the 29 programs, only 7 are being offered in English or are bilingual. 6 of them are Master programs (EQF 7) and 1 is a VET program. **All 7 address the design component of the shipbuilding value chain.**

CROATIA	
Specialization	The main field of specialization proves to be the **engineering disciplines** as most of the mapped E&T offers are addressing the professions of **Naval Architect** and **Marine Engineering** in addition to a couple of programs covering the **electromechanical engineer**, **electronics engineering technician** and **marine engineering technician**
Occupational profiles	The rest of the identified programs are covering only the **metalworking group of occupations** and specifically the **welders, Computer numerical control (CNC) machine operators** and **sheet metal workers**. The remaining of the occupational profiles prove not to be addressed by any of the shipbuilding-oriented programs and therefore covered by more generic educational and training offers.
Value chain	Shortages were found to exist **across the whole value chain**. Regarding the **pre-production** phase, there is a **lack of specific programs addressing the design part** of the value chain. Regarding the **production** and **post-production** phases, there are important gaps since **the majority of the occupational profiles** employed in these segments are not being supported by any of the available programs.
Language	Only two (2) of the Master programs are available in English.

SKILLS SUPPLY ANALYSIS: COUNTRY INSIGHTS

GREECE	
Specialization	Approximately **40%** of the identified occupational profiles are being targeted, to some extent, by the available E&T programs. The main **engineering disciplines** as well as **metalworks** prove to be the main fields of specialization.
Occupational profiles	**Welders, boilermakers, sheet metalworkers, pipe welders (pipefitters), naval architects, marine engineers, marine engineering technicians and electromechanical engineers** are the main occupations targeted by the available programs while to a less extent relevant knowledge and qualifications are also being provided for **shipwrights, marine electricians, boat riggers and computer numerical control (CNC) machine operators.**
Value chain	Important shortages are identified across the whole value chain. Compared to Italy, specific programs addressing the **design part** of the value chain **are missing** limiting in that way the availability and relevant competences for **drafters**. The gaps in the **production** and **post-production** phases are also important since several of the occupations undertaking activities there are not being supported by any of the available programs.
Language	Out of the 16 programs, only **3 Master programs (EQF 7)** are bilingual (Greek/English).

CYPRUS	
Specialization	The available programs focus on providing skills for **general metalworking and electrical activities.**
Occupational profiles	The available VET programs address occupations related to **technical disciplines** including **metalworking** and **electric** and **electromechanical activities**. These include **welders, boilermakers, pipe fitters, marine electricians, electromechanical engineering technicians** and **shipwrights**.
Value chain	Shortages exist to the **post-production** phase since only ship-repair activities are available in Cyprus
Language	Only one (1) Master program is available in English.

SKILLS DEMAND

Skills assessment and upskilling / reskilling needs

- Most companies in the sector review the skills and training needs of their employees on an *annual basis*, while a good percent undertake such a process more than once a year
- Engineers and engineering technicians are the occupations mostly targeted by such a process
- There is a pressing need to continuously improve existing skills so that the adaptation gap to market dynamics and new technology implementation is shortened
- The sector is currently in need of skills related mainly to electrification, alternative fuels, additive manufacturing and automation & digitalization

Employment needs

- Companies find it *quite difficult* to find employees with the desired skills and qualifications
- Young engineers and blue-collar workers lack the necessary experience to be directly employed in the sector
- Engineers and managers are currently in greatest demand
  - Engineering design, collaborative working, project management, process planning & organization, simulation (CFD), compliance with regulations and H&S standards
    - Project management, planning & organization, team mng & coordination, collaborative working, financial management
- The opportunities to attract skilled personnel from other production sectors need also to be taken into careful consideration

GAPS AND SHORTAGES IN HARD SKILLS

Skills category	Skills gaps and shortages
Engineering	▪ Electronic & electrical engineering skills ▪ Skills in automation ▪ Engineering design skills ▪ Skills in marine engineering
Business management	▪ Knowledge of business management tools ▪ Lean management ▪ Quality management ▪ Knowledge to efficiently coordinate different projects / works and take informed decisions ▪ Team building and management techniques (especially of inter-disciplinary teams) ▪ Skills for communicating technical knowledge and work guidelines (especially to inter-disciplinary teams) ▪ Holistic perspective of shipbuilding projects, considering all different phases and the respective needs they present as well as their interrelations and cascading effects / impact of certain actions / activities
Project management	▪ Knowledge of the life cycle of shipbuilding projects ▪ Project planning and organization ▪ Resources planning and monitoring ▪ Knowledge and efficient exploitation of available financial instruments ▪ Design and optimization of production processes ▪ Logistics and supply chain organization
Design	▪ Knowledge of design software (e.g. CAD) ▪ 3D design ▪ Data-based modelling ▪ Knowledge of different production processes ▪ Knowledge of all safety and regulatory parameters; ▪ Knowledge of any changes in relevant regulations and possible implications in work flows and conditions

Skills category	Skills gaps and shortages
Technical	▪ Welding techniques (e.g. welding and casting requirements of new materials, torch cutting, etc.) ▪ Composite materials manufacturing, application and surface finishing ▪ Assembly and installation of engines of new type ▪ Knowledge of cryogenic and overpressure technology (such as hydrogen) ▪ Electrical and electronic systems assembly and installation ▪ Handling of cranes, CNC machines and robots
Digital	▪ Digitalization and optimization processes for improving operations ▪ (Big) data analytics ▪ Handling of ERP and MRP systems ▪ Programing and handling of CNC machines and robots
Foreign languages	▪ Ability to fluently communicate in the English language ▪ Reading and understanding of engineering drawings, technical specifications and user manuals which are all in the English language ▪ Knowledge of other languages (e.g. Italian, Spanish, Chinese) for supporting communication and collaboration with other companies involved in the shipbuilding value chain

GAPS AND SHORTAGES IN SOFT SKILLS

Skills category	Skills gaps and shortages
Communication & collaboration	▪ Ability to communicate in different languages (mostly English) and in inter-disciplinary teams ▪ Ability to establish and manage horizontal and vertical relationships
Leadership and responsibility	▪ Ability to take informed and evidence-based decisions ▪ Ability to lead inter-disciplinary teams and effectively distribute roles and responsibilities
Critical thinking and problem solving	▪ Knowledge of problem solving techniques ▪ Quick and efficient solution finding ▪ Quick decision-making capability
Creative thinking and innovation	▪ Monitoring of technical and technological advancements and quick adaptation into work flows and conditions
Knowledge management and transfer	▪ Ability to efficiently manage and use new knowledge acquired through different means (E&T programs, practical experiences, etc.) ▪ Ability to transfer acquired knowledge to others (e.g. new employees)

RECOMMENDATIONS

- **Informal and non-formal education and training methods** were acknowledged as appropriate for addressing both hard and soft skills (i.e. knowledge and experience transfer, on-the-job training, professionally accredited courses)
- **Formal education must be combined with on-the-job training** for supplying the labor market with 'ready-to-work' young professionals
- **Accreditation** of certain E&T programs should be provided by **national professional / industry associations or governmental bodies**.
- **Synergies with other sectors** should be reinforced for transferring and exploiting available skill sets
- Shipyards must properly **reform their human resources policies and replacement mechanisms** of retired employees for efficiently transferring available knowledge and experiences to new generations
- Skills intelligence analysis may benefit from a **bottom-up approach** (national to regional) which may be conducted at frequent time intervals (standardized process) for assessing the dynamics and impact of new trends on skills, transmitting to E&T providers targeted recommendations for program reform

FOR MORE INFORMATION

Please consult the full report or its executive version

Full version:

https://www.projectmates.eu/wp-content/uploads/2020/10/MATES_D2.1_Final_Oct-2020.pdf

Executive version:

https://www.projectmates.eu/wp-content/uploads/2021/01/MATES-D2.1-Baseline-Executive-Report-Jan-2021-1.pdf

THANK YOU !!

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