



MARITIME SKILLS
COMMISSION

SKILLS FOR GREEN JOBS REPORT

JUNE 2024



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Authorship and Acknowledgements

This report has been produced by Kit Williams, Maritime Sustainability Skills Manager with Cornwall Marine Network (CMN) for the Maritime Skills Commission. December 2023. The views expressed herein are based on the outcomes of independent research completed by the authors. The report does not necessarily reflect the views of Maritime UK.

Foreword

I am delighted to be supporting the Maritime Skills Commission as they lead the UK maritime sector green skills transition to net zero.

We all recognise the maritime sector faces considerable challenges in meeting the future demand for green jobs and putting in place the skills required. Under the excellent leadership of Graham Baldwin, the Maritime Skills Commission is now leading the skills developments of the Department for Transport Maritime 2050 strategy to understand the skills needs of the sector, ensure the industry addresses skills shortages and gaps, and ensure the sector has the training provision it needs with clear information on career paths and re-training options.

The Skills For Green Jobs Report is the next important milestone in the MSC journey and their commitment to weaving the green skills agenda throughout its scheme of work, with a focus on understanding what 'green skills' mean to the different parts of the maritime sector.

In 2022, during Green Careers Week, the Maritime Skills Commission announced it had partnered with Cornwall Marine Network and with investment from both the Department for Transport and CMN, we recruited a Green Skills Manager to deliver the recommendations of the Green Skills Position Paper.

Kit Williams gained the role of Green Skills Manager and is the author of this report. Kit was recruited from within CMN and has a strong track record of responding to business needs and stimulating growth through innovation, so was ideally suited to help meet the emerging skills needs of the maritime sector. Kit has led the evidence gathering, including surveys of UK businesses to implement actions arising from the Green Skills Position Paper. One of the actions has seen Kit lead the development of a comprehensive matrix of green jobs and skills provision in the sector. The matrix has been developed and provides a comprehensive map of what is known about green skills in maritime. This mapping of jobs and skills into one comprehensive resource is unique to any UK business sector and this important new national resource will need to be managed and maintained going forwards. I would like to see the matrix devolved into the maritime UK region's to become a tool that can be developed and maintained by the Maritime Cluster Network to support regional green skills specialisms that are emerging. The clusters are ideally placed to expand on this excellent work. Green skills are essential to the achievement of net zero. Kit's recommendations outlined in this paper, endorsed by the MSC, are the next important stage in this journey that in the maritime regions we are all signed up to achieve.

I am proud to commit my team at Cornwall Marine Network to continuing the support for the MSC, MUK, the Maritime Cluster Network and DfT as we make progress together to equip our workforce of tomorrow with the new skills they need.

Executive Summary

During May 2022, the Maritime Skills Commission (MSC) adopted its 'Green Skills Position Paper', which highlighted the need to take ownership of the 'skills to support green jobs' agenda for the maritime sector by:

- Continuing to collaborate, learn, listen and work with industry.
- Leading the development and deployment of a comprehensive Matrix of Green Jobs/Skills in the sector.

In October 2022, Cornwall Marine Network (CMN) - in partnership with the MSC – employed Kit Williams as Maritime Sustainability Skills Manager, to deliver the outcomes specified in the Position Paper.

The main areas of focus and development, through collaboration with Government, training providers and key industry stakeholders, has primarily been: the production of a comprehensive 'Green Skills Matrix' which maps out the national Green/Sustainability skills training provision; creating a national resource, facilitating the connecting of industry to training provision.

The Green Skills Matrix is a revolutionary tool which (through the utilisation of Artificial Intelligence) can provide those new to the sector, and those looking to upskill or reskill, with accurate information and guidance regarding academia and careers, actively supporting the development of tomorrow's workforce.

As a result of the joint investment from MSC (supported by DfT and Maritime UK) and CMN, a revolutionary Green Skills Matrix has been produced. This is a truly unique and interactive national resource which, in the future, will be able to provide government departments with an accurate and up to date position on maritime workforce development progress. This provides vital information which can have real impact on the direction of maritime skills and training throughout the UK.

1. Introduction

1.1 This report outlines the delivery of the “Skills for Green Jobs” Workstream from October 2022 when the Maritime Skills Commission (MSC) and Cornwall Marine Network (CMN) employed a Maritime Sustainability Skills Manager to lead on the delivery of the workstream. Earlier in 2022, the MSC had published the “Skills for Green Jobs” Position Paper which set out seven actions for the Commission following the evidence-gathering sessions and independent report at COP26, one of which was to “oversee the development and deployment of a comprehensive matrix of green jobs/skills in the sector”.

1.1 The workstream investigated the demand for green skills across the maritime sector within the UK. It also investigated the extent of current green skills training provision supply across the UK on both a regional and national scale, indiscriminate of organisation size and range of training provision.

1.2 Key recommendations and ‘next steps’ are also identified within this report, with clear gaps from industry emerging throughout the delivery of the workstream. The findings and subsequent matrix have certainly mapped out the current landscape of green skills training provision, but there is undeniably more work to be done here. For example, having a Green Skills Matrix resource is fantastic, but it is currently broad in its coverage.

1.3 There is scope here for other workstreams under the Commission’s charge to adopt a similar approach and compose a matrix specific to their area of the sector to assist prospective workforce in navigating what can evidently be complex career corridors

2. Workstream Outline

2.1 On the 25th May 2022 the National Council approved the “Skills for Green Jobs” Position Paper (later released in June 2022) alongside the Maritime Skills Commission’s seven recommendations which were:

2.1.1 Take ownership of the ‘skills to support green jobs’ agenda for the maritime sector by continuing to collaborate, learn, listen and work with key industry stakeholders.

2.1.2 Support Maritime UK’s recommendation for a Green Skills tax credit

2.1.3 Work closely with Government, Research and Development institutions, and sector representatives to foster a favourable context for infrastructure investment, technology readiness and workforce development.

2.1.4 Support the calls for Government-funded green-specific promotion of skills and jobs, along with wage subsidies for jobs contributing to the green transition.

2.1.5 Support organisations to promote the diversity in green jobs in the maritime sector.

2.1.6 Collaborate with Maritime UK members (including Regional Clusters) and intermediary organisations to develop local ownership of the skills agenda whilst the Commission monitors the development and deployment of skills for green jobs across the UK.

2.1.7 Oversee the development and deployment of a comprehensive Matrix of Green Jobs/Skills in the sector.

2.2 At that meeting the following workstream objectives were endorsed to:

- Survey maritime businesses to gain a detailed understanding of their green skills needs.
- Produce a comprehensive Matrix to map what is known of Green Skills for the maritime sector. This matrix will become a national resource and will identify gaps and inform the development of new / enhanced training courses for the Maritime Skills Commission.

The Matrix will then generate an Action Plan of who, what, when and where in terms of the solutions. Sub-recommendations include:

- Draw together existing Green Skills relating to Labour Market Intelligence to support the development of the Matrix which will be relevant across shipping, ports, leisure marine, marine services and engineering and science.
- Support the work of Regional Maritime Clusters, industry and the training and qualification supply side to add to the list of additional accredited add-ons/ bolt-ons and (in the immediate short-term) short 1 and 2-day courses relevant to the maritime sector.

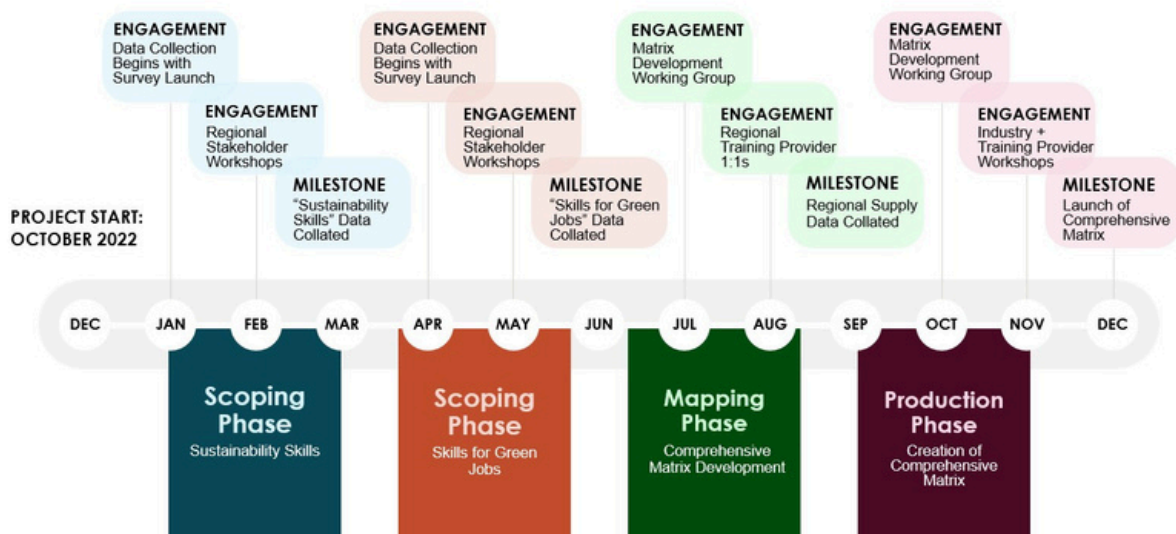
- Assist Regional Maritime Clusters, industry and the training/qualification supply side to add to the list of new apprenticeship standards to be developed rapidly that are specific to the Maritime sector.
- Collaborate with Regional Maritime Clusters and intermediary organisations to develop more ownership of the skills agenda in their region in order to support our ambition to oversee the development and deployment of skills for green jobs across the UK.
- Regularly report progress to the Head of Diversity and Operations/Maritime Skills Commission at Maritime UK and provide written reports for the MUK National Council and Maritime Skills Commission.

2.3 The Commission subsequently appointed a Maritime Sustainability Skills Manager, Kit Williams, in October 2022 to deliver against the recommendations, overseeing the development and deployment of a comprehensive Matrix of Green jobs/skills in the sector. The planning of the workstream’s engagement with industry took place with immediate effect and culminated in a timeline being developed (see Figure 1), with the workstream progressing onto the Scoping Phase in January 2023. The Scoping Phase commenced in January and successfully concluded in June 2023.

2.4 The Scoping Phase included:

- 2.4.1 Establishing a working group made up of Commissioners and National Council Board members.
- 2.4.2 Delivering of a series of evidence gathering workshops with Maritime Skills Commissioners, National Council members, Regional Clusters and stakeholders.
- 2.4.3 Undertaking surveys aimed at employers within the sector to gather further insights.
- 2.4.4 Delivering a series of 1:1 stakeholder engagement meetings to further test ideas from the workshops.

Figure 1 - "Skills for Green Jobs" Timeline



2.5 Evidence Gathering Workshops

2.5.1 Evidence gathering workshops were held regionally to gather insights of the shortage of green skills in the sector; to provide an opportunity to explore problems and solutions/ideas; and an occasion to gain stakeholder-based insights to help guide the direction of the project. However, due to poor industry response/uptake, the majority of these sessions were postponed and/or subsequently cancelled.

2.6 Surveys

2.6.1 There were two surveys within the Scoping Phase. The purpose of the surveys were to survey maritime businesses to gain a detailed understanding of their green skills needs, and to identify skills gaps and shortages in the sector.

2.6.2 The first investigated the supporting skills associated with sustainability and those needed to make a business “greener” to operate (i.e. analytical thinking, leadership for change, effective communication and resilience). The survey looked at technology and innovation skills, operational management skills, and monitoring and evaluation skills connected to the maritime sector. These skills, being broad and general, left the path clear to hone in on the specific skills required for green jobs in the second survey.

2.6.3 For the second survey, 'Skills for Green Jobs' were investigated by taking a closer look at how individuals and organisations from across the maritime sector were transitioning towards a sustainable/green future. Participants were actively encouraged to include as much detail within their answers as they wish.

2.6.4 The first survey provided quantitative data, where industry ‘scored’ and prioritised sustainability skills used within their respective fields of expertise, whereas the second survey provided qualitative data, where respondents could say as much or as little as they wished regarding the barriers or successes they had experienced relating to green skills and how they were transitioning towards a sustainable/green future.

2.6.5 The key stakeholders invited to take part in the surveys were identified following consultations with a Regional Clusters Council representatives, Maritime UK, members of the National Council, and MSC Commissioners.

2.7 1:1 Stakeholder Engagement Meetings

2.7.1 These meetings occurred where stakeholders either could not attend the workshops or preferred to discuss their response instead of/in addition to the survey. These were held either face-to-face or remotely online by the Maritime Sustainability Skills Manager, Kit Williams.

2.7.2 The Scoping Phase of the workstream was brought to a close in June 2023 and progressed onto the Mapping Phase, which concluded in August 2023. The Mapping Phase involved the collating of green skills training from training providers across the UK.

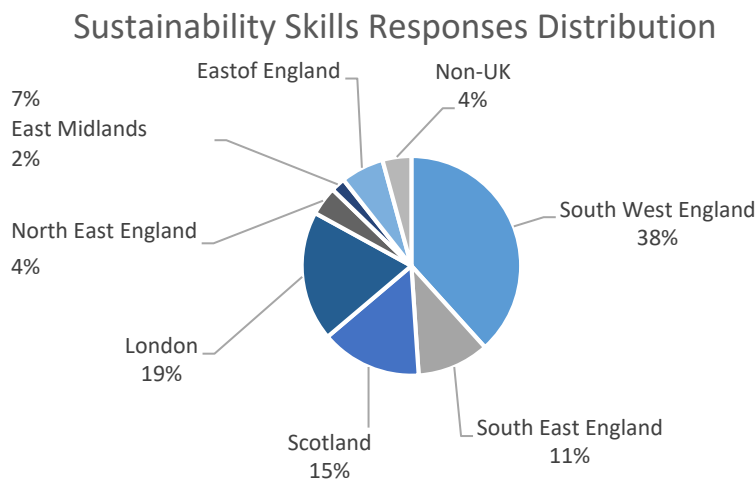
2.7.3 A target of ten sustainability/green skills training providers from each region was identified, and was purposefully eclectic in terms of organisation size and the range of courses and training provision offered. This inventory of UK Maritime and Green training provision has become the foundation of the Green Skills Matrix.

3. Key Findings

3.1 Sustainability Skills

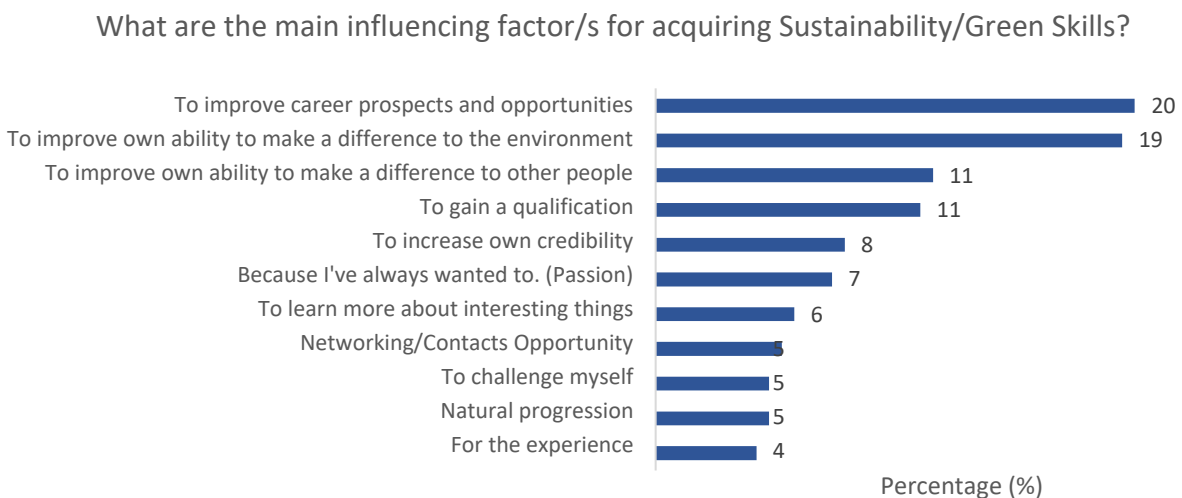
3.1.1 The geographical distribution of the businesses and organisations who responded and were involved in the regional stakeholder workshops can be seen below in Figure 2:

Figure 2 - "Where is your organisation based?"



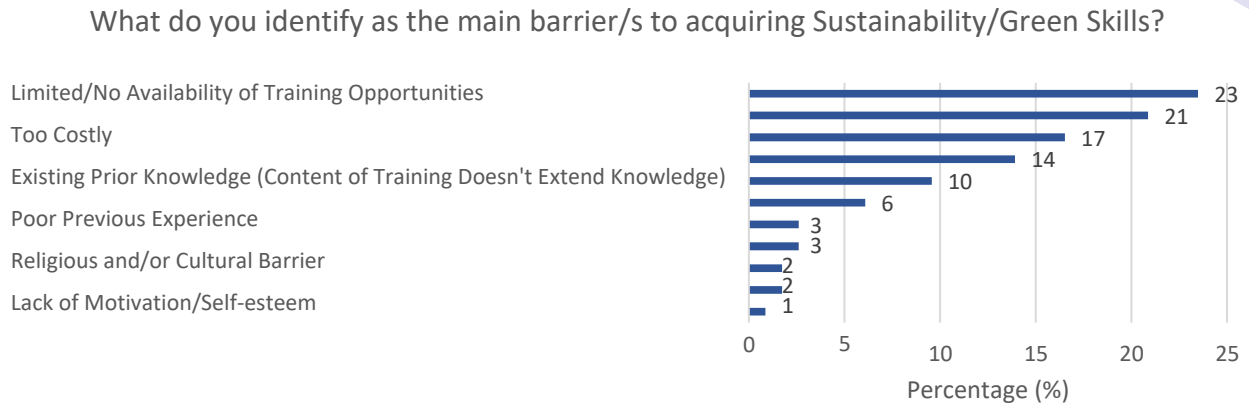
3.1.2 Figure 3 illustrates the sector’s main influencing factor for acquiring sustainability/green skills as a pathway to improve career prospects and opportunities, alongside the desire to make a difference to the environment.

Figure 3 - "What are the main influencing factor/s for acquiring Sustainability/Green Skills?"



3.1.3 The barriers identified by the sector to acquiring sustainability/green skills (Figure 4) proved unsurprising as they were echoed throughout the various areas of the sector. "Limited/No availability of training opportunities" emerged as the main barrier (20%), but was closely followed by "No time to learn/study" (21%), "Too costly" (17%) and "Geographical barrier" (14%).

Figure 4 - "What do you identify as the main barrier/s for acquiring Sustainability/Green Skills?"



3.1.4 As depicted in Figures 5 and 6, respondents were predominantly concerned with energy efficiency as a key focus area with it being the most frequently used sustainability skill amongst the respondents. However, Figure 7 also illustrates it as an area in which the respondents felt they required more training, bringing the quality of the training received into the spotlight

Figure 5 - "Which subject areas under 'Technology and Innovation' are required in your role?"

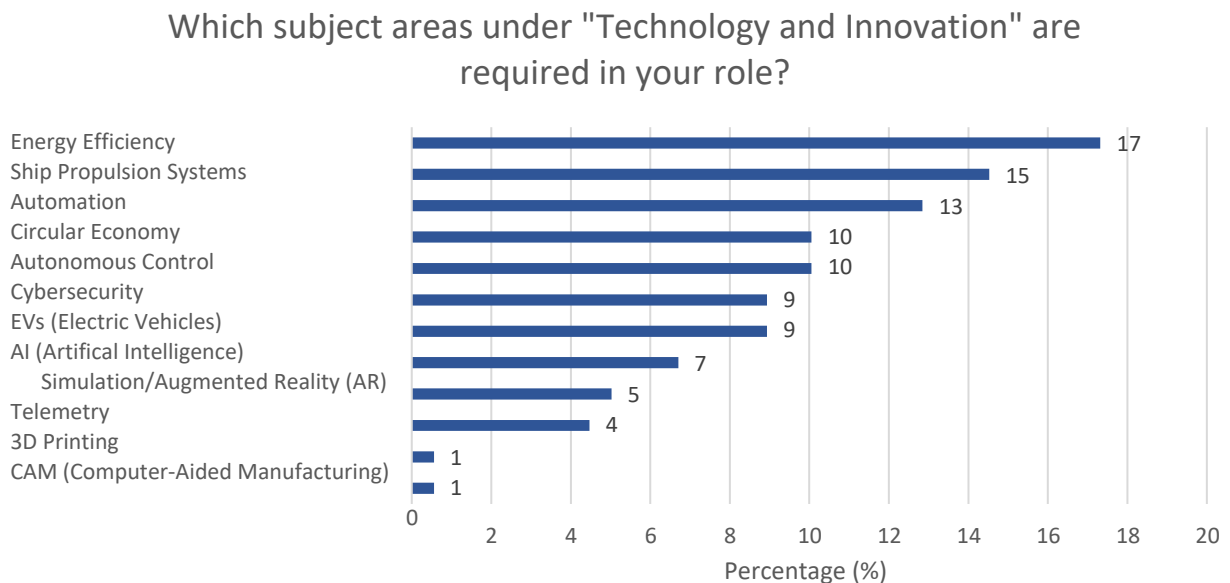


Figure 6 – Frequency of use of “Technology and Innovation” skills

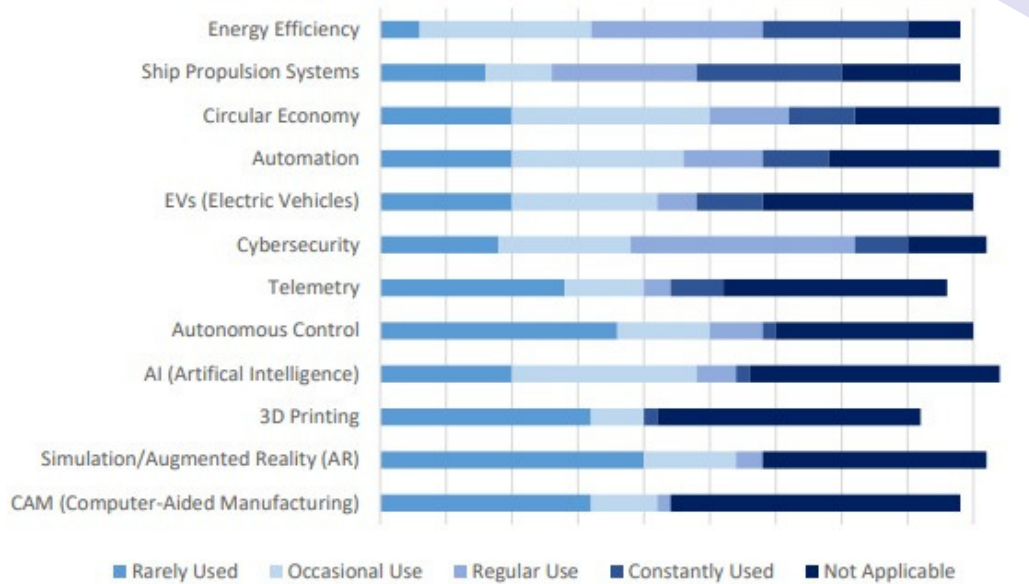
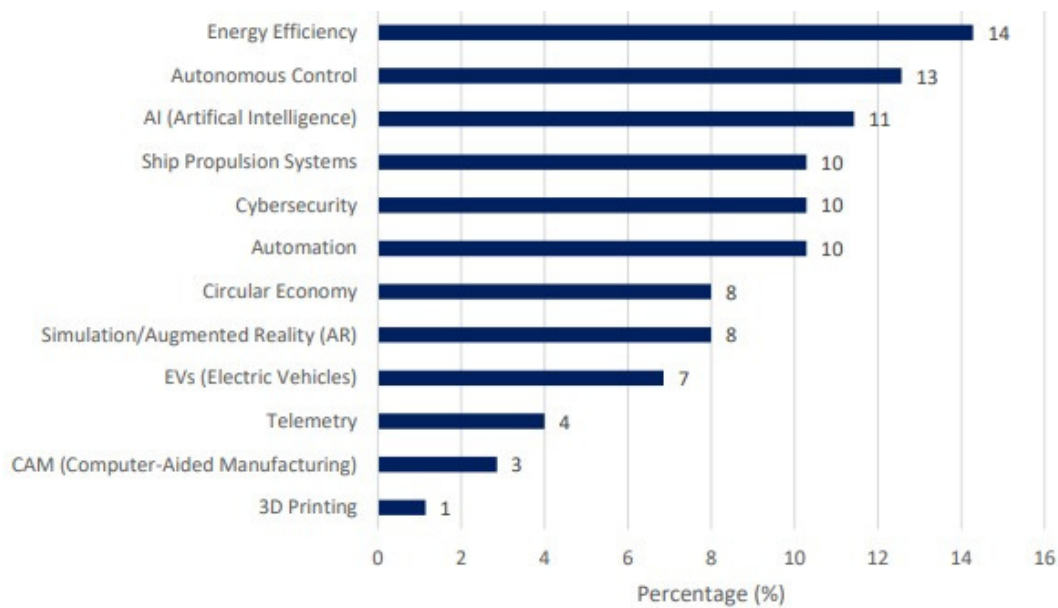
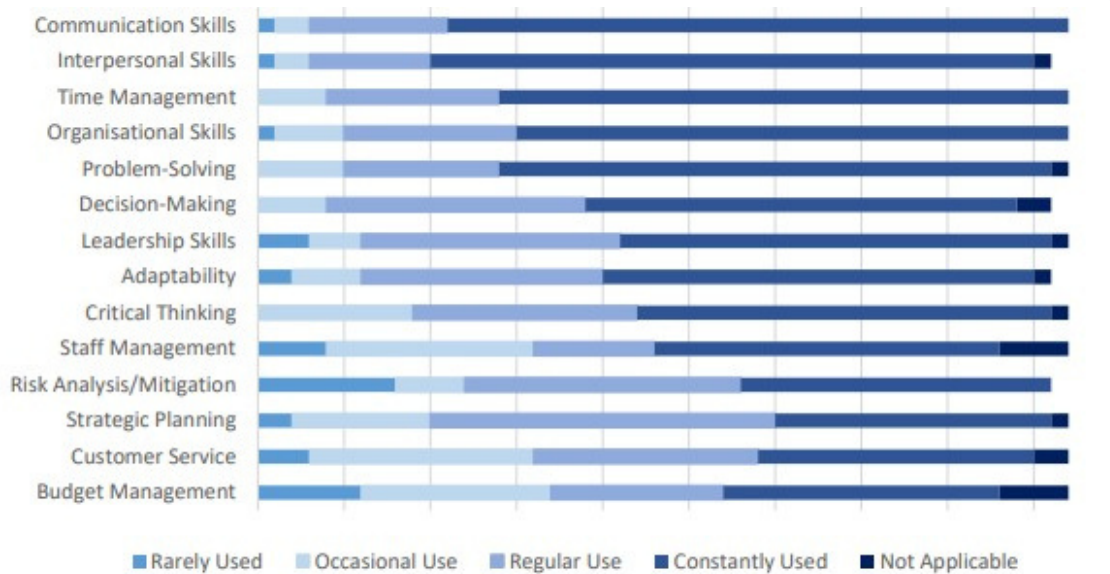


Figure 7 – “Which subject areas under ‘Technology and Innovation’ do you feel you require more training in?”



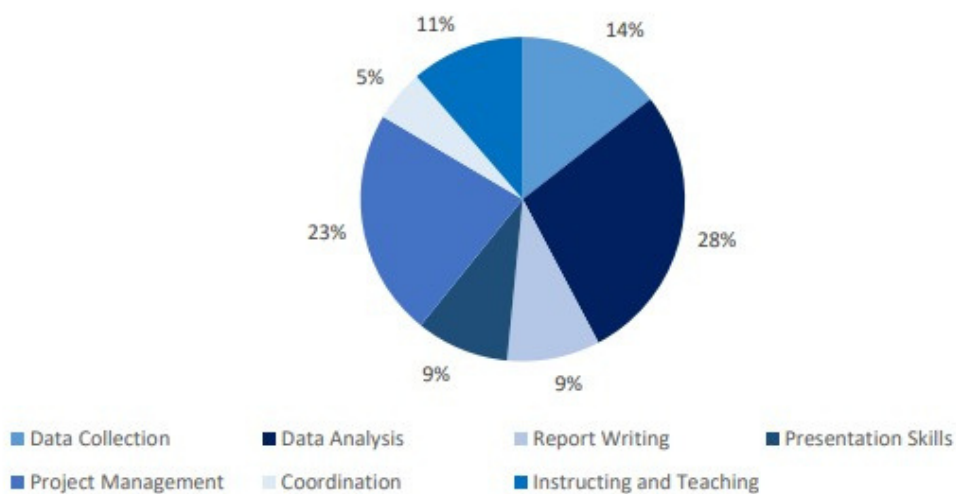
3.1.5 Figure 8 illustrates a fairly even distribution of “Operational Management Skills” used in the respondents’ job role with communication skills, interpersonal skills, time management and organisational skills being identified as the most used skills.

Figure 8 – Frequency of use of “Operational Management” skills



3.1.6 Figure 9 illustrates data analysis and project management as “Monitoring and Evaluation” skills which the respondents felt they required more training in, highlighting the importance and relevance of digital skills within the maritime sector.

Figure 9 – “Which areas of ‘Monitoring and Evaluation’ skills do you feel you require more training in?”



3.2 Skills for Green Jobs

3.2.1 The following (Box 1) are responses to open questions, which provided an opportunity for respondents to share comments on how their organisation is transitioning towards becoming more sustainable/green, along with how they felt their role contributed towards this transition.

Box 1

How is your organisation transitioning towards being more sustainable/green?

"We are a signatory to the Science-based Targets Initiative (SBTi)'s Business Commitment to 1.5°C. We are currently reviewing the SBTi's Corporate Net-Zero Standard, published on 28 October 2021. We will confirm a Net Zero target that aligns to this standard, alongside our science-based targets, by January 2024."

"Our greenhouse gas emissions are calculated in line with the Greenhouse Gas Protocol. Because we anticipate our people working from home as part of our new hybrid working arrangements, we have included home working emissions in our baseline."

"In order to continue our progress to achieving Net Zero, we have adopted the following carbon reduction targets: • 27% reduction by 2025. • 50% reduction by 2030. We project that carbon emissions will decrease over the next five years to 1,664 tCO₂e by 2026. This is a reduction of 32%."

"My organisation is helping us the members to understand the changes for our better environmental safety for the global climate changes and the needs to achieving also the economical."

"We are actively looking at the best options to reduce emissions by implementing different technologies on our existing fleet and building the next generation vessel."

"Developing low & zero emission products for the marine industry."

"Working towards to ISO 14001." "Supporting the development of relevant green-related and safety curricula."

"We have embedded the UN SDGs into our curriculum. We are part of the Erasmus+ SkillSea Consortium researching future proofing skills and competencies in Maritime Education and Training."

"We encourage our members to identify sustainable business objectives and to identify the skills to deliver these."

"Working on numerous projects to develop known technology (such as PV, air monitoring, developing shore power - small and large scale) whilst working with industry and government to develop and trial (as test bed and as partners) on new technology whether digital with data analytics or with smart hardware."

"We have a sustainability strategy and carbon pathway to zero, with an operational net zero target of 2030. Our key operational challenges from a sustainability perspective are travel, events and general procurement. Recent projects include a PV installation and expansion of EV charge points."

"We have our own CO₂ scope 1, 2, and 3 reduction targets. We are understanding how to embed carbon objectives in our teaching and research/innovation. Transport and logistics is an important sector and a major source of emissions, so that is attracting our attention. This is driven through the Sustainability Steering Group that includes facilities, academic, teaching research and innovation leadership teams."

How does/could your role contribute to the transition towards being more sustainable/green?

"Where travel is needed, it is performed using the least carbon-intensive method (normally rail), and I have developed key deliverables for bids into government where social value (including carbon reduction) is a key part of the proposal, showcasing how the company itself is moving towards Net Zero."

"I am prepared to welcome the lessons and the procedures to learn and deliver in my new working updates."

"To support the United Nation 17 sustainable development goals and therefore climate change objectives. These are written into framework agreements with organisations."

"I lead projects to implement energy transition technologies on our vessels."

"Designing and testing courses to aid the transition for various clients."

"I lead our strategic decisions on where to invest for the future."

"Leading discussions on change."

"We have made a MoU commitment to the SkillSea Consortium to continually maintain and update curriculum to incorporate themes such as Greening, Digitising, STEM and transversal skills."

"Running and monitoring projects, finding suitable funding streams and developing the projects is part of my work but the whole team has a 'can-do' ethos set up to develop projects to hit our goals of net zero by 2030 and carbon neutral by 2050."

"Social aspects of sustainability are addressed through other teams covering equality, diversity & inclusion."

3.2 Skills for Green Jobs

3.2.1 The following (Box 1) are responses to open questions, which provided an opportunity for respondents to share comments on how their organisation is transitioning towards becoming more sustainable/green, along with how they felt their role contributed towards this transition.

Box 2

Within your job role, which skills or previous experience do you feel assist you in being more sustainable/green?

"Having both a technical engineering background (naval architecture and marine engineering) I understand the complexities and challenges many of our customers face when investigating new technologies for use on ships and maritime assets. This helps me to better understand customer requirements and act accordingly with our deliverables to them. I understand, in a broad sense, the drivers behind many maritime organisations and the pressures exerted on them in addition to Net Zero, and can use this knowledge to help balance competing requirements."

"My previous experience as a front line essential worker in building services allows me to understand infrastructure policy from the ground up."

"I see this role as the continuation of my previous job, with a focus on the mid and long term instead of the short term."

"I am engaged in the maritime industry in sectors such as offshore wind, floating offshore wind, and shipboard solutions for alternative fuels with fuel cells, so shipping industry decarbonisation and sustainable energy are a major focus of my work."

"Strategy Development, Research, and Networking."

"Business development, commercial understanding, team work, multiple stakeholder team building and a willingness to trial and develop projects."

"Successful projects have been developed by the team mixing technical skills with financial, project and commercial skills whilst delivery has been made possible by operations also working with us."

"I am a Chartered Engineer and have over 20 years' experience in sustainability having worked for 13 years at the Centre for Alternative Technology then 7 years at a renewable energy company."

"Working within other organisations with a clear position on sustainability."

"I have a post graduate diploma in Sustainable Business. I have extensive experience of understanding the role of supply chain collaboration in delivering sustainability. I have knowledge from the automotive sector of both technology and behavioural pathways to carbon reduction."

"An in-depth knowledge of small ship design, construction and operation, and the associated law, regulations, rules and standards, and - importantly - limitations, including those that are applicable to the innovative technology of electrical propulsion and the safe use of Lithium-Ion batteries in the maritime sector."

"The specific courses and qualifications that I have undertaken have not been targeted at sustainability or green issues but the environment I work within does focus on that so I think it's how you apply knowledge and transfer skills appropriately."

"I led the project to deliver the UK's first fully electric passenger vessel. I am now leading other projects including developing training solutions for electric and hydrogen powered vessels."

"Ability to recognise talent and hire team members with the expertise to address the new services we need to provide to local businesses."

3.2.3 To conclude the survey, respondents were asked (see Box 3) what they felt was missing in the transition towards being more sustainable/green in both their role and their organisation.

Box 3

Based on previous experience and skills, what do you feel is remiss in the transition towards being more sustainable/green in your role and your organisation? a. Your Role

“For me personally if the sector took more ownership of the topic that would help. More early adopters, more understanding of why they need to make a shift to clean technologies, there is still a significant number who are either waiting for someone else to make the first step or who are still looking at the same old because it works and is effective.”

“Government policy for changes by 2050 are too long away for many. We need more detail on the smaller timeframes to get us to 2050.”

“Further knowledge of the issues and barriers faced by member businesses to adopting 'green'.”

“Funding not being available to support business transition to adopt greener practices.”

“Advice and business support being patchy or inconsistent from some organisations and information on latest green practices not always being available.”

“There are not enough people that properly understand the principles, essential safeguards necessary, and limitations of electrical propulsion. That leads to blindness to the hazards and dangers, and an overload upon those who are fully aware.”

“Availability of affordable green options.”

“I think more understanding of Project Management and Finance would help. Not specifically "green skills" as such, but the energy transition is very complex and does not confine to purely technical issues.”

“It can sometimes be difficult to engage with industry to establish relevant student projects. We do this most successfully through the Maritime Masters programme but more projects are in dire need to give students practical experience from industry, to complement their academic studies.”

b. Your Organisation

“I do think this is an ever developing topic, so ensuring we stay on top of knowledge, are at the forefront of policy development and provide a constructive critical and impartial voice moving forward, that is what we need to continue to do.”

“Developing tools to make the transition more straightforward for SMEs.”

“Further awareness for all colleagues to understand the direction of travel and urgency.”

“True meaning of sustainability not just an environment angle.”

“Behavioural change is always going to be the biggest challenge. Most people are supportive of the objectives of sustainability but real change is always hard to achieve. That said, we have been successful in embedding sustainable thinking through "lunch & learn" sessions and the rate of change is increasing.”

“Funding, digital skills and better collaborative working.”

4. Green Skills Matrix

4.1 Purpose

4.1.1 The comprehensive matrix will allow the user to identify desired training by simply searching for a particular green skill. By selecting relevant fields (delivery method, duration etc.) the national resource will draw from information in its database from across the UK, to highlight provision to the user, where they can then be directly connected with their chosen training provider.

4.1.2 Should the user be unable to locate their desired training, an enquiry form will be available to describe their training requirements and content. This form will then be automatically distributed to all registered training providers within the user's region to assist in identifying and developing local training provision to meet the user's needs. Through the inclusion of AI (courtesy of Ancoris), the resource uses reliable Google technology to enhance this resource's features and capability, making it a truly interactive national resource.

4.1.3 When fully-operational, the comprehensive matrix will be a tool that will, not only benefit the maritime sector's workforce, but also the training providers. The matrix will be able to connect stakeholders with training providers that provide training which is the best fit based on enquiry specifications. The matrix will inform industry and training providers alike on the training provision offered across the UK, igniting collaboration opportunities and discussions between industry and training providers about the creation/adaption of bespoke training.

4.1.4 Ultimately the matrix, through which national training providers' offer will be demonstrated, will encourage training providers to identify niche gaps across the sector and aid them in the identification of existing regional and national training, thus aiding the progression of training and curriculum development across the maritime sector and future-proofing employer-led training.

4.2 Structure

4.2.1 The matrix, as a resource, will serve as a tool which can be accessed nationally to assist members of the general public looking at entering the maritime sector for employment and/or education.

4.2.2 The resource will be able to provide training provision options to those looking at opportunities to reskill, upskill or enter the maritime sector. It will purely facilitate the connecting of the resource's user to green/sustainable training provision based on their career aspirations and their specific requirements.

4.2.3 The resource has a linear structure. The user will be able to detail specific training requirements (i.e. length, level, content) and career aspirations upon entering the resource and will be shown the most suitable training relating to their search parameters through the use of a regional map, which will showcase the locations of training providers within their local region.

4.2.4 Upon the selection of a course/training, they will be provided with further detail regarding their identified course (such as modules, entry requirements and fees) which will have been extracted from the training provider's course pages online. Additional information regarding the associated career pathways can also be found here. Should the user wish to pursue a course/training, they will then be connected by the resource to a recognised point of contact with the training provider.

4.2.5 The Green Skills Matrix relies on the content of the course pages present on training providers' websites. Through the use of artificial intelligence (AI), the information presented to the user is live and accurate as it is based on what is currently displayed on the course page. The onus is therefore on the training providers to ensure that the detail and content displayed on their online course pages are up to date and accurate.

4.2.6 The resource also has a number of simple features, outlined in section 4.3, which makes the using of this resource easier and simplified. Industry and training providers alike will be able to view green/sustainable training provision located anywhere in the UK using this resource. As a training directory, this resource enables users to make a clarified, informed, and educated decision regarding their academic and career pathway.

4.3 Features

4.3.1 The Green Skills Matrix utilises AI to provide an efficient, customer-focused service. Using AI, course/training information and specifics are extracted from the training provider's website via the course page's URL, providing greater time efficiency rather than the user navigating through complex websites.

4.3.2 Using AI, the Green Skills Matrix can highlight the links between courses/training and careers, embedding the Institute for Apprenticeships and Technical Education (IfATE)'s 'Occupational Maps' where appropriate, to inform the user of realistic, relevant career pathways associated with the course/training they are interested in.

4.3.3 The resource also uses AI in the form of a chatbot feature which can assist users by providing quick responses for any additional queries they may have relating to green/sustainability courses and training. The chatbot can respond in a conversational manner and signpost users to further information, destinations and resources. Built using sophisticatedly engineered, accessible Google technology, the chatbot can learn from the questions asked of it, providing anticipated and accurate responses.

4.3.4 Should users be unable to locate green/sustainability courses or training, there will be a "Not found what you're looking for?"-type button available, which will collect qualitative feedback from the user on the course/training they desire and subsequently distribute this feedback amongst the training providers within the user's local region. This will encourage the development of local green/sustainability training provision.

5. Observations

5.1 Green/Sustainability Skills Demand

5.1.1 Across the maritime sector, it seems that most organisations are working towards a greener and more sustainable future, not just environmentally, but by also seeking to improve their social sustainability and economic sustainability. This became apparent when looking at respondents' feedback during both surveys (see Figure 3 and Box 1) and from conversations held with industry stakeholders during the course of the workstream.

5.1.2 The main barriers identified to acquiring sustainability/green skills (Figure 4) were not overly surprising:

5.1.2a The recognised shortage of training opportunities proved to be the motive for this investigative workstream taking place. This is consistently being tackled as a barrier, with an increase in topic-based training made readily available and accessible to industry through various delivery methods (i.e. self-paced, remote learning, and online learning).

5.1.2b Time constraints pose a common dilemma as some businesses expressed that they struggled on occasion to afford the releasing of staff for time to study. This was a view most commonly shared amongst SMEs.

5.1.2c The barrier of costs were echoed through industry stakeholders and training providers alike. Industry stakeholders, although frustrated at the high costs for some of the training, understood that training providers needed to increase costs to sustain operations as they transitioned to a post-Brexit and EU-funded way of operating. Training providers similarly expressed frustration regarding this situation, but were optimistic that they would overcome this barrier by simply adapting the way they create and deliver training and curricula, harnessing online learning platforms and flexibility around assessment and attendance requirements. Throughout all conversations held with training providers, it became apparent that most training providers had anticipated this transition and were already making these changes to existing practice and curricula.

5.1.2d Geographical barriers, upon further inspections, became indirectly identified as a main barrier. Due to costs around 24 logistics and the lack of staff/time availability, respondents felt they were restricted to limited local training. This is visibly being remedied however, through the development of online training provision as an alternative to attending courses/training in person.

5.1.3 “Technology and Innovation” skills, under the umbrella of sustainable skills, were of particular interest amongst respondents (Figure 5), with skills principally related to future fuels and sustainable practices recognised as required within their roles.

5.1.4 Interestingly AI, Simulated/Augmented Reality (AR) and CAM (Computer-Aided Manufacturing) were all identified as subject areas which don’t yet have much of a presence within the respondents’ roles. Furthermore, respondents felt that these areas were ones which didn’t feature regularly in their job roles (Figure 6), but they were also areas which they didn’t require more training in (Figure 7). Further investigation into the existing demand and supply of technological skills across the maritime sector would shine a spotlight on the applicability and importance of these future skills within the sector.

5.1.5 Respondents demonstrated within their responses the presence of various “Operational Management” skills within their respective job roles (Figure 8). As these skills are broad employability, transferable, interpersonal and ‘soft’ skills, this finding is somewhat unsurprising in what is an innovative and progressive sector.

5.1.6 Respondents highlighted project management and data analysis as “Monitoring and Evaluation” skills in which they felt they required more training in (Figure 9). With the high level of innovation across the sector it is logical for industry to feel that they require the high level of skillset to manage projects and emerging data efficiently and effectively.

5.1.7 In terms of industry’s approach to transitioning towards being more sustainable/green, it should be recognised that there are exceptional efforts being made across the maritime sector (as seen within feedback collated in Box 1):

5.1.7a Industry is making a conscious effort to monitor their carbon footprint and emissions, in line with global standardised frameworks and standards (Greenhouse Gas Protocol and the United Nations’ 17 Sustainable Development Goals for example).

5.1.7b A large proportion of respondents are actively working towards achieving ‘Net Zero’ status by 2050, with ambitious targets being set for interim deadlines of 2025, 2030 and 2035.

5.1.7c Some respondents shared a desire to support the development of relevant green-related curricula, encouraging the inclusion of employer-led training/curricula.

5.1.7d There is also evidence of industry making conscious efforts to promote inclusivity in their approach towards becoming more sustainable and green in their operations, with respondents highlighting the encouragement of adopting an internal sustainability/green steering group, involving staff from across their organisations to engage and give ownership to the workforce in embedding and innovating a sustainable culture in the workplace.

5.1.8 In terms of how respondents feel their skills and previous experience assist them in being more sustainable/green, there is evidence of a wide range of transferable skills/experiences being drawn upon to help underpin efforts and approaches being made (as seen within feedback collated in Box 2). Previous skills and experiences include:

- Technical engineering/cross-sector experience from related transport industries (aiding the development and implementation of new technologies).
- Experience in renewable energies (which has assisted with engagement in offshore wind, floating offshore wind (FLOW) technologies, and alternative fuels).
- Strategic Development, Research and Stakeholder Engagement/Management skills.
- Sustainable Business studies (assisting in the development of supply chain collaboration in delivering sustainability).
- Working with legislation, regulations and standards, and the limitations which go with them (which aid the development of safe, innovative, alternative fuel technologies).

5.1.9 When asked what they felt was remiss in the transition towards being more sustainable/green, respondents shared common views (see Box 3) as highlighted below:

- Increased ownership from the sector, with a more proactive and autonomous approach towards challenging unsustainable practices/technologies.
- Availability of funding to support business transition to adopt greener practices.
- Provision of regular up-to-date knowledge, policy development and business support.
- More projects to allow students the opportunity to gain practical experience from industry, complementing their academic studies.

5.2 Green/Sustainability Skills Training Provision

5.2.1 Across the UK, the maritime sector has an abundance of training provision relating to green skills and sustainability as a topic, but these are mostly Level 3 and above. There is very little training available at lower level (Entry Level, Level 1 and Level 2).

5.2.2 The training providers were identified as follows:

Mersey and North West England

Blackpool and the Fylde College
Liverpool John Moores University (LJMU)
John Percival Marine Associates
Virsec
Seascope Maritime Training
OPS Training
Complete Training Solutions (CTS)

Wales

Cardiff University
Bangor University
Swansea University
Penbrokeshire College
Seacoast Training
Waterwise Marine Training
MRS Training and Rescue
Sea Sense Surveying Ltd
RYA Wales

Solent

Warsash Maritime Academy
Solent University
UKSA Isle of Wight
ECDIS Ltd.
University of Southampton
City College Southampton
Brockenhurst College
CECamm Isle of Wight College
Lloyd's Register
SMMI
University of Portsmouth

London and South East England

North Kent College (NMTC)
Maritime Skills Academy
Seahaven Maritime Academy
Lloyds Maritime Academy
Marlins Training
London Metropolitan University
Nautical Institute

Scotland

City of Glasgow College
UHI Scotland
North East Scotland College
Stream Marine Training
Glasgow Maritime Academy
Clyde Training Solutions
AIS Survivex
University of Strathclyde
Edinburgh Marine Academy

East Anglia

East Coast College
Petans Ltd.
Essex Marine Training
East Anglian Sea School
CWind Training
International Boatbuilding Training College (IBTC)

South West England

University of Plymouth
SeaRegs Training
Western Maritime Training
South West Maritime Academy
STCW Training UK Ltd.
University of Exeter
MLA College
Falmouth Marine School
Bristol Maritime Academy
Falmouth Training Solutions
Falmouth School of Sailing
Falmouth Powerboat School
Kovia
South Devon College
City College Plymouth
Cornwall Marine Network

Northern Ireland

Sea Fish Industry Training Association NI
Lagan Marine Training and Recruitment
Queen's University Belfast
Ulster University
PGM Training
Aqua Sun Charters
Ballyronan Boat Club
Kinnego Marina
North West Regional College
Redbay Powerboating
RYA Northern Ireland

Humber and North East England

Humber Maritime College
Humberside Offshore Training Association
Relyon Nutec
AIS Survivex
Newcastle University
East Riding College
Tyne Coast College
South Shields Marine School

5.2.3 Of the training provision identified (1600 individual courses), the majority of green/sustainability courses and training are exclusively face-to-face learning (1400 courses), with a small amount (200 courses) across the UK actually labelled as online training. To put this in perspective, 1 in 8 courses are taught online.

5.2.4 Although particular courses/training are taught on multiple locations around the UK (STCW and GWO courses for example), these are not made easy to locate. All training providers state the town or city the training is located in, but no geographical visual of the location is made available to those searching for local training.

5.2.5 24% of the identified green/sustainability skills training (391 out of 1600 courses) run for one day or less. These courses are all between Level 1 and Level 3.

Recommendations

1 Closer collaboration with training providers across the UK

In order to future-proof and modernise existing provision, it is recommended that the Commission works closely with training providers across the UK who specialise in green/sustainability courses, and maritime training. The onus is now on training providers to answer the call. The findings shown throughout the report highlight that there is not only demand for training, but that the existing training needs to be adaptable, flexible, and made readily accessible.

Training providers should be encouraged to populate the Green Skills Matrix with their directory of green/sustainability courses and training. They should also be encouraged to use the resource and identify market gaps. They should be encouraged to exploit these gaps and develop training to meet an identified opportunity. Connecting industry and training providers is essential if curricula is to evolve. The Green Skills Matrix can facilitate this collaboration.

2 Collaborate with Regional Maritime Clusters Maximising local engagement, empowerment and ownership is key.

The Commission must work with relevant maritime clusters and key regional stakeholders to empower respective regions. Local engagement is a major driving factor of local economy. Supporting local businesses, SMEs and large organisations alike, with high-quality accessible training will not only improve community sustainability, but it will also bring in interest from afar and raise the community's profile. Encouraging the regions to have ownership of their offer and training provision can showcase to other regions what is possible and can be a fantastic opportunity for the sharing of good practice. Regional collaboration opportunities can offer new funding opportunities, an expanded service area and greater agility in the development of training provision. Through cross-regional collaboration, communities around the UK will be able to significantly improve their social, environmental, and economic sustainability.

3 Investigate technological skills It is also recommended that the Commission conduct a similar investigative approach around the demand and supply of technological skills across the sector. A potential product of this work could be a similar matrix to map what is known of technology

skills for the maritime sector, which could then subsequently connect with the Green Skills Matrix where relevant.

Although AI, Simulated/Augmented Reality (AR) and CAM (Computer-Aided Manufacturing) were identified as areas which don't yet have much of a presence within the respondents' roles (see 5.1.4), there is undeniably significant progress being made in the development and use of these technologies across the sector.

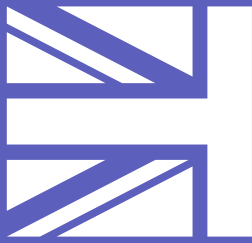
With feedback from industry highlighting the importance of these skills (see 5.1.3), there is a rationale here for industry to be one step ahead and ready effective and demand-led training provision regarding technological skills and knowledge required across the sector.

4 Develop the Green Skills Matrix

The Green Skills Matrix itself, as a national resource, needs to be sustainable. With this in mind, it is recommended that the Commission ensure the resource is managed and monitored moving forward to ensure the resource evolves and grows in content. The Green Skills Matrix is unique and is a resource which not only leads the way, but can guide the workforce and maritime education towards a brighter future.

Management of the Green Skills Matrix is vital. With content supplied by industry for industry, individuals looking to reskill or upskill, and indeed those new to the sector can find the information, advice and guidance they so desperately need.

In the future, the resource will be able to provide government departments with an accurate and up to date position on maritime workforce development progress, providing vital information which can have real impact on the direction of maritime skills and training throughout the UK.



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