KETmaritime Stakeholder Survey Results

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Version	Date	Changes
0.1	29/05/2019	Document delivered to partnership
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Executive Summary

The purpose of the stakeholder survey was to engage with the broad range of maritime communities represented in the KETmaritime stakeholders list and identify their needs regarding Key Enabling Technologies (KETs). Additionally, the survey shall gauge the current state of KET awareness and experience with maritime industries and research institutes and extract recommendations for strengthening the transfer of innovative technologies within the maritime community. These recommendations shall be included in the Road Map (D6.3). The survey was distributed to an identified stakeholder list, populated by all KETmaritime partners and the mailing list compiled from the KETmaritime website. By identifying and analysing the current state of links between KET and maritime industries, the gaps, needs and objectives of the community shall be identified and used to inform the roadmap.

1 Introduction

Purpose and Scope

This document is the Stakeholder Survey Results document for Work Package 6(WP6) of the Interreg Atlantic Area project, KETmaritime. The purpose of the document is to capture the needs, recommendations, feedback the use of KETs within maritime industry and research. The survey shall also inform the roadmap by identifying future auctions and means of enabling the uptake of KETs. The aim of the document is to identify and scope the needs and interests of maritime stakeholders.

The findings in this document will be used to guide the scope of the roadmap and subsequently feed into the actions and recommendations within the roadmap document. We aim to stimulate innovation, and develop connections with marine industries and SMEs, to carry out applied research and produce KET-enhanced products to boost future productivity and growth within the maritime sector

Document Structure

This document is structured as follows:

- Section 1 (this section) is the introduction.
- Section 2 gives an overview of the survey target groups, the methods of dissemination for the online survey and the limitations of the community survey.
- Section 3 gives an overview of the survey results. This includes a summary of response rates and an overview of response demographics, overall survey results.
- Section 4 gives the conclusion.
- Annex A gives full detail of the survey questions.

1.4 Definitions and Acronyms

Acronym	Meaning
IPR	Intellectual Property Rights
KET	Key Enabling Technologies
KO	Kick Off Meeting
MaREI	Centre for Marine and Renewable Energy Ireland
NDA	Non-disclosure Agreement
SMEs	Small and Medium Enterprises
UCC	University College Cork
WP	Work Package

2 Overview and Approach

2.1 Survey Target Groups

During the research stage of WP5 a stakeholder list was compiled specifically containing marine SMEs and maritime research institutes. In order to obtain a balanced user list, each project partner was requested to submit suggestions from there respective networks. To ensure a high rate of engage the partner responsible for identifying each stakeholder, was asked to invite said stakeholder to complete the survey designed by UCC. This not only increases the response rate but fosters already established relationships between project partners and stakeholders. By initially identifying marine stakeholders, a strong base of experts interested in providing valuable feedback and interaction with the project was established. The stakeholder list will continue to be populated throughout the project.

In addition, to broaden the survey feedback, and to incorporate the other marine communities, the survey link was circulated to the the attendees of a KETmaritime promotional event held in the National Oceanography Centre (NOC) is the UK.

2.2 Methodology

The survey was designed to engage the community, identify key issues and actions and encourage stakeholder involvement in the development of the KETmaritime roadmap. To determine key recommendations and issues, a 27 question online survey was designed using Google Forms. The questions focused on:

(a) Assessment of the current state of knowledge.

(b) Identifying motivation for, and barriers against, KET integration.

(c) Identifying integration/network opportunities and avenues.

(d) Support requirements for the advancement of KET integration.

To aid the continued involvement and growth of the stakeholder community, the final section of the survey included a consent questions for future contact regarding project development and updates. The survey was then distributed via two methods: personal invitations to all identified stakeholders and the project mailing list at the time of dissemination and via email notice to the attendees of the KETmaritime workshop at Ocean Business in the National Oceanography Centre (NOC), Southampton, UK.

The KETmaritime online survey was designed and distributed via the online survey software, Google Forms. Included on the front page of the survey were details about the project, text and graphic explanations of KETs and a paragraph providing information surrounding GDPR practices.

2.3 Limitations of the Survey

During analysis of the survey results, a clear limitation was identified regarding the geographical extent of the responses received. A high percentage of Irish responses (54%) were initially received, followed by Portugal (18%) and Spain (15%). This is due to the stakeholder list being compiled from partner networks. In response, UCC shall keep the survey live and disseminate the online survey link as part of validation exercises and event attendance. Likewise, all KETmaritime partners have been advised to disseminate to all relevant networks.

Further data acquired through the survey will be incorporated in the road map development stage.

3 Survey Findings

3.1 Survey Response Rates and Demographics

The online survey was distributed, via personal email invitation, to the 27 stakeholders and the 55 people signed up to the KETmaritime mailing list (Total: 82)

The response rate of the online survey was 40% (33 complete responses).

3.1.2 Online Survey Response Demographics

The online survey received 33 responses, of which 100% were fully complete responses. The following sub sections summarise the demographics of the respondents.

(i) Country of Residence/Work

The geographical spread of the respondents covered seven countries. With one exception all countries were within the Atlantic.

Answered (33)

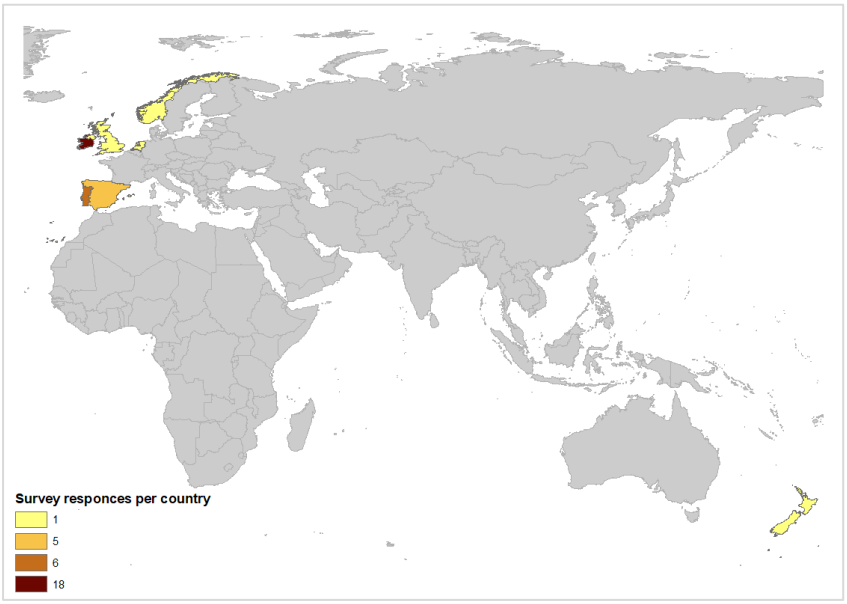

Figure 1 - Global map of survey respondent's country of origin.

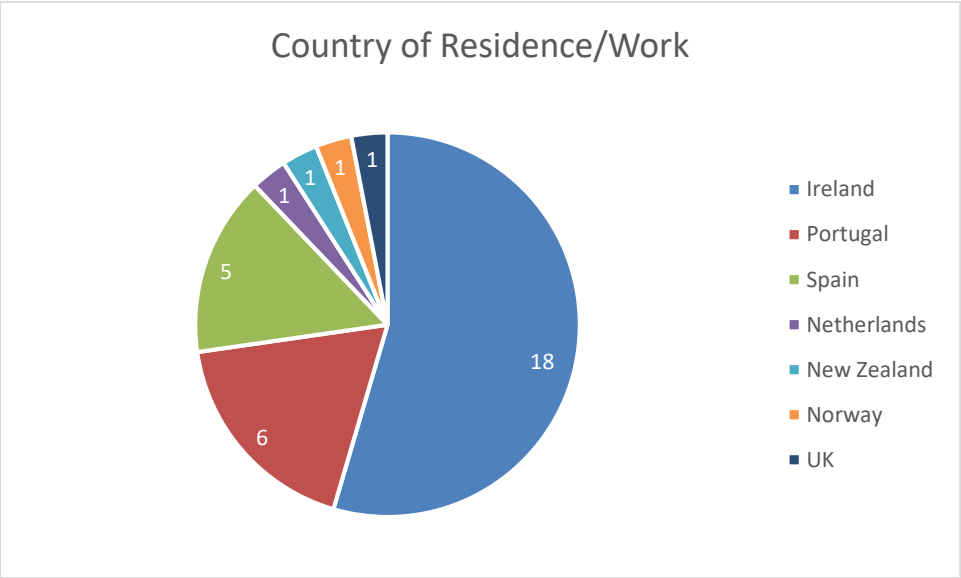

Figure 2 - Graphic representation of the geographic spread of respondent's country of residence/work.

(ii) Respondent's sectors of interest

A wide range of maritime sectors are represented in the survey data.

Answered (33)

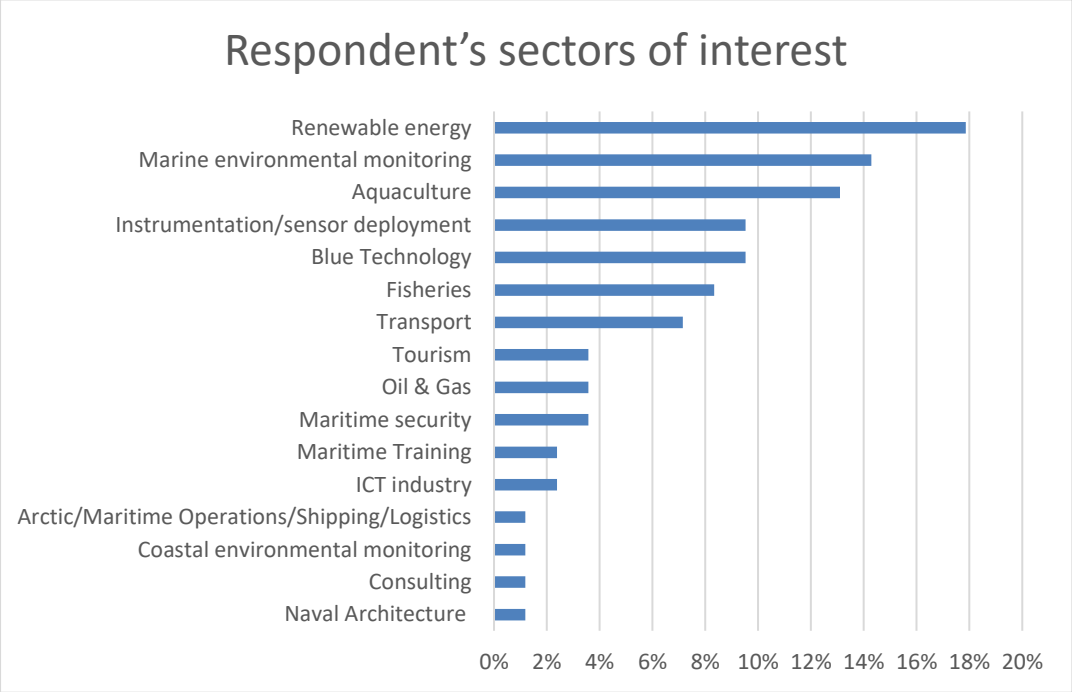

Figure 3 - The maritime sectors which respondents identified as their field of expertise.

(iii) Respondent's position within companies/institutes

Likewise, a broad range of positions within the workplace was also present.

Answered (33)

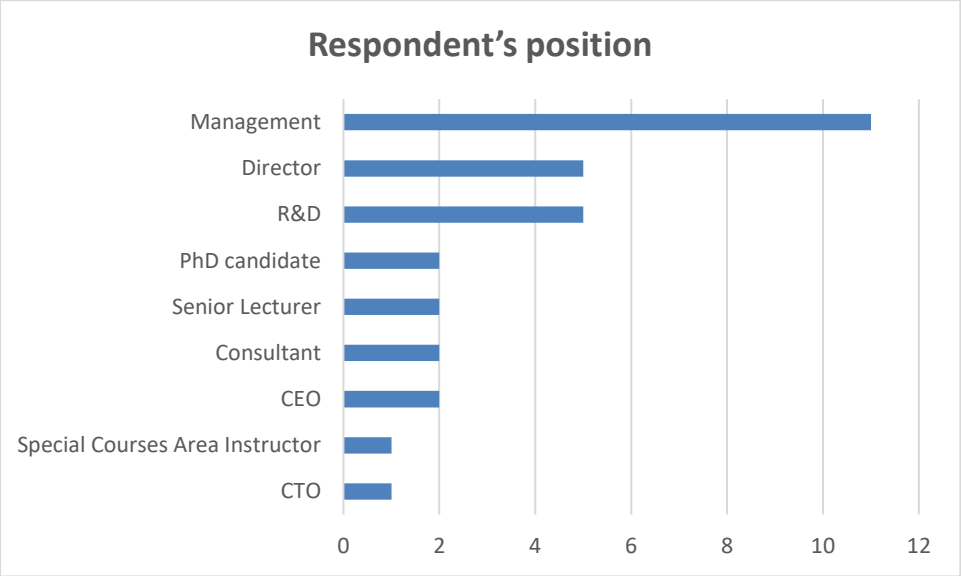

Figure 4 - Respondent's position within the workplace.

(iv) Company/Institute Size (based on employee figures)

Answered (33)

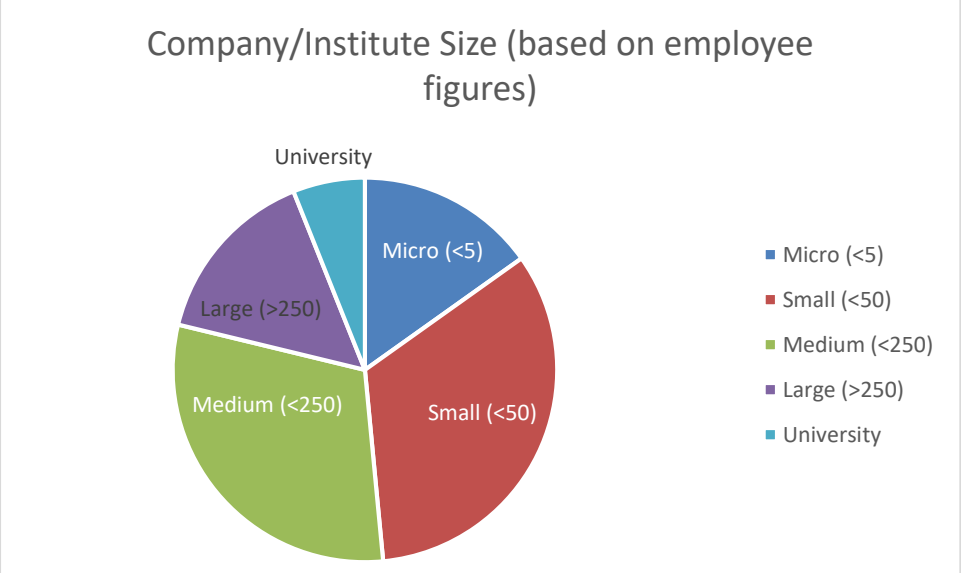

Figure 5 - Company/Institute Size (based on employee figures).

3.2 Overall Survey Results

Stakeholder answers and feedback were collected, and information extracted based on: -

- Assessment of the current state of knowledge.
- Identifying motivation for, and barriers against, KET integration.
- Identifying integration/network opportunities and avenues.
- Support requirements for the advancement of KET integration.

The following sub-sections detail the results derived from the survey for each of the categories.

3.2.1 Assessment of the current state of knowledge.

The first section of the survey was designed to focus on identifying the current state of stakeholder knowledge surrounding KETs and their potential applications in maritime R&D. Of the answers collected, 81% of respondents were aware, 16% were unaware and 3% were somewhat aware of the use of KETs in maritime industries (see Fig. 6). The total number of replies were 32.

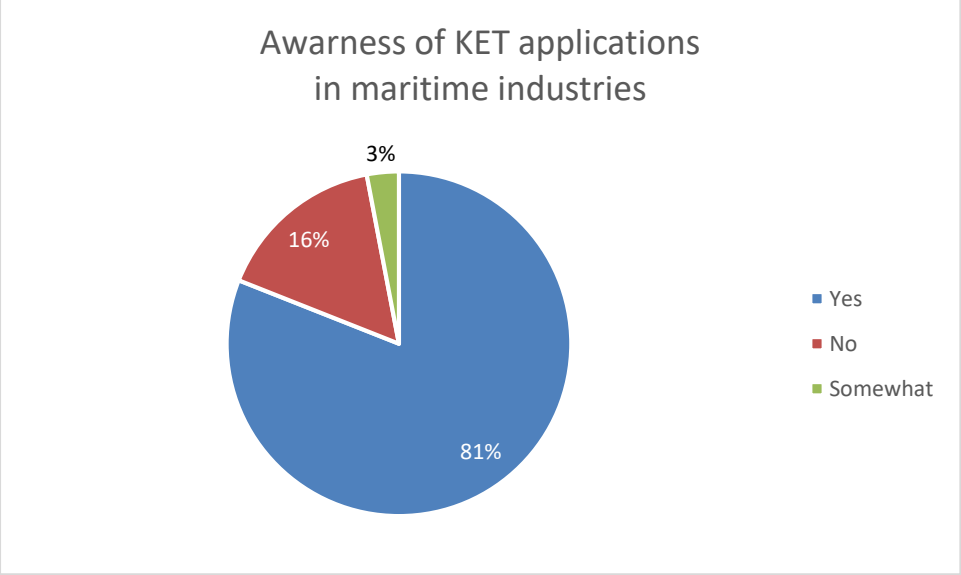

Figure 6 - Percentage of respondents who are aware of KET applications

The vast majority (81%) of respondents stated an awareness of KET application in maritime R&D, and likewise the majority (85%) conduct their in-house R&D. Although a high percentage of organisations have an awareness of KETs and the technical skills to facilitate in-house R&D, a significant amount (45%) stated that they rarely, if ever, incorporate or collaborate with KET companies (see Fig. 7).

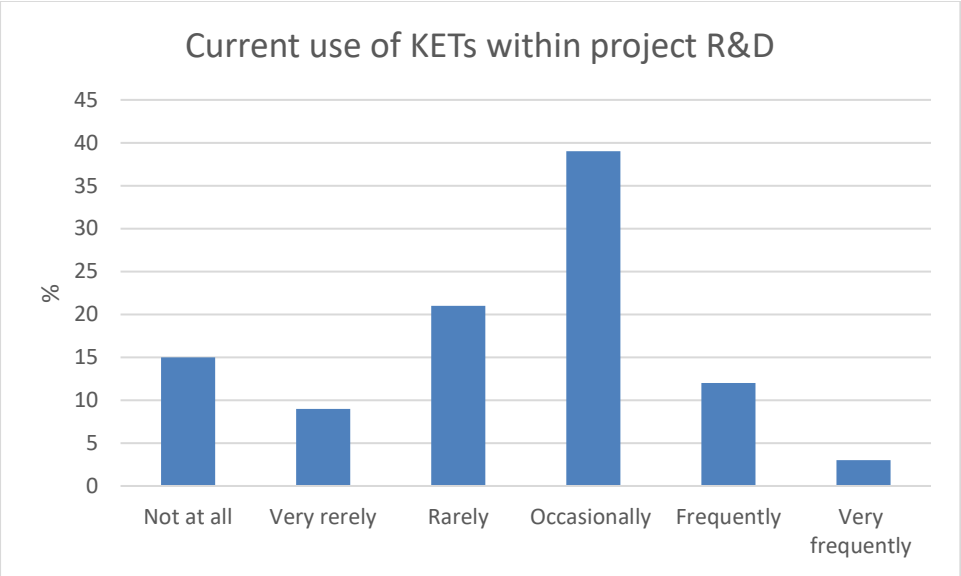

Figure 7 - Percentage of respondents' current/past use of KETs within R&D projects.

Respondents provided examples of current (or past) projects in which KETs have been involved in delivering end products or services. From these answers, thematic areas of interest were extracted (see Table 1).

Areas of interest for the application of KETs
Bioplastics
Feed additives
Bio-actives from marine sources
Marine environmental monitoring sensors
Prototype renewable energy devices
Robotics for coastal monitoring
IoT solutions for coastal monitoring
Unmanned multi-sensor aerial platform
Environmental monitoring sensors
Solar energy connections
IOT edge processors for remote monitoring
RFID – Radio-frequency identification
Robotics for marine operations
Water quality sensors
High powered computing
Advanced simulations
Anti-icing coatings for arctic shipping
3D printed sensors for environmental monitoring
Advanced optical sensors
Multi-sensor communications and data transfer
Optical sensors for the near surface

Table 1 - R&D areas of interest

3.2.2 Motivation for the integration of KETs and possible barriers

It is clear from the results that there is an interest in gaining more knowledge about KETs and the possible avenues for adaptation into maritime research. Of the 33 answers responses collected, 31 respondents replied positively when asked if they believed that integration of

KETs would enhance their research and marine products/services. To identify possible drives for the uptake of KETs within existing maritime organisations, respondents were asked to identify triggers which they believed would push KET maritime collaborations forward in the future (see Fig 8). This gives a key insight into the needs of the maritime industry when they envisage adopting new technologies and the driving motivations for collaboration.

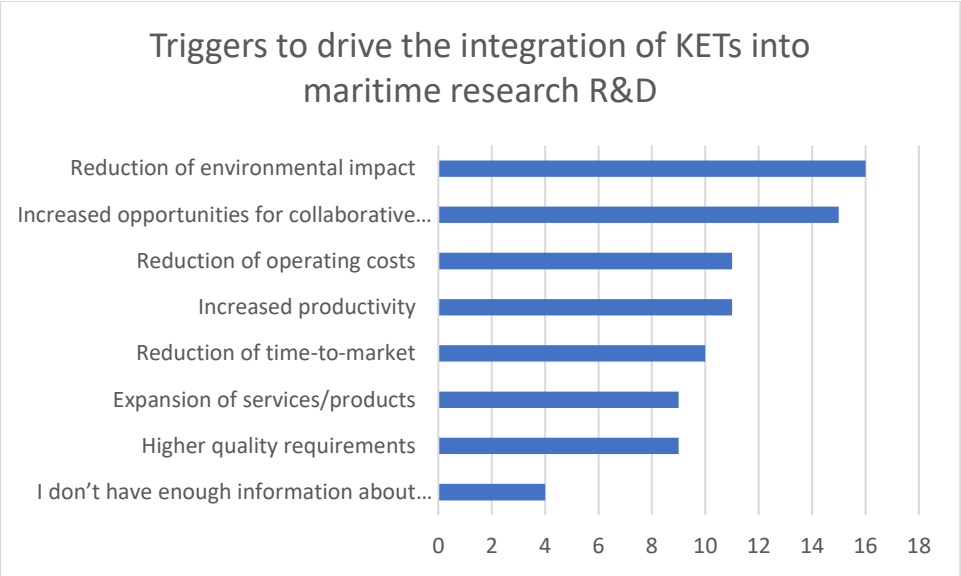

Figure 8 - Triggers to drive the integration of KETs into maritime research R&D.

In addition, to provide further insight into the current needs of the community, respondents were asked to provide three perceived benefits of incorporating KETs into their business (Table 2).

Perceived benefit of KETs to the maritime sector	% of total answers
Increased productivity/performance	30%
Broader product development opportunities	21%
Cost reduction	12%
Enhanced reputation and increase of customer base	12%
Increased knowledge, diversity and capability	9%
Enhanced monitoring of remote equipment performance	9%
Business sustainability	9%
Environmental benefits	6%
No knowledge of benefits	6%
Added value to existing products	3%
Network expansion	3%
Higher quality products	3%
Improving renewable energy technologies	3%
Monitoring and management of marine pollution	3%
Improved communications for SAR	3%
Improved product reliability and durability	3%
Identification of new opportunities with the maritime sector	3%

Table 2 - Perceived benefits of incorporating KETs into the maritime sector.

In order to understand the road forward for strengthening KET and maritime integration, it is important to identify and key issues and barriers. Of the 33 respondents, 48% were unaware of the cost benefits of implementing any form of KETs in their organisation. (see Fig 9)

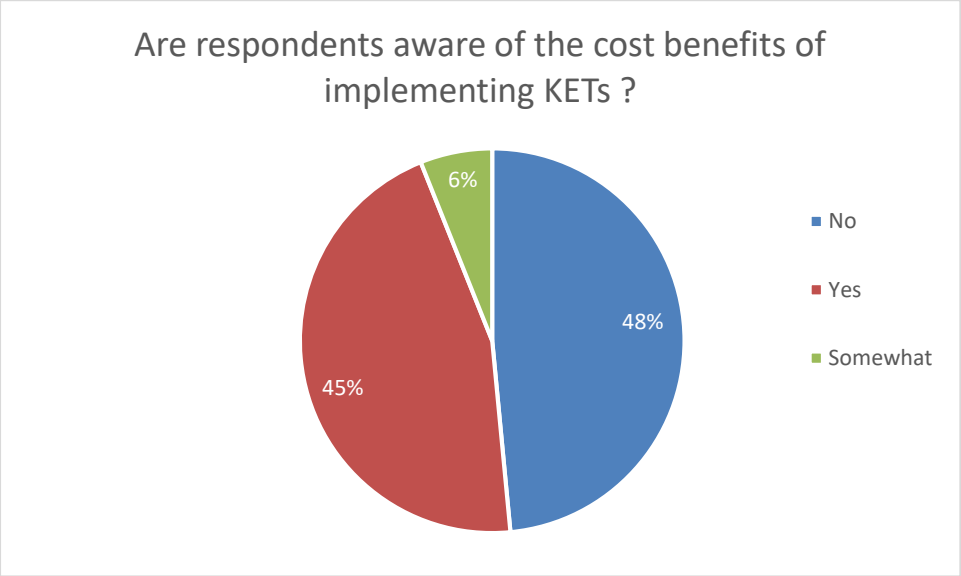

Figure 9 - The percentage of respondents who are aware of the cost benefits of implementing KETs within their company.

In addition to a 48% unawareness of the cost benefits of KET integration, respondents identified a broad range of factors which have limited, or deterred, the use of KETs within the respective organisations (See Fig 10).

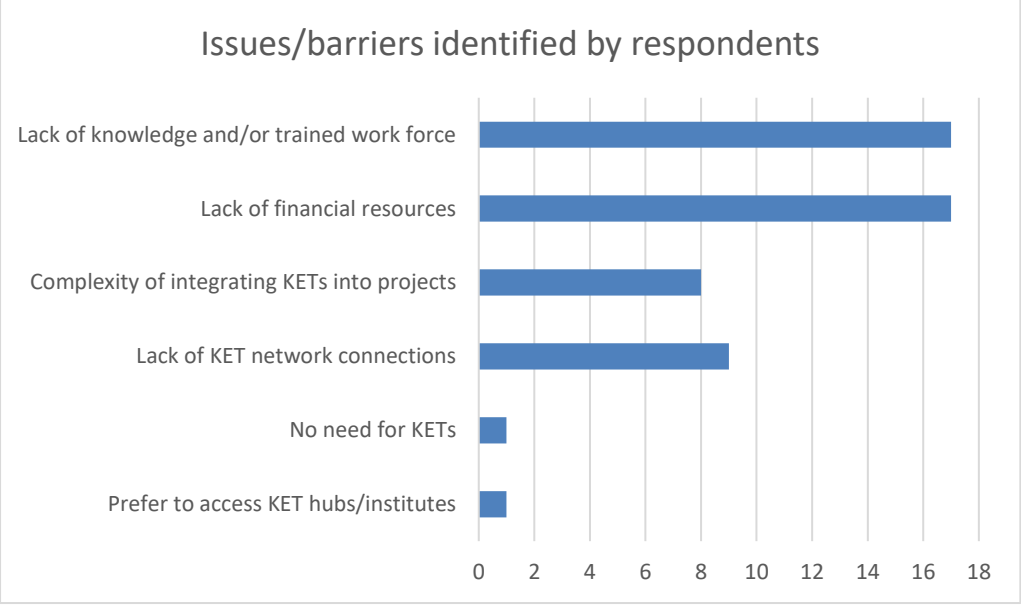

Figure 10 - Issues/barriers identified by respondents.

A number of possible measures were identified to overcome the barriers illustrated in Figure 10. It is clear that solutions are to be found by improving awareness within both sectors and increasing knowledge of the mutually beneficial opportunities available (See Fig 11).

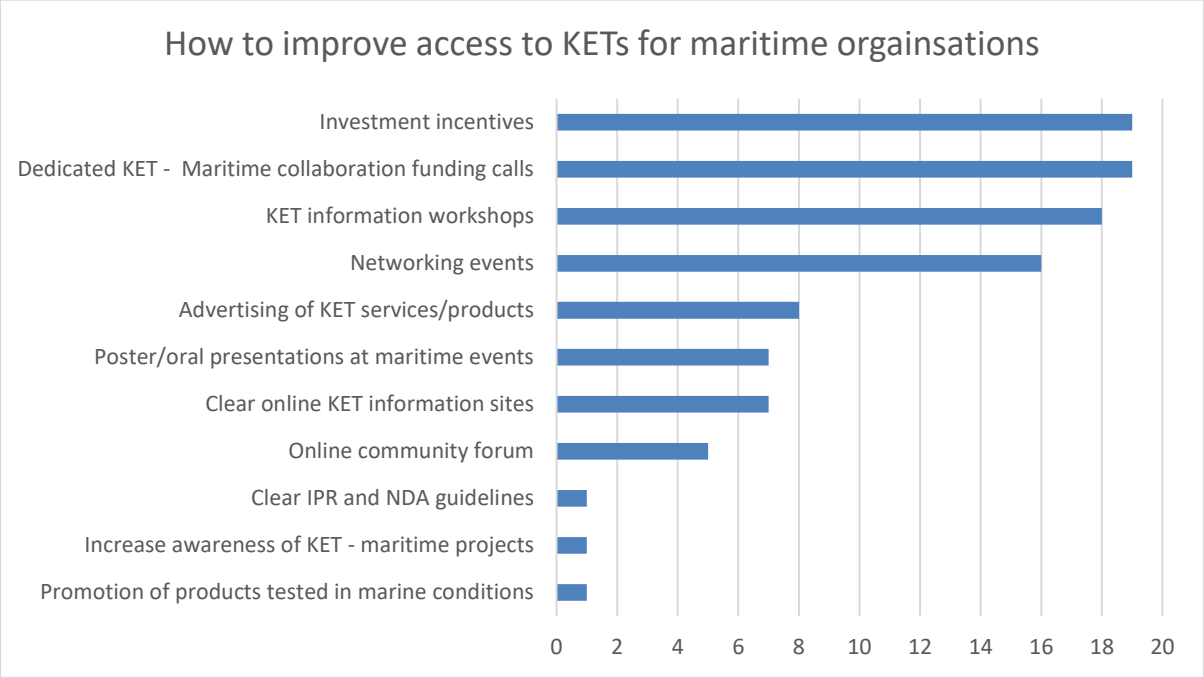

Figure 11 - How to improve access to KETs for maritime organisations.

3.2.3 Identifying opportunities for collaboration

Previous collaboration opportunities between KET organisations and the respondents has been low. 68% of respondents have never collaborated with a KET organisation. Of the remaining 32% (10 responses out of 33) who have previously collaborated with a KET organisation, the majority of these have only collaborates on one to three occasions (see Fig 12).

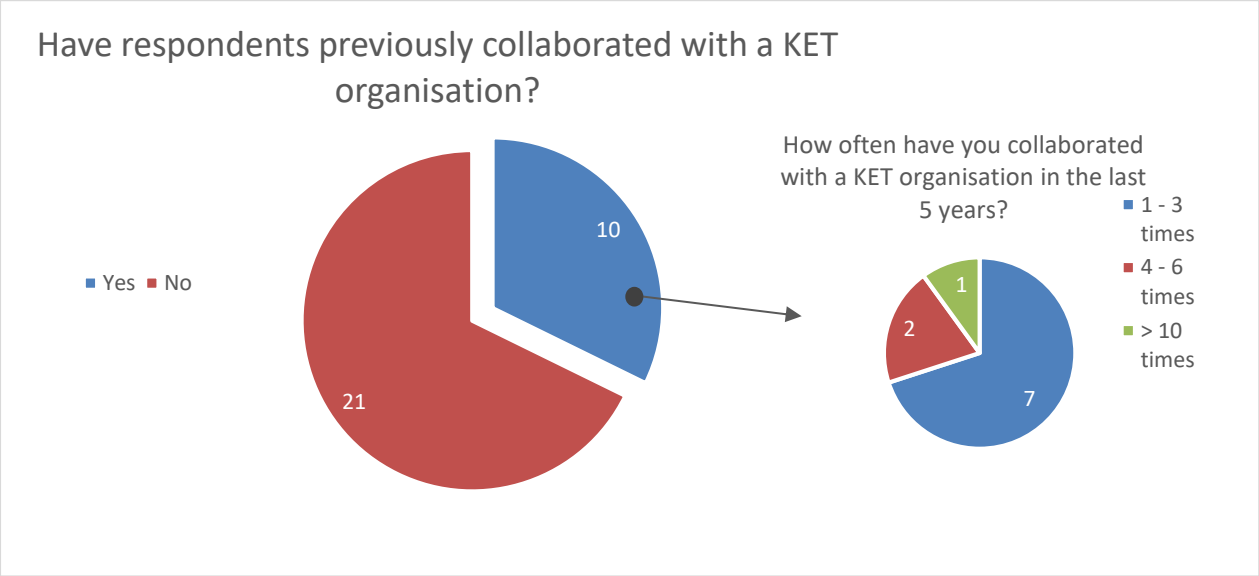

Figure 12 - Number of respondents who have previously collaborated with a KET organisation and the quantity of said collaborations.

The ten respondents, who have previously worked with KET organisations, identified the avenues they utilised to establish and grow a KET – maritime collaborative network (see Fig 13).

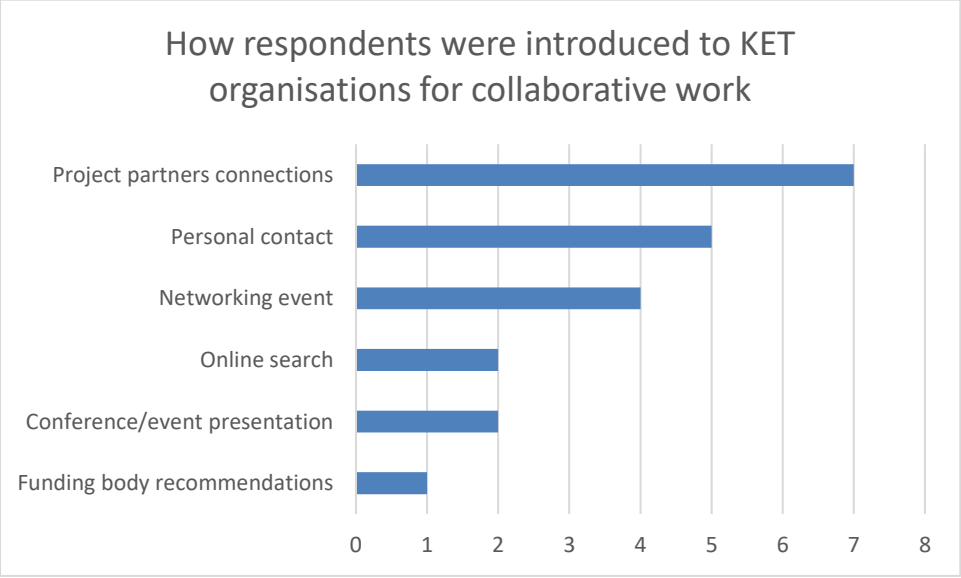

Figure 13 - How respondents were introduced to KET organisations for collaborative work

The 21 respondents who stated no previous collaboration with KET organisations provide a broad range of reasons for exploring or initiating contact with a KET focused company (see Fig 14).

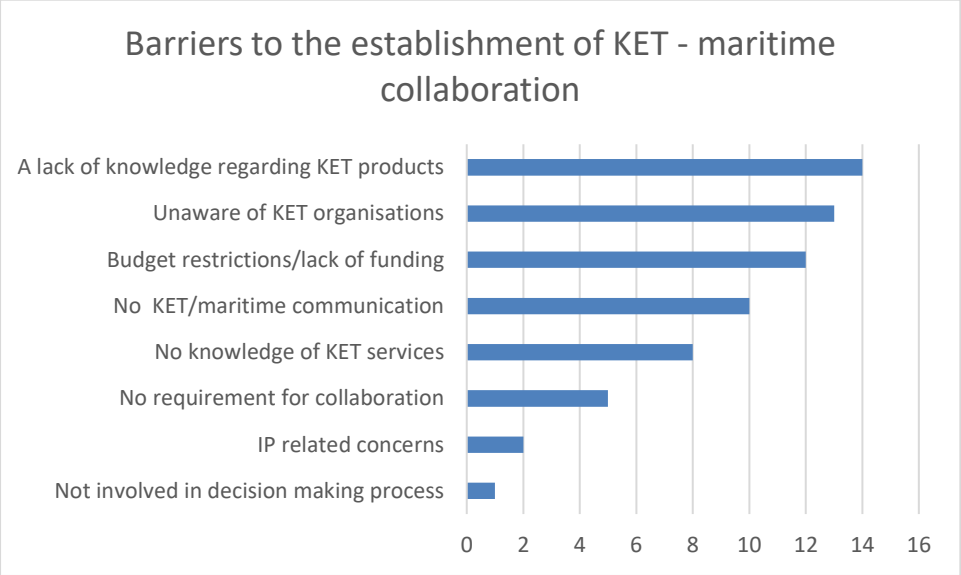

Figure 14 - Barriers to the establishment of KET - maritime collaboration

Although there is a high percentage (68%) of respondents who have never collaborated with a KET organisation, there is a clear interest for developing future collaborations. 73% of respondents would be interested in receiving guidance to find suitable KET organisations to meet their development needs. Reflecting the scope and interest of the respondents, network building opportunities over a broad range of geographical extent is required (see Fig 15).

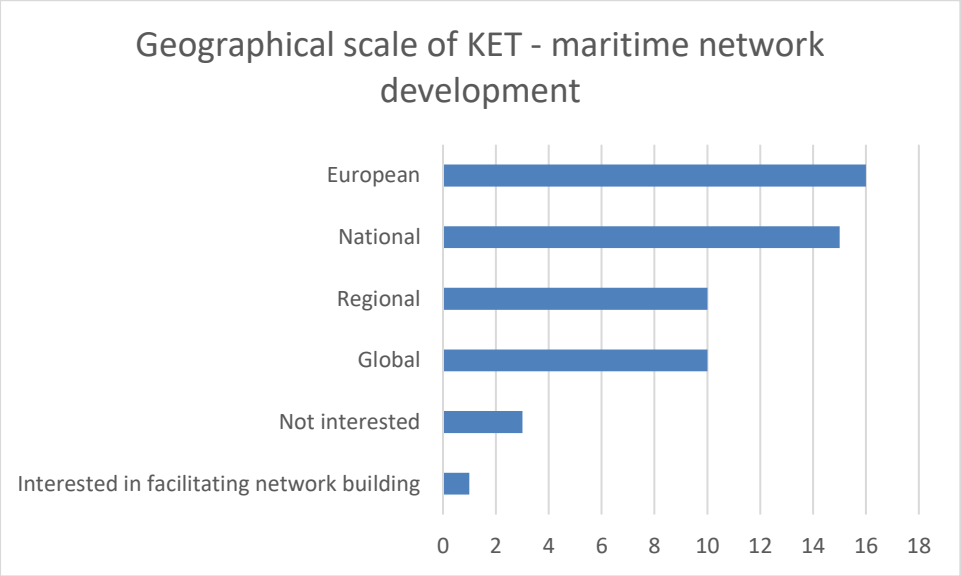

Figure 15 - Geographical range of interest for the development of KET - maritime collaborations

3.2.4 Support requirments and the road forward

Going forward, 91% of respondents would like to improve their knowledge of KET applications, product, services and the associated benefits and challenges of implementing KETs into their business/organisation. The 30 respondents, who stated that they would like further information and support, identified the KET areas they are interested. Furthermore, respondents suggested preferred means of support provision to enable cross sectoral integration and KET – Maritime collaboration (see Fig 16 & 17).

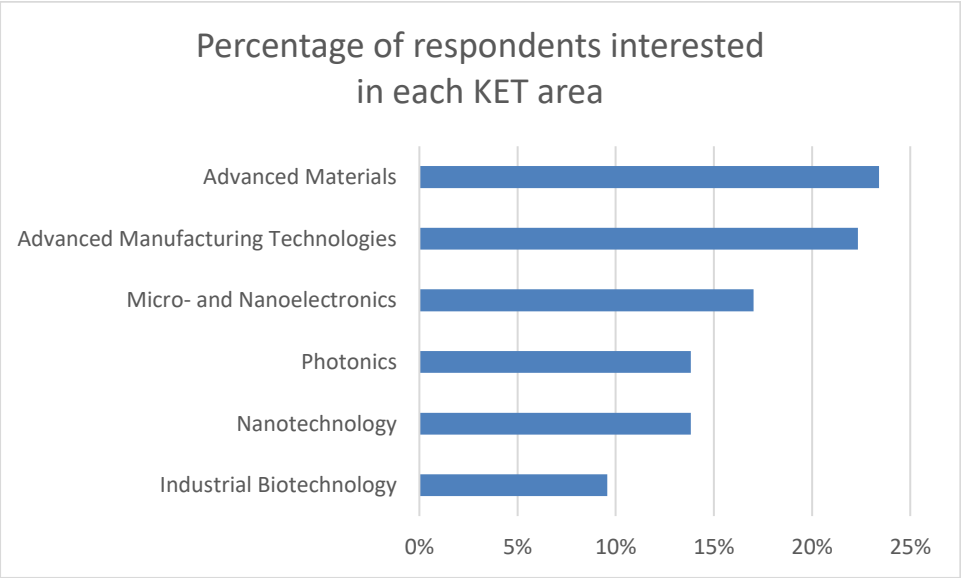

Figure 16 - KET areas and the percentage of interest respondents have in each area for their respective business.

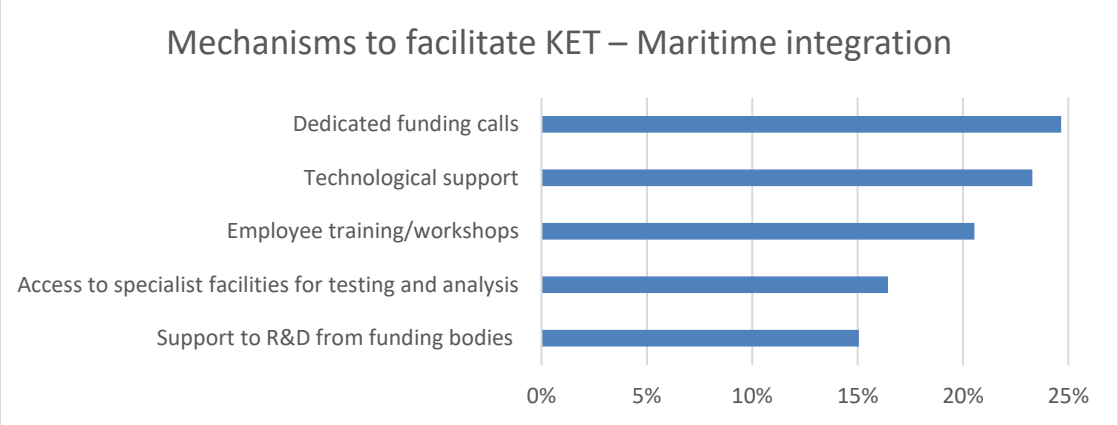

Figure 17 - Respondents suggestions for mechanisms to facilitate KET – Maritime integration.

To further engage both communities and encourage integration, support must be supplied in a clear manner and via avenues preferred by the maritime community. Examples of such avenues, which have worked in the past, are identified in Fig 11 & 14. It is important to note that when respondents seek information on KET collaborations and or support, guidelines regarding the use of NDAs and IPR standards should be at the forefront and included in all digital and printed material.

4.1 Conclusion

In order to establish a baseline of information for the Road Map document and to engage stakeholders, a community survey was circulated as a requirements gathering exercise, assessment of the current state of knowledge and to identify mechanisms for KET – Maritime integration. The results presented in this report will provide guidance for the KETmaritime Road Map document and other training material.

The results presented in this report are from the responses of the survey to date, 25/05/2019. The survey will remain active throughout the duration of the project, thus opinions and feedback from stakeholders and attendees of validation exercises will continue to be gathered as the project develops and new contacts are made. Further data gathered through the survey shall be incorporated into the Road Map.

Respondents to the survey were enthusiastic and 50% expressed an interest in joining the mailing list and to be kept up to date with the project's progress. The results from the stakeholder survey show that researchers, professionals and maritime managers from a variety of disciplines and backgrounds have a keen interest in KET services and products. But further training, guideline dissemination, network building and funding initiatives are required to ensure collaboration between the two innovative sectors.

Annex A – Survey Questions

*Orange text indicates questions which appear based on previous answers

Section 1: Respondents Info

1. Company Location: _____
2. Company Size (based on employee figures):
    a. Micro (<5)
    b. Small (5 to 50)
    c. Medium (75 - 250)
    d. Other: _____
3. What is your role in the company?_____
4. What marine sector(s) are you most active in?
    a. Marine monitoring
    b. Maritime security
    c. Fisheries
    d. Aquaculture
    e. ICT industry
    f. Renewable energy
    g. Oil & Gas
    h. Instrumentation/sensor deployment
    i. Tourism
    j. Transport
    k. Blue Technology
    l. Other (Please specify) _____
5. Does your organisation conduct in-house research for new products/services?
    a. Yes
    b. No

    If yes, please indicate the percentage of your organisation involved in R&D

    _____

    If no, do you out source new product/technology research? _____

Section 2: Identifying and assessing KET knowledge within the maritime sector

6. Are you aware of KETs and the potential application to the maritime sector?
    a. Yes
    b. No

7. Which Key Enabling Technologies are relevant for your organisation?
    a. Photonics *(e.g. LCD displays, optical fibres, laser-based tech, solar cells)*
    b. Nanotechnology *(e.g. nanostructured coatings, nano emulsions, nano wires)*
    c. Micro- and Nanoelectronics *(e.g. optical sensors, communications, data transfer, power electronics)*
    d. Industrial Biotechnology *(e.g. polymers, bioplastics, biofuels, feed additives)*
    e. Advanced Manufacturing Technologies *(e.g. smart automation, robotics, high performance computing)*
    f. Advanced Materials *(e.g. high-performance materials, surface engineering and coatings)*
8. Would you like to learn more about the applications of KETs and the associated benefits and challenges of implementing KETs into your business/research?
    a. Yes
    b. No
    Please give one reason for your answer_____

9. (if yes) Please specify which of the 6 KETs you would like to learn more about

10. To what extent does your organisation already using KETs?

    a. Very frequently
    b. Frequently
    c. Occasionally
    d. Rarely
    e. Very rarely
    f. Not at all
    Further comment _____

11. If ans a-e – How many of your projects have involved KETs? And can you give examples of the end products?

12. Do you think KETs could enhance your research and products/services?
    a. Yes
    b. No

13. Identify three possible benefits to your organisation of incorporating KET into your business?
    a. _____
    b. _____
    c. _____

Section 2: Identifying motivation for, and barriers against, KET integration

14. Are you aware of the costs and benefits of implementing KETs in your business?
    a. Yes
    b. No

15. What triggers do you think could be responsible for adopting KETs into your business?
    a. Higher quality requirements
    b. Increased productivity
    c. Reduction of environmental impact
    d. Greater customer focus
    e. Reduction of time-to-market
    f. Increased collaborative research and development
    g. Expansion of services/products
    h. Reduction of operating costs
    i. I don't have enough information about KETs to identify triggers
    j. Other (Please specify) _____

16. Please select the phrase(s) which best suit your thinking about KETs:

    a. I don't have enough information to assess KETs impact on my R&D
    b. KETs are useful for guiding research activities
    c. KETs are useful for guiding development activities
    d. KETs are useful for guiding commercial innovation
    e. KETs are useful for guiding research activities, development and commercial innovation
    f. I do not find KETs useful for guiding research activities, development or commercial innovation
       Please elaborate on why you do not believe KETs to be useful for guiding research activities, development or commercial innovation

17. Please identify factors that have limited the integration of KETs in your company?
    a. Lack of financial resources
    b. Lack of KET network connections
    c. No need for KETs
    d. Complexity of integrating KETs into projects
    e. Lack of knowledge and/or trained work force
    f. Other (Please specify) _____

18. What kind of support would help with the integration of KETs in your business?
    a. Human resources
    b. Dedicated funding calls
    c. Technological support
    d. Others

Section 4: Identifying integration/network opportunities and avenues

19. Have you ever collaborated with a KET Research & Technology Organisation in any capacity?
    a. Yes (please elaborate on the extent of collaboration)
    b. No (skip to 22)
20.

21. How often have you collaborated with a KET organisation in the last 5 years?
    a. 1 – 3 times
    b. 4 – 6 times
    c. 7 – 9 times
    d. > 10 times
    e. Other (please specify) _____

22. How did you establish a collaboration with a KET organisation?
    a. Personal contact
    b. Networking event
    c. Online search
    d. Through project partners
    e. Funding body recommendations
    f. Online advertising
    g. Conference/event presentation
    h. Other (Please specify) _____

23. Please identify reasons for not collaborating with a KET organisation in the past?
    a. A lack of knowledge regarding KET products
    b. IP related issues
    c. No communication network between sectors
    d. No desire to collaborate
    e. Budget restrictions
    f. Other (Please specify)

24. In your opinion, what could be done to improve access to KETs for maritime organisations?
    a. Investment incentives
    b. Dedicated KET – Maritime collaboration funding calls
    c. Online advertising of KET services/products
    d. Networking events
    e. Poster/oral presentations at maritime events
    f. KET information workshops
    g. Clearer online information sites
    h. Other (Please specify) _____

25. At what level are you interested in developing collaborative networks with KET organisations?
    a. Regional
    b. National
    c. European
    d. Global
    e. Not interested

    If not, why?_____

26. Would you like support to find the most suitable KET organisation for your needs?
    a. Yes
    b. No

27. Would you like to be added to our mailing list for occasional updates, event notifications and information about opportunities in KETs?

    e-mail _____