

# marinerg-i

Marine Renewable Energy

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## Final report on interaction with stakeholders

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## Abbreviations

SH	Stakeholder
DB	Database
NGO	Non-governmental Organization
ORE	Ocean Renewable Energy
R&D&I	Research, Development and Innovation
RI	Research Infrastructure
SMEs	Small and medium-sized enterprises
TRL	Technology Readiness Level
PS	Principle Stakeholder
MRE	Marine Renewable Energy
TAC	Transnational Advisory Committee
TOR	Terms of reference
IEC	International Electro-technical Committee
IPCC	Inter-Governmental Panel on Climate Change
IEA-OES	International Energy Agency – Ocean Energy System

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## 1. Introduction

The MARINERG-i concept evolved out of the MaRINET FP7 project, which clearly demonstrated the benefits of uniting Europe's leading marine renewable energy research organisations. MaRINET, now followed by the MaRINET2 H2020 program, functions as a coherent network linking 57 of the leading testing facilities across Europe. These projects have both had measurable success in terms of establishing an advanced community of testing infrastructures and enabling integration whilst supporting research and development in the Offshore Renewable Energy (ORE) sector.

The Stakeholder Engagement activity (Task 7.5) provides opportunities to align MARINERG-i business practices with societal and industrial needs and expectations.

It helps to ensure that stakeholders are effectively involved in project decisions and execution throughout the project lifecycle, to gain support, anticipate resistance, and conflict, or competing objectives among project stakeholders.

Based on the profiles and priorities identified in D7.3 (*Figure 1*), the Stakeholder Engagement Plan (D7.4) developed a specific strategy, resources, steps and tools tailored for each grouping in order to attain significant impact and influence in the achievement of MARINERG-i's objectives. As MARINERG-i will be the only integrated MRE platform of its scale worldwide, it will be the epicentre of this developing industry. This means that the stakeholder engagement process encompasses non-EU countries with a profile of MRE involvement (see Appendix D). This will allow potential users to identify the future European Research Infrastructure Consortium (ERIC), whilst also attracting infrastructures in these third countries to be included in the consortium, helping to underpin global alignment in the promotion of the industry.

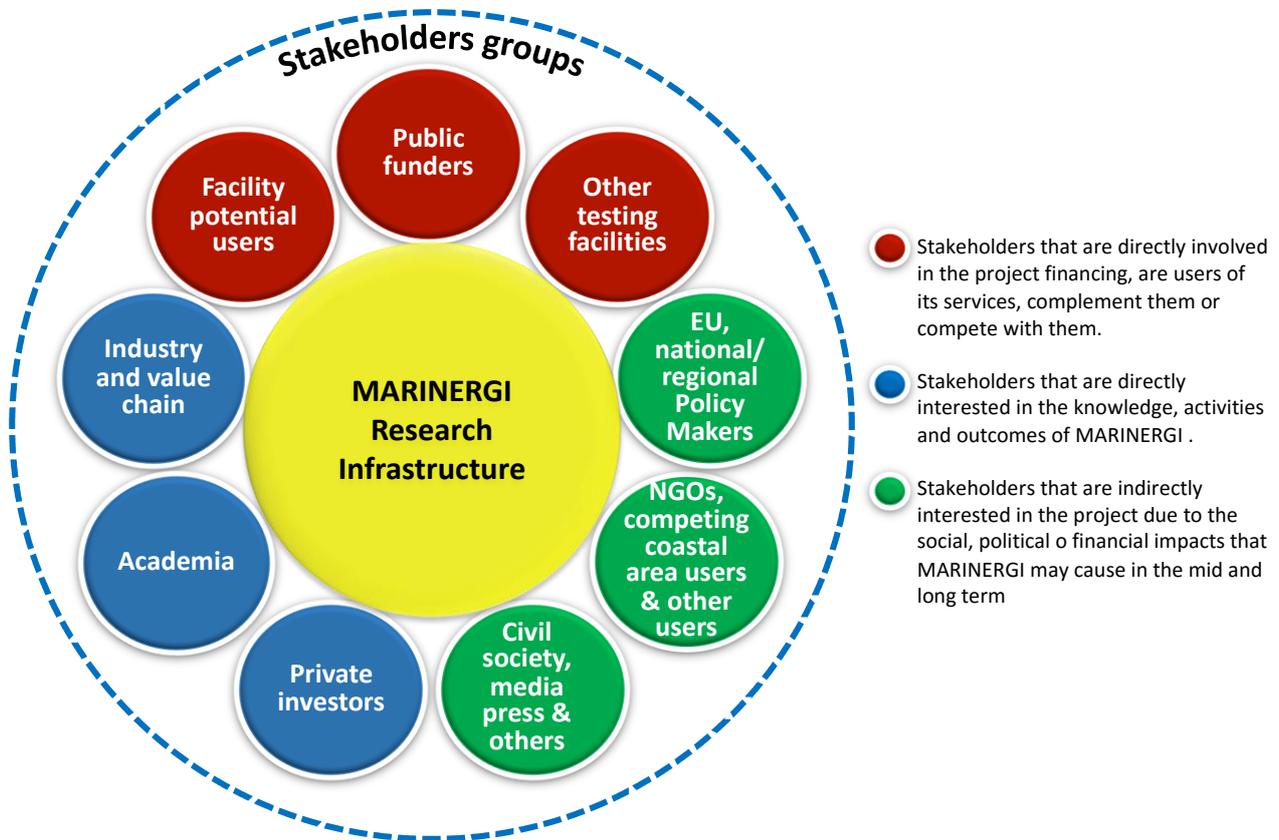
Basic information was disseminated, including the project's mission, vision, values, service offerings and value proposition through each of the actions carried out in Task 7.5. These activities were complemented by a specific survey, which was undertaken to identify needs and pinpoint existing gaps in the network.

High-level stakeholder engagement began right at the outset of the project, implementing the near-term strategy that was reported in Deliverable 7.5 – Initial report on interactions with stakeholders in M16.

Deliverable D7.6 is the final report on interactions with stakeholders and it includes the following sections:

- Update on stakeholders networks
- Update on stakeholders national engagement activities
- Transversal (cross-cutting) activities

Figure 1: MARINERG-i stakeholders’ classification groups – Red: Primary stakeholders, Blue: Secondary stakeholders, Green: Tertiary stakeholders



## 2. Stakeholder networks update

The two main groups in MARINERG-i with a formally identified role in stakeholder engagement activities are the National Champions (NC) and the Transnational Advisory Committee (TAC).

### 2.1. National Champions

Each country has nominated a National Champion (NC) as the main contact for engaging national stakeholders. The NC’s have made significant progress on identification of and contact with “Principal Stakeholders/Organisations” (PS). These activities were profiled in MARINERG-i D7.4 and are summarised in Table 1.

The following chapter (3) provides a summary of the interaction between NC and PS..

**Table 1: List of partners nominated “National Champions”/primary points of contact for the MARINERG-i project in each country**

Country	National Champion	Principal Stakeholders/Organisation
Belgium	Peter Devriese/ Jeroen De Mayer	TBC
Denmark	Amélie Tetu/Kim Nielsen	Danish Agency for Science, Technology and Innovation, under the Ministry of Higher Education and Science.
France	Christophe Maisondieu	Ministry of Higher Education and Research (MESRI)
Germany	Jochen Bard	Federal Ministry for Economic Affairs and Energy
Ireland	Jimmy Murphy	Dept. of Business, Enterprise and Innovation.
Italy	Francesco Salvatore	Ministry for Education, University and Research (MIUR), the Ministry for Economic Development (MISE)
Netherlands	Erik-Jan De Ridder	Ministry of Education, Culture and Science. Netherlands Organisation for Scientific Research (NWO)
Norway	Hans Christian Bolstad	Ministry of Petroleum and Energy; Research Council of Norway (RCN)
Portugal	Jose Candido/Marta Silva	Fundação para a Ciência e a Tecnologia (FCT)
Spain	Joaquin Brito/Simone Memè	Benjamin Sanchez – Ministry of Science, Innovation and University (MICINN)
Sweden	Irina Temiz	Swedish Energy Agency
United Kingdom	Cameron Johnstone	Department of Business Energy and Industrial Strategy (BEIS) and UK Research and Innovation (UKRI)

## 2.2. Transnational Advisory Committee (TAC)

The Transnational Advisory Committee (Table 2) was initiated as an adjunct to the overall governance structure of the MARINERG-i project in line with provisions set out in the work plan.

The committee members are drawn from the key categories of relevant stakeholders from the partnering countries of the European Union, as well as the European Economic Area which includes Norway. The TAC has been created as an integral part of the MARINERG-i INFRADEV H2020 project in order to:

- Provide strategic advice and direction
- Be a direct link to key external bodies and initiatives
- Provide comment and direction on technical outputs of the MARINERG-i project, to ensure that they are fully representative, applicable, fit for purpose, and of value to end-users across each of the constituent jurisdictions

## Deliverable 7.6

- Contribute to the overall general dissemination of the project at the European/international level in line with the project dissemination plan, and in cognizance of similar activities being carried out by the nominated national champions/representatives drawn from the project partnership.

The identification of the most appropriate TAC representative for each node and the definition of the Terms of Reference was carried out during the first half of the project.

The main activities of the committee were effectively implemented during the second half of the project with two meetings held to identify and review the key deliverables, and further meetings due by the end of the project, as defined in Table 3.

**Table 2: TAC members group**

Country	Industrial and professional federations/ European networks	Teaching and Research Institutions	Public Institutions and Government bodies (including regional development)	National Study Groups	EU Authorities
Belgium		Tina Mertens			
Denmark		Ole Svenstrup Petersen			
France			Yann-Herve de Roeck		
Ireland	Peter Coyle				
Germany		Stefan Schimmels			
Italy					
Netherlands		Anton de Fockert			
Norway			Jon Dugstad		
Portugal					
Spain	Beñat Sanz				
Sweden					
United Kingdom	Andrew Mill (Chair)		Jan Reid		
International	Remi Gruet/ Amy Parsons/Sheila Heymans				

**Table 3: Key Deliverables for Endorsement By TAC (note these are submission dates so the review process will begin at least one month in advance)**

Deliverable	Description	Due Date
D3.4	Final report MRE e-infrastructures strategic and technical alignment	June 2018
D4.3	Final design study	May 2019

D5.6	Final model for the overall legal framework of the MARINERG-i distributed infrastructure	May 2018
D7.7	Final MARINERG-i mission vision and values statement	June 2019
D8.2	Final business model	July 2019
D8.4	Final corporate governance procedures	July 2019
D9.2	Implementation plan	July 2019

**Table 4: TAC meetings during the project**

Meeting	Host	Date
TAC kick-off	Bird&Bird NL	23/3/2018
TAC second assembly	Teleconference	30/7/2018
TAC third assembly	TBD	1 <sup>st</sup> Q2019

### 2.2.1. TAC Kick-off meeting

The TAC’s Kick-off meeting provided a comprehensive summary of the status of the MARINERG-i project to the committee, including key milestones achieved to date and principal stakeholders’ commitment for each of the member’s states.

The Project Coordinator and Manager summarized the ERIC structure and documentation needed for the ESFRI roadmap application and explained the details of the TAC’s Terms of Reference (TOR) and responsibilities.

Resulting actions from this meeting have been at operational level, including TOR update with feedback from the meeting, practical issues for document sharing and possible dates for the follow-up meeting.

**Table 5 TAC Kick-off meeting agenda**

Time	Item	Session lead
13:00-13:30	Introduction, Agenda, Project Progress Summary	UCC
13:30-15:00	Working Session addressing matters arising under Terms of Reference 4 (A to I)	
15:00-15:30	Round-up and arrangements/timetable for follow-up meetings	

**Table 6 TAC Kick-off meeting attendees**

Organisation	Name	Short name
University College Cork	Gerry Sutton	GS
University College Cork	Fiona Devoy McAuliffe	FDM
University College Cork	Jimmy Murphy	JM
University of Strathclyde	Cameron Johnstone	CJ
WAVEC	Marta Silva	MS
PLOCAN	Simone Memè	SM
PLOCAN	Paula Pacheco	PP
SINTEF	Hans Christian Bolstad	HCB
CNR	Francesco Salvatore	FS
CNR	Fabio Di Felice	FDF

Ghent University	Vicky Stratigaki	VS
MARIN	Erik-Jan de Ridder	EJR
Aalborg University	Michael Eriksen	ME
Bird & Bird LLP	Roger Bickerstaff	RB
EMEC	Oliver Wragg	OW
Aquatera	Natalia Rojas	NR
Transnational Advisory Committee - Belgium	Tina Mertens	TM
Transnational Advisory Committee - Ireland	Peter Coyle	PC
Ocean Energy Europe	Rob Flynn	RF
European Marine Board	Sheila Heymans	SH

**Joined via WEBEX:**

Organisation	Name	Short name
Transnational Advisory Committee - Denmark	Ole Svenstrup Petersen	OSP
Transnational Advisory Committee - UK	Jan Reid	JR
TAC Chair	Andrew Mill	AM
Transnational Advisory Committee - Spain	Beñat Sanz	BS
Transnational Advisory Committee - Norway	Jon Dugstad	JD
Transnational Advisory Committee - France	Yann-Herve de Roeck	YHR

**2.2.2. TAC second assembly**

The second TAC assembly was held via teleconference to facilitate the participation of all members.

Particular attention was given to the on-going discussion with the direction of the WINDSCANNER ERIC, to explore the possibility of merging interests and activities of the two consortia.

WINDSCANNER is an ESFRI centre already on the roadmap and led by DTU that commercialises LiDAR technology across Europe for wind resource assessment. Currently they are experiencing financial difficulties which may threaten the viability of their business case in relation to obtaining ERIC status. This position may be strengthened by a strategic coalition with MARINERG-i. MARINERG-i coordination will continue discussions with WINDSCANNER to explore the potential collaboration between the two organisations.

During the assembly the coordinator presented the MARINERG-i White Papers, a working document which summarizes key aspects of the future ERIC, including mission and vision, added value, governance, scientific framework and budget estimates.

Finally, the coordinator presented D5.6 with a view to collecting feedback to be included in the final version of the document.

**Table 7 TAC first assembly agenda**

Time	Item	Session lead
10:00-11:00	Last meeting action points	UCC
	Intro new members	
	Project summary document	
	Proposed criteria and process for selection of facilities as members	

D5.6 Final legal framework  
AOB

**Table 8 TAC first assembly attendees**

Organisation	Name	Short name
University College Cork (UCC)	Fiona Devoy McAuliffe	FDM
UCC	Jimmy Murphy	JM
Transnational Advisory Committee – Belgium	Tina Mertens	TM
Transnational Advisory Committee – Ireland	Peter Coyle	PC
Transnational Advisory Committee – Netherlands	Anton de Fockert	AF
Transnational Advisory Committee – Denmark	Ole Svenstrup Petersen	OSP
Marine Board	Sheila Heymans	SH

### 3. Engagement with National Principal Stakeholders

A series of face-to-face meetings were held in each participating country, organised by the national representatives of the MARINERG-i consortium in collaboration with IFREMER and UCC. The two main objectives of these stakeholders meetings that were held during the initial 18 months of the project were:

- To gather information necessary for the profiling the Research Infrastructure (RI), facilitating the identification of the various relevant RI and institutions, as well as the end-user’s requirements and future needs,
- To obtain the necessary high-level governmental commitment (financial and political at each state’s ESFRI node) to ensure MARINERG-i access to the ESFRI roadmap and to guarantee that the consortium continues to operate sustainably (as an ERIC) thereafter.

These meetings were conducted in two parts. A general presentation of the MARINERG-i initiative aims and the longer term objective of building a Pan-European distributed Research Infrastructure for Ocean Energy was given first; followed by discussions about the main topics of interest for the elaboration of the Design Study and Science Plan including:

- Identification of end-users’ requirements
- Identification of National RI of relevance for the project
- National research priorities in the domain of ORE
- National policies regarding the organisation and funding of research programs
- National priorities regarding development of the ORE industry

Records of these meetings capturing the major outcomes of the discussions and gathering the information provided have been compiled in MARINERG-i deliverable D7.5 “Report on Stakeholders Interactions”. The information collected is highly relevant and feeds into several WPs.

Since this initial interaction, there have been significant evolutions in the dialogue at each national node, which are reported in the following chapters. These are presented in alphabetic order, describing the outcome of the engagement process at each node.

### 3.1. Belgium

#### 3.1.1. Introduction

In line with local, regional and national strategy, Belgian actors have contributed a sustained effort towards ensuring that Belgium can play an active role as a key player in the MARINERG-i submission for Offshore Renewable Energy Research Infrastructures in the next ESFRI roadmap call in 2020- 2021. This involved a range of steps and procedures which were followed as per requirements of the official national authorization process to be part of the future ERIC.

#### 3.1.2. Overview

Meeting Agenda		
Project	MARINERG-i (UK Stakeholders)	
Type of Meeting	Physical Meeting	
Meeting Date	Q1 2018	
Location	Greenbridge, Ostend	
Schedule	Activity	Speakers/chair
	Introduction	Gerry Sutton (UCC)
	MARINERG-i	Christophe Maisondieu (IFREMER)
	Belgium Marinerg-i partner	Vicky Stratigaki, Peter Troch (Ghent University)
	Q/A	

#### List of Attendees

Initial	Name	Affiliation
GS	Gerry Sutton	UCC-MaREI -MARINERG-i Project Manager, Senior Research Fellow; Team Lead coast and ocean systems.
CM	Christophe Maisondieu	IFREMER-France. MARINERG-i WP 2&3 Lead.
VS	Vicky Stratigaki	UGent Snr Res Engineer. Dept of Coastal & Offshore Engineering - Renewable Ocean Energy
PD	Peter Devriese	UGent Dept of Offshore Engineering, PM COB, Proj Eng, MARINERG-i for UGent
CJ	Colin Janssen	UGent. Professor Applied Ecol and MarBio. Director of Marine_@_UGent.
MM	Marianne Martens	UGent Greenbridge CEO
PM	Pieter Mathys	UGent Business Development Manager, Offshore Energy. PM MET-Certified, U-Gent.
NW	Noemie Wouters	UGent Greenbridge. Liaison officer Blue Growth.

<b>MDM</b>	<b>Maggy De Man</b>	Jan de Nul - Design and Engineering Manager Offshore
<b>BM</b>	<b>Bernard Malherbe</b>	Jan de Nul - Director of Project Development
<b>JG</b>	<b>Jan Goormachtigh</b>	DEME - Project Manager at DEME Blue Energy
<b>MH</b>	<b>Marc Huygens</b>	DEME - Environmental and sustainability manager
<b>PH</b>	<b>Piet Haerens</b>	CEO at IMDC- International Marine and Dredging Consultants
<b>TM</b>	<b>Tina Mertens</b>	VLIZ (Flanders Marine Institute) - Assistant Director
<b>SM</b>	<b>Sarina Motmans</b>	POM WVL West Flanders Development Agency. Factories of the future: Coordinator Blue Energy.
<b>SJ</b>	<b>Sarah John</b>	LAMINARIA SME project manager
<b>PR</b>	<b>Pieter Rauwoens</b>	KU Leuven. Asst. Prof. Coastal Engineering. Coastal and Geotechnical Engineering Group. -
<b>ES</b>	<b>Eric Sleenckx</b>	Flemish Government- Ministry innovation and economy. Senior advisor innovation.
<b>MV</b>	<b>Marc Vantorre</b>	UGent Professor of Maritime Technology. Promtor Knowledge Centre Ship Manoeuvring in Shallow and Confined Water.
<b>AG</b>	<b>Alain Goddyn</b>	Section Manager at Engie Fabricom. PM infrastructure water north.

### 3.1.3. Actions

In addition to the Belgian Stakeholders meeting there was continuous update calls/communications with the Flanders Research Foundation (FWO) and the Department of Economy Science and Innovation (EWI), the Flemish Governmental Agencies that represent Belgium at ESFRI. Mrs Michele Oleo (EWI) and Mrs Caroline Volckaert (FWO), have been kept up to date with MARINERG-i developments and the Belgian stakeholders who will be potential participants in this distributed research infrastructure initiative. Following Ghent Universities application to the national ESFRI call of June 2018 organised by FWO and EWI, and after a successful interview of the UGent partners (Dr. Vicky Startigaki, Prof. Peter Troch, Dr. Gerry Sutton) before an international scientific panel, political support has been granted for Belgian participation in the MARINERG-i ESFRI submission.

## 3.2. Denmark

### 3.2.1. Introduction

The status regarding MARINERG-i access to the ESFRI roadmap in Denmark is not positive. The Danish government has granted only two projects within the field of wave energy in the last four years.

This contrasts sharply with the situation for offshore wind. The Danish government is willing to finance offshore wind energy, but the field is at the point where all development can be financed directly by the private sector. The Danish offshore wind energy sector does has to date been not been able to lend it's support to the MARINERG-i project. It has not still been possible to obtain a letter of commitment from the Danish government at this time and the likelihood of obtaining it in line with MARINERG-i timeline is considered low.

## Deliverable 7.6



Several meetings have been held during the last year in order to promote wave energy and the MARINERG-i initiative as described in the following section.

### 3.2.2. Overview

No MARINERG-i follow up meetings were held in Denmark in view of the low level of support at political or governmental level. Others meetings involving stakeholders have taken place as described below.

Meeting Agenda		
Type of Meeting	Research infrastructure meeting	Danish partnership for wave power meeting
Meeting Date	17/05/2018	
Location	Risø Campus, Roskilde	Technical University of Denmark, Department of Wind Energy
Schedule	Activity	Speakers/chair
10:00	Welcome and tour de table	
10:15	Background on WindScanner, FI, ESFRI roadmap, Danish application, EU	Søren Knudsen
10:25	WindScanner measurement technology – the science case	Torben Mikkelsen
10:35	Draft budget and rules/possibilities explanations	Søren Knudsen
10:45	National wind tunnel Poul la Cour	Mikael Sjöholm
10:50	Activities at Aalborg University	Peter Frigaard
11:00	Activities at FORCE	Søren V. Larsen
11:10	Activities at Aarhus University	Matthias Ketzler
11:20	Activities at DMI	Rashpal S. Gill
11:30	Marinet2 and MARINERG-i	Peter Frigaard
11:40	Discussion on the Danish hub for research infrastructure	Søren Knudsen
12:00	Lunch	
13:00	Discussion on the Danish hub for research infrastructure and next step for the consortium	Søren Knudsen and Charlotte Hasager

### List of Attendees

Initial	Name	Affiliation
SK	Søren Knudsen	Technical University of Denmark (DTU)
CH	Charlotte Hasager	DTU
CB	Christian Bak	DTU
HEJ	Hans E. Jørgense	DTU
HB	Henrik Bredmose	DTU
JM	Jakob Mann	DTU
MC	Mike Courtney	DTU
TM	Torben Mikkelsen	DTU
SVL	Søren V. Larsen	FORCE

MK	Matthias Ketzel	Aarhus University (AU)
RSG	Rashpal S. Gill	Danish meteorological institute (DMI)
PF	Peter Frigaard	Aalborg University (AAU)
AT	Amélie Têtu	Aalborg University

**Meeting Minutes – summary**

The meeting was an attempt to form a national research infrastructure, where WindScanner would be the lead. It was concluded after several discussions post meeting that AAU’s infrastructure is not suited for a WindScanner as no wind generation is available at the wave basin at AAU. The participation of AAU’s wave basin infrastructures in the national research infrastructure led by WindScanner has been revoked.

The Danish partnership for wave power is an active association meeting twice a year to discuss progress on the development of Danish wave energy concepts, strategies, applications to funding agencies, and ongoing projects.

Meeting Agenda		
Type of Meeting	Assembly	Danish partnership for wave power meeting
Meeting Date	11/09/2018	
Location	Aalborg	Department of civil engineering, Aalborg University
Schedule	Activity	Speakers/chair
13:00	Welcome and introduction	Kim Nielsen
13:15 – 15:00	Status for projects and applications	Ruth Bloom. Deployment at sea of Crestwing’s prototype Lars Wigant: Exowave status Erik Friis-Madsen: WaveDragon status Morten Kramer: Floating power plant status Jens Peter Kofoed: status for the COSTaction project and Weptos Amélie Têtu: status on the Innovation foundation application and Marinerg-i. Christian Nereus Grant: status on DanWEC Peter Brandt Larsen: status from Thisted municipality Christian Munk Jensen: status for Offshoreenergy.dk and the ELBE project Hans Arildsen Pedersen: status on the future strategy for the partnership for wave power.
15:00-15:55	Discussion on the roadmap	Kim Nielsen
15:55-16:00	Next meeting	Kim Nielsen

List of Attendees

Initial	Name	Affiliation
KN	Kim Nielsen	KNSwing and chairman of the Danish Partnership for wave power
RB	Ruth Bloom	Crestwing
LW	Lars Wigant	Exowave
ERM	Erik Friis-Madsen	WaveDragon
MK	Morten Kramer	Floating Power Plant
JPK	Jens Peter Kofoed	Department of civil engineering, Aalborg University (AAU)
AT	Amélie Têtu	AAU
CNG	Christian Nereus Grant	DanWEC
PBL	Peter Brandt Larsen	Municipality of Thisted
CMJ	Christian Munk Jensen	Offshoreenergy.dk
HAP	Hans Arildsen Pedersen	House of energy

Meeting Minutes - summary

The meeting went according to the agenda described previously, where all participants of the meeting gave a status of the different projects they are involved in.

A draft update to the Danish roadmap will be sent around to the partnership. This will include an overview of the collaborations and innovative opportunities.

3.3. France

3.3.1. Introduction

Two main engagement activities have been conducted in France since April 2018:

- The TheoREM RI was placed on the National RI Roadmap 2018<sup>1</sup>
- Additional discussions with the delegates of the Ministry for Higher Education, Research and Innovation and other relevant development and funding bodies regarding French RIs contribution to the development of ORE at the National and European level have been conducted.

3.3.2. Overview

The TheoREM Research Infrastructure<sup>2</sup> brings together the hydrodynamics facilities of IFREMER and Ecole Centrale de Nantes. This joint venture was included on the 2018 national roadmap of Research Infrastructures. It is noted that the International dimension of the TheoREM RI is related to its contribution to the future MARINERG-i RI.

A meeting with the delegates of the Ministry for Higher Education, Research and Innovation was organised on January 14th to discuss the possibilities for enlargement of the scope of the TheoREM RI and its possible interactions with other national Research Infrastructures.

<sup>1</sup>[http://cache.media.enseignementsup-recherche.gouv.fr/file/Infrastructures\\_de\\_recherche/04/6/Brochure\\_Infrastructures\\_2018\\_UK\\_1023046.pdf](http://cache.media.enseignementsup-recherche.gouv.fr/file/Infrastructures_de_recherche/04/6/Brochure_Infrastructures_2018_UK_1023046.pdf)

<sup>2</sup> <http://theorem-infrastructure.org/>

A workshop involving the partners of the THEoREM RI was organised on November 22nd and 23rd at the IFREMER Bretagne Centre to discuss the technical coordination of the RI and the possible contributions to the MARINERG-i science plan.

### 3.3.3. Actions

Preparatory actions are currently being taken towards a stakeholders meeting in April 2019 involving different stakeholders, namely ministries delegates, national funding agencies, national research bodies, developers and industrials. This will present the current status of the MARINERG-i RI proposal and the contribution of the THEoREM national Research Infrastructure, as a one-day workshop in Brest (Ifremer Bretagne Center) in late April.

## 3.4. Germany

### 3.4.1. Introduction

In terms of mainstream policy being prioritised around offshore wind, the underlying situation in Germany has not changed significantly compared to what was reported in the previous deliverable D7.5. However the outlook has definitely become more positive over the past 6 months in light of significant governmental investments (30mEuro) to radically upgrade the large wave flume facility at FZK in Hanover University.

### 3.4.2. Overview

This investment package will create advanced and unique capability for undertaking specialized research, development and testing that integrates waves, structured flows and sediment dynamics. This facility and staff are recognised by MARINERG-i as being of high value with great potential for delivering high impact results and leading edge discoveries. Initial discussions have revealed the mutual benefits that can flow from participation in MARINERG-i activities.

### 3.4.3. Actions

GS was invited to present on the MARINERG-i project at the annual FZK – KOLLOQUIUM, Marine Ressourcen und erneuerbare Energien, held at Leibnitz Universitat – Hannover. 21st March 2019. A number of associated meetings were arranged in the margins of the main event with senior staff of the centre and a representative of the German ministry of economics. This activity has established active communication channels through which documentary responses have been provided to address a number of specific queries on the role, responsibilities and rewards that may flow from participation of German facilities in the future ERIC. Additional follow-up is anticipated over the following months.

## 3.5. Ireland

### 3.5.1. Introduction

There is no formal stepwise ERIC or ESFRI application process in Ireland, thus activities have been organised on a logical basis in communication with the Irish ESFRI NCP who is based at Science Foundation Ireland (SFI). The second Irish stakeholders engagement meeting was held in Cork in January 2019, as a specific MARINERG-i focus event, and chaired by Declan Meally, of the Sustainable Energy Authority of Ireland (SEAI). As well as profiling the current status of the project and outputs generated since the first Irish engagement in July 2017, the coordinators provided an update on the status of the ESFRI application and national commitment. Cameron

Johnston presented results from the MARINERG-i business model. Sverre Quale dialled in through Skype from Norway and presented an overview of the ECCSEL ERIC, Contributions by SQ provided attendees with a clear picture of the implications of joining an ERIC.. Alan Berry (Irish Marine Institute) presented an account of experiences in the EMSO ERIC. Details of the attendees and actions identified from the meeting are presented in Sections 3.1.2 and 3.1.3.

### 3.5.2. Overview

Meeting Agenda	
<b>Project</b>	MARINERG-i
<b>Type of Meeting</b>	National coordination
<b>Meeting Date</b>	9/1/19
<b>Location</b>	UCC, Beaufort Building, Ringaskiddy, Co. Cork, Ireland.

### List of Attendees

Name	Organisation	Short name
Declan Meally	Sustainable Energy Authority of Ireland	SEAI
Alan Berry	Marine Institute	MI
Fiona Grant	Marine Institute	MI
Edel O'Connor	Marine Development Team	MDT
Paul Brewster	Irish Maritime Development Office	IMDO
Jimmy Murphy	University College Cork	UCC
John Breslin	SmartBay	SmartBay
Tony Lewis	University College Cork	UCC
Sarah Culloty	University College Cork	UCC
Jeremy Gault	University College Cork	UCC
Nora Geary	University College Cork	UCC
Anita Maguire	University College Cork	UCC
Jonathan Hurley	University College Cork	UCC
Michael O'Shea	University College Cork	UCC
Christophe Maisondieu	IFREMER	IFREMER
Gerry Sutton	University College Cork	UCC
Fiona Devoy McAuliffe	University College Cork	UCC
Vicki Stratigaki	Ghent University	UGent
Simone Meme	PLOCAN	PLOCAN
Cameron Johnstone	University of Strathclyde	UoS
Treena Dunlea-Peatross	Bird and Bird Ltd	B&B
Sverre Quale	NTNU (ECCSEL ERIC)	NTNU

### 3.5.3. Actions

Action	Organisation/person responsible	Deadline
Identify funding for scaled back activities to maintain momentum and bridge the gap between the end of MARINERG-i and the ESFRI application and publication of the roadmap in 2021.	UCC	ASAP

SEAI agreed to be champion state agency for MARINERG-i in Ireland. Action to set up a meeting with SEAI and other governmental stakeholders to present and agree the contribution from the Irish government.

UCC

ASAP

The stakeholder engagement event was followed by a second meeting attended by the project coordination team and key members of the UCC senior management team. The main outcomes of this were:

- Greater clarity and understanding around the project and specifically provisions of the statutes with recommendations from UCC on how these could be strengthened to provide additional security for partner institutes to ensure full legal and managerial control of their facilities is maintained under any future ERIC scenarios.
- Very positive and supportive position from the UCC senior management for MARINERG-i to proceed, with a recommendation that there every effort should be made to ensure close operational coordination and communication around MARINERG-i at the local management level within MaREI.

### 3.6. Italy

#### 3.6.1. Introduction

The first in-country stakeholders meeting held at the University of Rome “La Sapienza” in December 2017 and reported in Deliverable D7.5. The meeting had a limited though very qualified audience from Academia and Industry and was an opportunity for starting a general discussion about the opportunities related to the ESFRI initiative and the impact of the initiative in the context of the ongoing national plans for research and for the evaluation of research infrastructures relevant for ORE applications.

A decision was then taken to organize a second in-country meeting open to the widest community of stakeholders. Originally planned for February and postponed for technical reasons, the event was held at the end of May 2018 at CNR-INSEAN in Rome. Details of this event are described in the following section.

Another occasion to discuss the MARINERG-i initiative was through the delivery of a presentation given by Francesco Salvatore (CNR-INSEAN) during a workshop organized in the framework of the Interreg-MED Project MAESTRALE. This event was organized by the University of Siena and held in Grosseto on May 3rd, 2018. Among the attendees, Mrs. Giannina Usai, President of the Italian Association of Mayors of the local authorities in small Islands (Associazione Nazionale dei Sindaci dei Comuni delle Isole Minori, ANCIM) expressed a strong interest in the MARINERG-i initiative for its expected impact on the maturation of ORE as a fundamental contribution to the renewable energy mix for small islands.

#### 3.6.2. Overview

The second in-country stakeholders meeting was held at CNR-INSEAN, Rome, on May 30th 2018, with the agenda and the attendance as shown in the following tables.

The meeting was attended by 20 senior representatives of Academia, Research Centers, Industry, and NGO, and by a number of researchers from CNR-INSEAN. In particular, qualified participation came from academic staff at universities hosting RIs relevant for the MARINERG-i

initiative (notably Naples, Milan and Florence), research centers (ENEA, RSE, INGV), representatives from industry (Umbra Group, Micoperi) and utilities (ENEL Green Power). Dr. Laura Beranzoli and Cecilia Lalle (CNR) made significant contributions towards the MARINERG-i initiative by presenting respectively the experiences of two synergetic actions, the EMSO-ERIC and the outcomes from the H2020 IN-ROAD project. The workshop was opened by a welcome speech from CNR-INSEAN Director, Mr. Daniele Ranocchia, while CNR at higher level was represented by Dr. Emilio Campana, head of Department for IT, Energy and Transport (DIITET).

Meeting Agenda		
<b>Project</b>	MARINERG-i	
<b>Type of Meeting</b>	Workshop	
<b>Meeting Date</b>	May 30 2018	
<b>Location</b>	CNR-INSEAN, Rome, Italy	
Schedule	Activity	Speakers/chair
10:45	Welcome	Daniele Ranocchia (CNR)
11:00	Meeting objectives & background	Francesco Salvatore (CNR)
11:10	Marine renewable energy resource in the Mediterranean sea and Italian technologies	Gianmaria Sannino (ENEA)
11:35	Italian research infrastructure network and the EU MaRINET projects	Francesco Salvatore (CNR)
11:50	Case stories from the MaRINET Project	Giovanni Bracco (Poli-TO)
12:20	The MARINERG-i initiative	Christophe Maisondieu (IFREMER)
13:00-14:00	Lunch	
14:00	Experience from ESFRI projects: EMSO-ERIC	Laura Beranzoli (INGV)
14:15	Discussion and Q&A on MARINERG-i and the ESFRI framework	all
15:45-16:00	Coffee break	
16:00	ESFRI mark on national research programs and funding: PNR, PNIR	Francesco Salvatore (CNR)
16:15	BIG: The technology Cluster on Blue-Growth	Emilio F. Campana (CNR)
16:30	Blue-Growth: the BLUE-MED initiative	Elena Ciappi (CNR)
16:45	Wrap-up and conclusions	C. Maisondieu/F. Salvatore/all
17:00	Closure	

**List of Attendees**

Initial	Name	Affiliation
FA	Felice Arena	Univ. Mediterranea, Reggio Calabria
SB	Simone Bastianoni	Univ. Siena
MB	Marco Belloli	Technical Univ. Milano
LB	Laura Beranzoli	INGV; EMSO-ERIC
DB	Domenico Borrello	Univ. La Sapienza, Rome; OWEMES
GB	Giovanni Bracco	Technical Univ. Torino

EFC	Emilio F. Campana	CNR, head of DIITET Dept.
LoC	Lorenzo Cappietti	Univ. Firenze; CONISMA
LuC	Luca Castellini	Umbra Group SpA; IEC-TC 144
DC	Domenico Coiro	Univ. Federico II, Naples
AC	Antonella Colucci	ENEL Green Power
CL	Cecilia Lalle	CNR; INROAD Project
CM	Christophe Maisondieu	IFREMER; MARINERG-i Project
EP	Edoardo Papa	CONISMA
MAP	Maximo A. Peviani	RSE
GP	Giovanna Pisacane	ENEA
FR	Francesco Roncallo	Univ. Genova
GS	Gianmaria Sannino	ENEA
FSc	Fabrizio Sciulli	Micoperi SpA
DV	Diego Vicinanza	Univ. Campania, MARINERG-i ; CONISMA
FS	Francesco Salvatore	CNR-INSEAN; MARINERG-i Project
EC	Elena Ciappi	CNR-INSEAN; Blue-Med Project
FDF	Fabio Di Felice	CNR-INSEAN; MARINERG-i Project

*Figure 2: Emilio F. Campana, head of CNR Dept. for IT, Energy and Transport (DIITET) at the in-country stakeholders workshop held at CNR-INSEAN, Rome, on May 30<sup>th</sup> 2018 (left) and the audience (right).*



In order to secure the interest of a large audience and motivate participation, the event was structured as a full-day workshop. The first part was dedicated to providing a comprehensive overview of the MARINERG-i initiative. The impact of ORE in the Mediterranean region and the state-of-art of ORE technologies by Italian developers were reviewed. As the result of a consultation made before the event, 14 Italian Research Infrastructures (RI) potentially relevant as nodes of the MARINERG-i network were presented. Selected case studies from MaRINET 1 and 2 projects were taken as examples to illustrate the impact of RIs on the development of ORE technologies and the role that Italy can play. This was followed by a presentation of the MARINERG-i initiative that was given by the WP7 lead Christophe Maisondieu (IFREMER).

The second part of the meeting focused on ESFRI. In particular, LB presented the experience of coordinating the EMSO project now running as an ERIC. Contributions by CM and LB provided

attendees with a clear picture of how ESFRI works, the mechanisms of participation to the ESFRI roadmap calls and the implications of joining an ERIC.

The third part of the meeting was dedicated to analysing the MARINERG-i initiative in the context of running programs for research and for RIs at national level. In particular, FS stressed that the MARINERG-i initiative happens in a phase characterized by new initiatives at country level in the context of the Blue Growth including ORE. In particular, EFC presented the new Technology Cluster on Blue Growth (BIG), an instrument created by the Ministry for Education, University and Research (MIUR) to leverage public/private synergies on R&D actions. There are also plans for MIUR to update the database of RIs and align related actions at country level with EU initiatives including ESFRI. Facility managers attending the discussion agreed on the importance of strengthening collaboration and building a national network of RIs.

However, EFC reported that CNR management envisaged that the engagement of CNR in ESFRI initiatives should be gradually reduced in the near term. In this context, the inclusion of RIs managed by CNR Institutes in the MARINERG-i initiative would not be aligned with CNR strategies. This position is clearly at odds with the current situation, given the valuable extent of CNR involvements in a large number of ESFRI Projects and Landmarks in many thematic areas including Energy and Environment.

In general, meeting parts II and III were animated by Q&A and general discussion open to the floor, with key contributions from Academia (MB, DV, LoC), Industry (AC), and research institutes (LB) who were very keen to understand how an ERIC works.

The outcome of this second in-country stakeholders meeting highlighted Italy's position with respect to the MARINERG-i initiative, where Academia and Research interests are strongly represented along side facility managers who are keen to collaborate in the formation of a national network of RIs.

The workshop was held following a prolonged preparatory phase in order to create awareness about the MARINERG-i initiative among the managers of relevant ORE facilities. As a result, a group of 14 RIs potentially relevant for the MARINERG-i initiative has been identified, with several more that may also be considered. The majority of these RI's are at University laboratory scale, and several are classed as large-scale facilities. Participants agreed that CNR should operate as the lead node for Italy, owing to its strengths as the largest research center in Italy and of the relevance of facilities under it's control and managed by CNR-INM (former INSEAN).

A lack of commitment by CNR, as mentioned by EFC, would represent a serious drawback in the process of obtaining political support from MIUR Ministry for the participation of Italy to the ESFRI roadmap 2020. To mitigate this, the association of Universities on Marine Sciences (CONISMA) and the Agency for new technologies, energy and sustainable development (ENEA) have a combined critical mass that could be directed towards promoting the MARINERG-i initiative.

Ministries to be engaged are MIUR and MISE (Ministry for Industry and Economic Development).

Another important result from this meeting is the established collaboration with key contacts from the EMSO-ERIC project, there represented by Dr. Laura Beranzoli.

### 3.6.3. Actions

After the meeting, slides presented by speakers were made available to all participants. No specific action list was discussed, while partners agreed to take advantage of events related to ORE to continue engagement and discussion.

Who	What	When
CNR-INSEAN	Continue networking with RIs relevant for participation into a network on ORE	Open
All	Include discussion on MARINERG-i in workshops and events of interest of stakeholders	Open
CNR	Clarify position with respect to new ESFRI initiatives	Asap
INGV	Collaboration with CNR-INSEAN on ESFRI, ERIC	Open
CNR-INSEAN	Make plans for a third in-country workshop by June 2019	By April 2019

## 3.7. Netherlands

### 3.7.1. Introduction

Netherlands is moderately positive in joining the future MARINERG-i ERIC, whilst key interested parties have signaled interest in broadening the scope to include offshore wind energy and numerical simulations. In this sense, it could be an opportunity mainly from the perspective of offering a complete package including hydrodynamic model testing, materials and other aspects, combining the expertise of various partners of the ERIC.

Interaction with stakeholders has been informal after the initial meeting described in D7.5 and specific actions have been identified.

### 3.7.2. Overview

No further explanations are available.

### 3.7.3. Actions

No specific actions have been identified during these meetings and general follow up will be carried out regularly.

## 3.8. Norway

### 3.8.1. Introduction

Meetings and follow-up discussions of relevance in this second half of the project have been undertaken between NC and National Norwegian TAC representative (Jon Dugstad) and discussion between NC and funding agency NCP.

### 3.8.2. Overview

In Norway the path towards participation in any ERIC or ESFRI infrastructure goes through the biennial application procedures for national infrastructure initiatives. This is a 3 phased process where infrastructures must first be prioritized at the institutional level. Thereafter in the 2nd step through the national application process, an established set of criteria must be met by the infrastructure, including national value, interest, cost, scientific level, European agenda and not least the national industry interest and potential use of infrastructures. Finally, in the 3rd step, an evaluation by the national funding agency is made which may result in a recommendation being made to the ministry. The meetings relevant for underpinning this process are primarily at institutional level in the pre-application process.

Meeting Agenda		
<b>Project</b>		
<b>Type of Meeting</b>	National Infrastructure owner meeting	Status and next steps
<b>Meeting Date</b>	08.03.2018	
<b>Location</b>	SINTEF Ocean	
<b>Schedule</b>	<b>Activity</b>	<b>Speakers/chair</b>
<b>Afternoon session</b>	Presentation And discussions	Hans Christian Bolstad John Olav Tande

**List of Attendees**

Initial	Name	Affiliation
HCB	Hans Christian Bolstad, NC	SINTEF Energy Research
BW	Bård Watne VP Research	SINTEF Ocean
3-4 Colleagues	John Olav Tande Research Manager	NTNU and SINTEF Ocean SINTEF Energy Research

Meeting Agenda		
<b>Project</b>	NC and outdoor Infrastructure Owner	Coordination meeting
<b>Meeting Date</b>	29.03.2018	Prof Golmen and Colleagues
<b>Location</b>	Runde Marine Test Centre	
<b>Schedule</b>	<b>Activity</b>	<b>Speakers/chair</b>
	Facility overview	Prof Golmen; NIVA, Norwegian Institute for Water Research, Runde Test Centre
<b>All day meeting</b>	Presentation And discussions	Dr Hans Christian Bolstad
	National coordination activities	Dr Hans Christian Bolstad
	Application timeline and risk	Dr Hans Christian Bolstad

**3.8.3. Actions**

No specific actions have been identified during these meetings and general follow up will be carried out regularly.

### 3.9. Portugal

#### 3.9.1. Introduction

In December 2018 a networking dinner was held with participants of the WAVEC Annual Seminar to present the project to different national and international stakeholders. There were 38 participants, from academia, industry and public bodies.

A second Stakeholder Workshop is scheduled for May 2019, in order to present the business, science and design plans to the Portuguese stakeholders.

#### 3.9.2. Overview



During this time two initiatives with possible linkages to MARINERG-i have advanced in implementation: the AirCentre and the CoLab +Atlantic.

The AirCentre is a long-term multilateral platform for cooperation, focusing on Atlantic countries, with integration through earth observation from space to deep ocean observation and data science. It has already identified collaboration projects within the ocean energy sector, including cross-cutting initiatives in Atlantic Research & Observation Infrastructures.

The AirCentre is in the process of transitioning from an implementation team to the permanent staff, and of consolidating its governance and business plan.



The CoLab +Atlantic is a national initiative which aims to develop infrastructures and capabilities to provide sustainable and holistic solutions on the Atlantic system, through new data/info that will allow for a better exploration/exploitation of Atlantic resources. It is set up as a private association held by Portuguese industry, R&D centers and public institutions. It foresees the management of different national test sites.

The CoLab +Atlantic will likely be the national connecting node to the AirCentre, but in its implementation does not limit itself to the AirCentre initiative alone. It is currently at the launching phase.

#### 3.9.3. Actions

No specific actions have been identified during these meetings and general follow up will be carried out regularly.

### 3.10. Spain

#### 3.10.1. Introduction

Stakeholder engagement in Spain was established by PLOCAN and included continuous exchange of information with the Ministry in charge of ESFRI in the country. At the outset of the project the Ministry of Economic affairs (MINECO held responsibility for coordinating the Spanish involvement in ERICs, however this has recently been replaced by the Ministry of Science,

Innovation and Universities (MICINN – General Secretariat for Science and Innovation Internationalization) due to reorganization of roles and responsibilities following the change of Government in 2018.

Following more formal involvement from the Principal Stakeholder, Marine related infrastructures in Spain have now been reorganised and aggregated to form MARHIS, a single entity.

Participation in the Bilbao Marine Energy Week (BMEW), which is the leading conference for Mariner Energy in Spain and at international level, provided the most recent opportunity for stakeholder engagement.

### 3.10.2. Overview

Considerable progress at the political level has already been made through several high-level face-to-face meetings as indicated in D7.5. These discussions developed into the creation of a new national Maritime Aggregated Research Infrastructure called MARHIS, with the objective of optimising national research performance and competitiveness offered by public infrastructures.

Participation at the BMEW conference enabled the inclusion of additional stakeholders into the database and to provide updates on the current status of the project to existing participants.

#### **MARHIS (Maritime Aggregated Research Hydraulic InfrastructureS)**

The fundamental mission of [MARHIS](#) is to provide and share knowledge, technology and services to support the development of maritime, offshore and coastal engineering. It comprises the most advanced research infrastructures in the field, ranging from tank testing facilities to open water test sites. Initially MARHIS included UPC and IHCANTABRIA institutes, and was subsequently extended to incorporate other research facilities as indicated in Table 9.

**Table 9: MARHIS research infrastructures list**

NODE	OUTSTANDING FACILITIES
iCIEM	CIEM - Canal d'Investigació i Experimentació Marítima large Scale La Bassa Wave Basin CIEMITO Wave Flume - Canal d'Investigació i Experimentació Marítima small scale
GTIM-CCOB	GTIM-TSU (55 m X 2 m X 2 m flume) GTIM-GT (44 m x 30 m x 3,7 m multidirectional wave basin)
INTA-CEHIPAR	CEHIPAR Ship Dynamics Laboratory CEHIPAR Cavitation Tunnel CEHIPAR Calm Water Towing Tank
PLOCAN	PLOCAN Test site
BIMEP	BIMEP Monitoring Area

These infrastructures are currently reviewing the legal agreement that establishes their joint activity including the access policy, funding mechanism, governing structure, research strategies and joint dissemination activities.

While this progress is very relevant in terms of organization and coordination that can support Spanish participation in the MARINERG-i ERIC, there has been no formal commitment as yet. The next step will be to present the ERIC business plan, Scientific Plan and Statutes, which will provide the basis upon which decisions will be made regarding Spanish commitment to the ERIC.

The following tables summarize the National Stakeholder meeting held in Spain:

Meeting Agenda	
Project	MARINERG-i
Type of Meeting	National coordination
Meeting Date	22-23/1/19
Location	Santander (IHCANTABRIA)

List of Attendees

Initial	Name	Affiliation
RG	Ángel Pazos Carro	GTIM-CCOB
OL	Octavio Líñas	PLOCAN
YT	Yago Torres	BIMEP
FT	Francesc Torres i Torres	iCIEM
JMSP	José María Salom Piqueres	CEHIPAR

3.10.3. Actions

Who	What	When
MARHIS PARTNERS	Review administrative and legal documents for signature	2Q 2019
	Review the strategic plan and provide feedback	
	Review Dissemination activities for synergies	
	Check compatibility with MARINERG-i	

3.11. Sweden

3.11.1. Introduction

No significant updates have been reported since deliverable D7.5.

3.11.2. Overview

No significant updates have been reported since deliverable D7.5.

3.11.3. Actions

No significant updates have been reported since deliverable D7.5.

### 3.12. United Kingdom

#### 3.12.1. Introduction

Engagement with existing UK stakeholders was established by Cameron Johnstone, University of Strathclyde and Oliver Wragg, EMEC. The stakeholders targeted for this round of engagement were identified from existing UK infrastructures, which are part of the MaRINET and MaRINET 2 programs. The UK were part of the original Marine Renewables ESFRI submission and are part of the MARINERG-i submission preparation for Offshore Renewable Energy Research Infrastructures for the next ESFRI submission in 2019- 2020.

#### 3.12.2. Overview

The last formal stakeholders meeting has been at the beginning of 2018 as reported in Deliverable 7.5.

Meeting Agenda		
<b>Project</b>	MARINERG-i (UK Stakeholders)	
<b>Type of Meeting</b>	Conference Call	
<b>Meeting Date</b>	Q1 2018	
<b>Location</b>	Conference Call	
Schedule	Activity	Speakers/chair
	Introduction	Gerry Sutton (UCC)
	MARINERG-i	Christophe Maisondieu (IFREMER)
	UK Stakeholders Engagement and Contributions	Cameron Johnstone (University of Strathclyde)
	Q/A	

#### List of Attendees

Initial	Name	Affiliation
	Oliver Wragg	EMEC
	Paul Lamont Kane	Queens University Belfast
	Tom Davey	University of Edinburgh
	Philipp Thies	University of Exeter
	Stewart Stripling	University of Plymouth
	Sandy Day	University of Strathclyde
	David Ingram	University of Edinburgh

#### 3.12.3. Actions

In addition to the UK Stakeholders meeting there is continuous update calls/communications with the UK Science and Technology Facilities Council, The UK Government Agency who represents the UK at ESFRI. The STFC contact, Gabriella Pastori (GP), has been kept up to date with MARINERG-i developments and the UK stakeholders who will be potential participants in this distributed research infrastructure initiative. STFC will coordinate the issuing of the UK letter of Support/ Endorsement for a MARINERG-i ESFRI submission. An update meeting will be

scheduled with GP at STFC for the end of April/ beginning of May 2019 to provide an update on the conclusions of the MARINERG-i initiative and the submission of a European Distributed Offshore Renewable Energy RI to ESFRI.

#### 4. MARINERG-i Integration Workshop

In October 2018 the Integration Workshop (Milestone 5) was initiated with the following aims:

- Make tangible progress in integrating across different strands of work being carried out under the various work packages towards a more coherent and concrete common rendition of our distributed infrastructure
- Progress the design study and science plan
- Ascertain current status of MARINERG-i in each country and agree action plans to deliver necessary commitment letters by April 2019

Project partners had the opportunity to summarize the status of national stakeholder engagement. The coordination and CM provided an overview on the status of the Science Plan and Design Study and collected feedback from the participants in order to verify that these documents cover all requirements and requested domain of activities.

**Date:** Mon 29th Oct. 11:00 – 18:30

**Venue:** DoubleTree by Hilton Edinburgh City Centre

#### Agenda

Time	Activity	Lead
10:30-11:00	Arrival and coffee	
11:00-11:20	Introduction and overview of aims and agenda.	GS/CM
11:20-11:40	Housekeeping.	
11:40-12:40	Feedback by country: Belgium, Denmark, France, Germany, Italy	VS, AT, CM, JB, FS
13:00-13:30	Light Lunch & Refreshments	
13:40-15:20	Feedback by country Ireland, Nederland, Norway, Portugal, Spain	JM, E JdeR, HCB, MS, SM
15:20-15:40	Coffee Break	
15:40-16:20	Sweden, United Kingdom	IT, CJ
16:20-16:40	Coffee Break (GS/CM compile proposed facilities)	
16:40-17:30	Design Study Review: Agree facilities listing, structure and elements of design study, assign tasks/responsibilities	GS/JM
17:30-18:30	Science Plan & E-Infra Review: Agree draft plan for subsequent development and assign tasks/responsibilities	CM/GS

#### Attendees

Organisation	Name	Initials
EMEC	Rob Flynn	RF
EMEC	Matthew Finn	MF

UCC	Gerry Sutton	GS
UCC	Jimmy Murphy	JM
UCC	Michael O'Shea	MOS
IFREMER	Christophe Maisondieu	CM
ECN	Yves Perignon	YP
Ugent	Vicky Stratigaki	VS
Bird&Bird	Treena Dunlea-Peatross	TDP
CNR	Francesco Salvatore	FS
CNR	Fabio Di Felice	FDF
UU	Irina Temiz	IT
SSPA	Michael Leer-Andersen	MLA
WAVEC	Marta Silva	MS
PLOCAN	Simone Memé	SM
PLOCAN	Joaquin Brito	JB
AAU	Amélie Tetu	AT
UoS	Cameron Johnson	CJ
UoS	Stephanie Ordonez	SO
Fraunhofer	Jochen Bard	JB
TAC Norway	Jon Dugstad	JD
TAC Germany	Stefan Schimels	SS
TAC France	Yann-Hervé De Roeck	YHDR

Figure 3: MARINERG-i representation at international WATERS 2018



## 5. Transversal activities

To date, a number of transversal SH engagement activities have been undertaken by partners including:

- Surveys as a specific SH engagement action for user profiling and operating costs
- Participation to conferences and workshops with the objective of:

- Disseminating project's mission and vision
- Populate the DB of SH
- Evaluate the possibility of third countries inclusion in the ERIC
- The project's [website](#) and [twitter](#) account as key channels for interaction such as:
  - Stakeholders sign-up to the project's mailing list
  - Download of results and public deliverables
  - News and events publication

The 14 consortium participants are drawn from a diverse range of backgrounds across 12 different European countries. There are University and National Government research centres together with Industry research centres and a Legal firm. MARINERG-i is attractive beyond the EU and is now beginning to involve countries with commitments to Marine Renewable energy research on a global basis. These can be identified as those with active participation in IEA OES, IPCC and IEC, and include US, Canada, Chile, Brazil, China, India, Japan, Korea, Taiwan, Australia, South Africa, New Zealand and Mexico. It should be noted that Brazil were partners in MaRINET and Taiwan were associate members.

In terms of direct industrial involvement, each node partner is actively engaged with Industry through their test infrastructures, research projects, policy making and/or technical development.

This engagement and dissemination has been supported by Aquatera Ltd. as an external subcontractor with expertise in this area.

The objective of these transversal activities is to generate a shared understanding and permanent interaction with key stakeholders on technologies, policies, barriers, risks and opportunities associated with marine energy to ensure a multi-actor long-term dialogue and collaboration among stakeholders affecting research infrastructures.

### 5.1. Stakeholder surveys

Two surveys have been sent the participants in the MARINERG-i SH DB in order to provide information to address MARINERG-i need for a more complete understanding of existing or potential future end-user requirements at one or more test facilities, and also to gain a better understanding of the marine testing infrastructure available in Europe. , there have been.

#### 5.1.1. End-user survey

The first questionnaire was carried out to collect information about end-users' requirements as key input for the correct execution of WP2. This was oriented to support the goal of ensuring that the future MARINERG-i distributed Research Infrastructure will be user-oriented, offering a suite of technical R&D services matched to the requirements of end-users in the ORE industry.

The end-user's questionnaire was sent to 216 stakeholders on the 25th April 2018. Initial response was low, and a reminder was sent on the 4th May 2018 with a follow-up email from NC and the subcontracting company Aquatera (see D7.5). Sixty-seven stakeholder responses were received for this first survey, which was considered reasonable. The survey was undertaken through google forms<sup>3</sup> and sent by mailchimp (see results in Appendix A).

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<sup>3</sup> <https://www.google.com/forms/about/>

The methods and results terms of user requirements for ORE capacity and service offering, are presented in D2.1 End-Users' Requirements.

### 5.1.2. ORE infrastructure survey

The second survey was undertaken to support the development of the business case within the framework of WP6. This sought to elicit information from which to create a financial profile of research infrastructures operations. This included surveying capabilities within facilities, understanding the cost structure and financial considerations associated with managing and operating such facilities, and identifying the current and future needs of the sector.

The information obtained through the questionnaires was aggregated, analysed and compiled into a report (D6.1) that summarises the overall cost and revenue structure of the various facilities. The questionnaire was sent to 88 stakeholders (universities and infrastructure facilities) on the 24th May 2018 by Mailchimp in a word format due to the limitations associated with formatting the survey structure. A reminder was sent on the 4th June 2018; however the response was poor and only 6 replies were received, results are presented in Appendix B.

## 5.2. Communication and Dissemination activities

The objective of the current communication and dissemination under MARINERG-i is to promote projects and future ERIC's activities, achievements (strategic and scientific) and mission & vision, raise awareness of benefits to potential users/beneficiaries/new members and finally reach-out to a large and informed audience. This process has mainly been executed via contacts registered as participants in the stakeholder database as part of task 7.3. Documents used for this purpose are presented in Appendix C which ensured compliance with the Ethics requirements described in WP10 for those that have signed up.

This is proving to be the most effective SH engagement activity, particularly with third countries, where MARINERG-i ERIC will have to inspire confidence and ensure the recognition our position as the global leader in the field. Appendix D explains the general process of engagement with SH from third countries.

MARINERG-i has been fully represented at several key international workshop and conferences as described in the following paragraphs. Since M16 PLOCAN has attended a number of events where the attendees have been made aware of the MARINERG-i project and where their views on the status, needs and solutions for the sector have been sought.

### 5.2.1. Asian Stakeholders engagement: AWTEC conference and International WATERS 2018

The Asian Wave and Tidal Energy Conference ([AWTEC](#)) (Figure 4) is an international technical and scientific conference supported by the European Wave and Tidal Energy Conference (EWTEC) organisation, and recognised as the leading conference in the area of ocean wave and tidal renewable energies. AWTEC was held in September 2018 in Taipei as a forum to engage in knowledge transfer and debate at the cutting edge of marine renewable energy technology, and also to deliver an update on recent global activities and initiatives with a focus on the Asian region. Key points of relevance to MARINERG-i are synthesised from the conference are as follows:

Figure 4: AWTEC 2018



- Sector confidence
  - The wave and tidal sectors are under pressure, some would say intense pressure, to show that they can be relevant to the energy systems of tomorrow.
  - Key concerns at present relate to the cost competitiveness of the technology, the ability of tech start-ups to deliver proven technologies and the reliability of marine technologies.
  - The apparent abandonment of marine energy by the UK government is not unnoticed in other jurisdictions, where governments are questioning the value of marine energy.
  - The case for marine energy varies significantly from place to place and country to country.
  - Need more devices working for >1yr trouble free operation.
  - Wide reporting of technology performance by technology developers.
  
- Markets and prospects
  - It is important for the wave and tidal sectors to understand where they may have a competitive advantage in existing and future energy markets.
  - Technologies need to be developed to serve particular markets rather than technology developers expecting markets to be created to serve their technology.
  - Regarding cost competitiveness, there is still too strong a focus on grid connected/utility scale business models within which it may be difficult and perhaps impossible for marine energy to be successful.
  - Technology developers need to be more aware of market character and dynamics, including trends in competitor technology development.

- Marine energy needs to embrace suitable storage and balancing mechanisms.
- Need to be able to prove to energy customers that marine energy can deliver reliably and cost appropriately.
- Technology development
  - There is a growing appreciation that the start-up to OEM technology development pathway is broken and unlikely to deliver successful technology progression.
  - Alternative pathways that nurture the inherent capacity of the tech start-up itself, or sector aligned specialist manufacturers, are likely to be much more successful.
  - Consequently, finance will be required to allow tech start-ups to self-fund technology commercialisation.
  - This will require both governmental technology/industrial capacity support as well as impact/crowd investment efforts to support new tech development.
  - Project pipelines will need to be developed separately and through technology agnostic processes which lead to technology deployment opportunities.
- Technology testing
  - Technology testing requirements arise at a number of levels from concept verification, prototype testing through to technology improvement and array demonstration.
  - The costs of testing need to be managed and minimised to sustainable levels.
  - Limiting the size of test technologies may help.
  - Testing structural technology models before fully functional energy producing models of technology is prudent.
  - Mechanisms for peer assist and applying non-confidential lessons learned would be beneficial.
  - Better performance management of technology and project development processes needs to take place.
  - Test sites should encourage technology developers to work with experienced local expertise to help facilitate successful test programmes.
  - Test sites should act as a catalyst for wider supply chain development where economic development is an important objective.
  - Test sites should be careful to deliver services and facilities based upon appropriate standards for the markets being serviced.
  - Technology for small scale markets need appropriately scaled testing regimes.

### International WATERS workshop 2018

International Wave and Tidal Energy Research Sites ([WATERS](#)) is an alliance that brings together international open-water test sites to establish a global network focused on collaborative opportunities for test centres in support of the developing ocean energy industry.

As test and demonstration sites are emerging for Ocean Renewables, the industry is clustering around these sites drawing in expertise from device developers, supply chain companies, regulators and research organisations, ensuring knowledge transfer across different regions and supporting the creation of a global market.

Within this network, participants' efforts are coordinated through Working Groups focusing on:

- The creation of best practice research at open-water ocean energy test and demonstration locations in the fields of environmental data collection, technology testing, marine operations, stakeholder engagement and marine safety to underpin the development of the ocean energy sector
- The development of robust procedures across the network to ensure a consistent technology development pathway is put in place along with further development of standards and guidelines for the ocean energy sector
- Integration of research and development activities across the Action partners to enhance dissemination, create new opportunities for early stage researcher development and maximise the growth opportunities for the participants

PLOCAN presented MARINERG-i highlighting the mission and vision and presenting recent project results to the 20 attendees who are listed below:

**List of Attendees**

Country	Organisation	Name
DENMARK	DANWec: Danish Wave Energy Center	Morten Kramer
IRELAND	SmartBay Ireland	John Breslin
JAPAN	Class NK Nagasaki Prefecture	Takaaki Morita
JAPAN	NaMICPA: Nagasaki Marine Industry Cluster Promotion Association	Ei-ichi Kobayashi
NETHERLANDS	DMEC: Dutch Marine Energy Centre	Peter Scheijgrond
SOUTH KOREA	KIOST: Korea Institute of Ocean Science & Technology	Dr. Dong Hui Ko
SOUTH KOREA	KIOST: Korea Institute of Ocean Science & Technology	Dr. Jin-Hak Yi
SOUTH KOREA	KRISO: Korea Research Institute of Ships & Ocean Engineering	Mr. Jeong-Hwan OH
SOUTH KOREA	KRISO: Korea Research Institute of Ships & Ocean Engineering	Mr. Jong-Su Choi
SPAIN	PLOCAN: Oceanic Platform of the Canary Islands	Simone Meme
TAIWAN	ITRI: Industrial Technology Research Institute	Chieh-Cheng James Yen
TAIWAN	ITRI: Industrial Technology Research Institute	Shih-Sheng Hsu
TAIWAN	NTOU: National Taiwan Ocean University	Assist. Prof, Yaw-Huei Lee
TAIWAN	NTOU: National Taiwan Ocean University	Prof. Shiaw-Yih Tzang
TAIWAN	NTOU: National Taiwan Ocean University	Jiahn-Horng Chen
UK	EMEC: European Marine Energy Centre	Rob Flynn
UK	EMEC: European Marine Energy Centre	Caitlin Long
UK	EMEC: European Marine Energy Centre	Lisa MacKenzie
UK	EMEC: European Marine Energy Centre	Oliver Wragg
USA	Hawaii Natural Energy Institute	Patrick Cross
USA	National Wind Technology Center	Arlinda Huskey

The workshop was structured into 3 sessions and the following paragraphs report on the most important aspects discussed:

- Session 1: Update on test centre progress

In the past 12 months, 8 WECs and 5 TECs have undergone test programmes at real-sea testing sites. A significant number of real-sea testing sites are developing new facilities in this period – 1 in the US and Japan and 2 in Korea.

Many centres plan activities in developing standards and services around verification – an area of increasing focus for test centres.

Other common activities included environmental monitoring (key focus on acoustics in some test sites), standards development, component testing and sensor/instrument testing.

Some test sites are under development at present, most notably are:

- Korea (KTEC and KWETEC)
- Japan (Nagasaki)
- USA (PacWave)

- Session 2: Environmental monitoring and consenting challenges

EMEC highlighted the role test centres play in educating regulators and finding solutions for new industries. Key consenting challenges in UK for marine energy include: lack of suitable software, data transfer, harsh operating conditions, building in redundancy, lack of funding for analysis, and IP management. Addressing these challenges will require: early engagement, knowledge exchange between developers, policy consistency across jurisdictions, and protected species compliance. .

- Session 3: Roundtable discussion

A focus group was organised to discuss effective financial schemes applicable to test sites. The group discussed the merits and drawbacks of different business models, and their impact on operational issues related to procurement, funding, overheads, HR & recruitment etc. Outsourcing was noted as a key method for reducing costs, though some areas such as Health & Safety must be provided by the test site.

Another key discussion of particular relevance to MARINERG-i was on quality standards and certification. This provided the basis for further discussions between the present MARINERG-i team and MET-CERTIFIED project coordinator Peter Scheijgrond, and highlighted the urgent need to undertake comparative quality checking between test results for various ocean testing devices' in order to increase investor, user, and general stakeholder confidence.

This is an important added value component of the MARINERG-i implementation plan, with the objective of aligning all the facilities at consistently high levels of competence and capacity through accreditation schemes and equipment sharing.

Figure 5: MARINERG-i representation at international WATERS 2018



**5.2.2. American stakeholders engagement: POET 2018 and FORCE**

MARINERG-i has been actively engaged on the American continent twice to date, with further plans of engagement before the end of the project. As part of the subcontracting service to support PLOCAN in WP7, Aquatera CEO, Gareth Davies undertook a one day participation in the Pacific Ocean Energy Trust ([POET](#)) 2018 event in Oregon.

POET is a 501(c)3 organization committed to the responsible development of marine renewable energy in the Pacific Region. Growing out of the Oregon Wave Energy Trust, POET brings ten years of experience working on issues relating to marine renewable energy development, with a special

emphasis on policy and regulatory matters, better understanding of environmental effects of marine renewables, and stakeholder engagement.

In USA the backing of the federal government for wave energy in particular has given the sector some momentum and the prospective PacWave test centre, alongside the existing WETS facility in Hawaii, have a potentially strong technology pathway coming through. This first contact highlighted the importance of a specific SH engagement in the US, ideally through the medium of face to face consultations, which have proven to be most effective.

### **FORCE**

Canadian Stakeholders were approached via face-to-face meetings during the AWTEC conference in Taipei in September 2018, where a taskforce of key local experts provided strong event support. Simone Memè from PLOCAN and Cameron Johnstone from the University of Strathclyde met for discussions with representatives from *Fundy Ocean Research Centre for Energy* ([FORCE](#)) who are responsible for the tidal energy test site in the bay of Fundy; Marine Renewables Canada ([MRC](#)) who are the Canadian association for Marine Renewables, and [Envigour Policy Consulting Inc.](#), a private consultancy with extensive experience in Ocean Energy.

After introducing the project, its mission, vision and added-value for stakeholders, the discussion evolved into a more formal interest and a follow-up meeting was organized in November 2018. The meeting was attended by FORCE CTO, Andrew Lowery, MARINERG-i Coordinators, representatives from WP7 and WP5, with the objective of analysing the most appropriate legal framework to formalize the interest in collaborating with the future ERIC.

Currently MARINERG-i ERIC is not yet established, therefore it is not possible for the project consortium to enter into any legal agreement but Bird&Bird suggested to formalize the interest with a Letter of Support from Canadian SHs to offer support to the MARINERG-i project.

Once the ERIC is established, the ERIC may determine that a formal collaboration is appropriate, at which time an agreement could be drafted and signed in line guidance contained in the draft ERIC governance procedures.

### **5.2.3. Global stakeholders engagement: OEE2018 and IEA-OES**

MARINERG-i was represented (attending booths 21-22) with several WP leads, Aquatera, the PM and Coordinator, at the Ocean Energy Europe ([OEE](#)) conference on the 30-31st October 2018. OEE is the largest network of ocean energy professionals in the world, with over 120 organisations, including Europe's leading utilities, industrialists and research institutes.

The purpose of exhibiting at OEE 2018 was to inform the aims and current progress of MARINERG-i to the wider marine energy community and to further influence potential supporters of the project. The project Coordinator gave a presentation of the MARINERG-i concept on Tuesday 30<sup>th</sup>, in the main conference programme. Interested parties had the opportunity to engage after the presentation later in the afternoon thanks to a networking event at the MARINERG-i booth, which was held on Tuesday at 5pm. Approximately 20-30 people attended this event allowing a project specific and face-to-face dialogue with the assistants. The stand was officially closed at 4pm on Wednesday.



Table 10: Project partner attendees at OEE2018

Organisation	Name	Short name
UCC	Gerry Sutton	GS
UCC	Jimmy Murphy	JM
PLOCAN	Simone Memè	SM
PLOCAN	Joaquin Brito	JB
EMEC	Oliver Wragg	OW
EMEC	Matthew Finn	MF
IFREMER	Christophe Maisondieu	CM
WAVEC	Marta Silva	MS
WAVEC	Ana Brito	AB
Ghent University	Vicky Stratigaki	VS
AQUATERA (subcontractor)	Catherine Tait	CT

**International Energy Agency – Ocean Energy System**

On June 12th-15th MARINERG-i presented at the International Conference on Ocean Energy 2018, in Cherbourg, France, the prestigious international event focused on the industrial development of ocean energy, supported by the International Energy Agency (IEA) through its technology collaboration program, Ocean Energy Systems (OES). OES consists of 25 members from different countries, mainly specialists from government departments, national energy agencies, research or scientific bodies and academia.

Both PLOCAN and UCC had the opportunity to disseminate the project mission and vision with keynote presentations and face to face meetings and the Coordinators (PM) took advantage of the presence of the Irish Minister Denis Naughten (Minister for Communications, Climate Action and Environment) to inform him of the project and it’s importance in Irish, EU and global contexts.

Gerry Sutton, MARINERG-i PM, presented during the specific session on “Big Data and Knowledge Management”, highlighting the added-value of the future ERIC’s e-infrastructure.

Simone Memè and Joaquin Brito from PLOCAN organized a workshop focused on opportunities and barriers of the implementation of marine energies in islands, which provided an ideal platform within which to promote the project’s activities and the synergies between test sites and islands. Attendees from member countries and two key representatives from the EC Matthijs Soede (DG Research & Innovation ) and Xabier Guillou (DG Mare) also participated in the workshop, A key outcome was the recognition of the potential of Islands in the context of the MARINERG-i ERIC mission, to operate in synergy as interconnected infrastructures supporting and enabling the testing of evolving technologies and business models in parallel. The workshop included 23 worldwide participants from the marine renewable sector who presented various results to the 34<sup>th</sup> IEA-OES Steering Committee meeting held during the conference.

Finally, MARINERG-i was strongly represented through contributions to the IEA-OES 35th Executive Committee meeting hosted by PLOCAN on November 29<sup>th</sup> and 30<sup>th</sup>. Here, the project was presented under the session “Proposal new Tasks” and both Simone Memè (PLOCAN) and Rob Flynn (EMEC) mentioned the future ERIC as a key development both for promoting ORE in Islands and for the future sustainability of test sites worldwide.

Figure 7: MARINERG-i presence at IEA-OES events.





## 6. Conclusion

Considering the outputs from D7.4 and D7.5 (Initial Report on Stakeholders Engagement), through D7.6, it is clear that the MARINERG-i team has engaged with a broad range of stakeholders who will have significant influence on both the project direction, and its ultimate success in terms of those who will derive benefit. A review of the database is provided in D7.3 and a final update will be provided in D7.9 – Final stakeholder database.

Engagement activities have been developed and are well documented, through direct contacts such as face-to-face meetings, email invitations, phone calls and through transversal activities such as conferences and workshops. These have been successful and have also resulted in an expansion of the stakeholder database and repeated engagements with those already subscribed. The overall agreed engagement methodology and strategy outlined in D7.4 has been successfully implemented, including provisions of the newly implemented GDPR Regulations in accordance with guidelines indicated set out in WP10-Ethics which came into force after the project was up and running.

A clear factor emerging from the stakeholder engagement is the wide variation in national approaches to the ESFRI application process. Some countries operate a prescriptive and well defined application process must be followed precisely in order to obtain formal commitments from the principal stakeholders, such as Belgium, France and Norway. Conversely many countries have no formally specific preparatory procedures or qualifying steps (e.g. Italy, Spain, Germany and Ireland). However, obtaining any kind of firm commitment from principle stakeholder in any jurisdiction requires presenting a firm case which must be backed up with strongly reasoned arguments and usually a requirement to review key documentation which sets out the overall plan and design, including financial, technical and scientific rationales.

Is important to note that France and Spain are already engaged in the creation of Joint Research Units which bring the various marine infrastructures together on a national basis, and thus provide a significant step towards the integration of the MARINERG-i concept at national level.

There is also a strong body of interest for the implementation of the future ERIC on the global stage that is perceived to be linked to Europe maintaining its lead as a pioneer in the Ocean

Renewable industry. The ongoing efforts to involve third countries in the future ERIC will help to consolidate this position, through the promotion, adoption and implementation of EU led standards at the global level. We also anticipate that the strength and recognition afforded to the MARINERG-i brand will diminish interest in creating competing networks, improving efficiency and effectiveness for all in the mid to long term. These factors underline the importance of continued further investment in maintaining an ongoing global engagement programme at least until the end of the project, and ideally beyond although mechanisms and resources to support this have yet to be identified.

Key outcomes of the engagement activity since M16 have been:

- Completion of TAC list and Principle stakeholders
- A living MARINERG-i digital engagement framework including an authorized and updated database of stakeholders, a project website and twitter account
- Expansion of the stakeholders' database from 82 up to 300 including 37 stakeholders from sixteen non-EU countries
- A final long list of national facilities that could be included in the consortium
- Two surveys sent to stakeholders to gain a more complete understanding of existing or potential future end-users requirements at one or more test facilities and also to profile the marine testing infrastructure available in Europe
- MARINERG-i presence at relevant national and international Marine Energy events and key working groups including European Commission representatives:
  - 4 international conferences and exhibits
  - 2 IEA-OES proposal tasks
- One third country expression of interest from a specific research centre

## Appendix A End-Users Survey Report

MARINERG-i survey  
**Overview**

Sent 5/3/18 14:30

### 216 Recipients

List: MARINERG-i newsletter

Delivered: Thu, May 03, 2018 14:30

Subject: MARINERG-i survey on users' requirements for ORE testing - Kind reminder of the deadline on May 4th.

<b>0</b> Orders	<b>\$0.00</b> <u>Average order revenue</u>	<b>\$0.00</b> <u>Total revenue</u>
--------------------	---	---------------------------------------

Open rate	33.0%	Click rate	8.8%
<div style="width: 33%; border: 1px solid black;"></div>		<div style="width: 8.8%; border: 1px solid black;"></div>	

List average	38.5%	List average	11.3%
Industry average (Education and Training)	14.5%	Industry average (Education and Training)	1.5%

<b>71</b> Opened	<b>19</b> Clicked	<b>1</b> Bounced	<b>0</b> Unsubscribed
---------------------	----------------------	---------------------	--------------------------

Successful deliveries	215 99.5%	Clicks per unique opens	26.8%
Total opens	136	Total clicks	2,500.0
Last opened	6/12/18 15:30	Last clicked	5/7/18 16:05
Forwarded	0	Abuse reports	0

**MARINERG-i survey**  
*Opens by location*

Sent 5/3/18 14:30

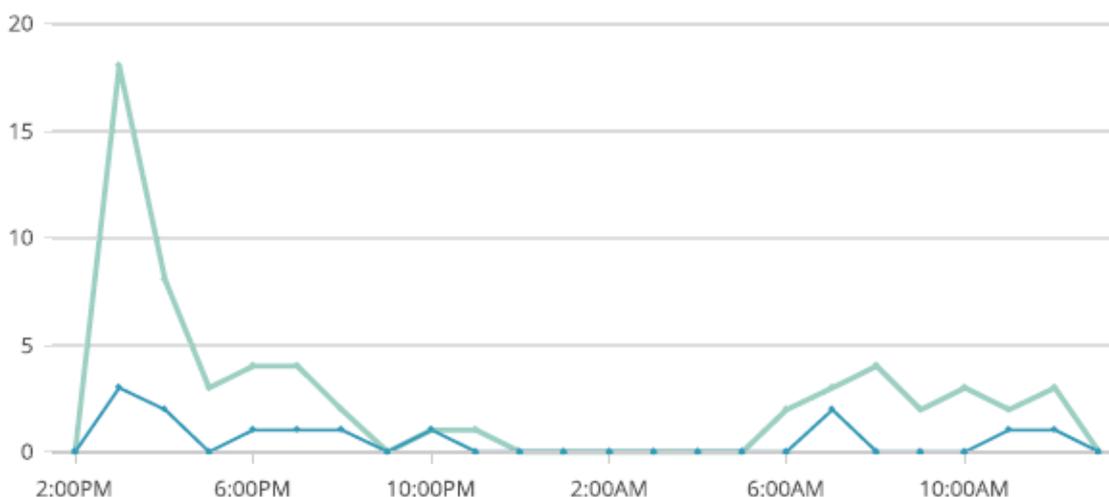
Country	Opens	Percent
 USA	29	24.0%
 Spain	18	14.9%
 Portugal	15	12.4%
	15	12.4%
 Italy	15	12.4%
 Ireland	8	6.6%
 Sweden	6	5.0%
	6	5.0%
 Bosnia and Herzegovina	2	1.7%
 Czech Republic	2	1.7%

**MARINERG-i survey**  
**Subscriber activity**

Sent 5/3/18 14:30

**24-hour performance**

Opens      Clicks



**Top links clicked**

<a href="https://goo.gl/forms/4fQB6eAVIW5PMipf1">https://goo.gl/forms/4fQB6eAVIW5PMipf1</a>	19
<a href="http://www.marinerg-i.eu/">http://www.marinerg-i.eu/</a>	3
<a href="https://ec.europa.eu/research/infrastructures/index_en.cfm?pg=eric">https://ec.europa.eu/research/infrastructures/index_en.cfm?pg=eric</a>	1
<a href="http://www.marinergi.eu/">http://www.marinergi.eu/</a>	1
<a href="http://www.marinerg-i.eu">http://www.marinerg-i.eu</a>	1

**Subscribers with most opens**

Matthew.Finn@emec.org.uk	5
jjhmillar@gmail.com	9
vsilva@tecnilab.pt	4

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christian.berhault@ec-nantes.fr	5
generma@generma.com	5

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MARINERG-i survey  
Advanced reports

Sent 5/3/18 14:30

**Email domain performance**

Domain	Email	Bounces	Opens	Clicks	Unsubs
gmail.com	22 (10%)	0 (0%)	11 (50%)	3 (14%)	0 (0%)
aquatera.c...	5 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
tecnalia.com	4 (2%)	0 (0%)	1 (25%)	0 (0%)	0 (0%)
ucc.ie	3 (1%)	0 (0%)	1 (33%)	0 (0%)	0 (0%)
Inec.pt	3 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Other	179 (83%)	1 (1%)	58 (33%)	16 (9%)	0 (0%)

**Data protection**

Follow the link to see details about how your data will used and protected and then confirm that you have read and accepted these.

[https://drive.google.com/file/d/14Hod\\_Zei4C2U-cVf9IsCt3POlyl1lfR5/view?usp=sharing](https://drive.google.com/file/d/14Hod_Zei4C2U-cVf9IsCt3POlyl1lfR5/view?usp=sharing)

**Please confirm that you have read and accepted the consent information form prior to completing the survey**

67 responses, all Responded yes.

**Please enter your email address (optional).**

51 responses, 16 left this blank

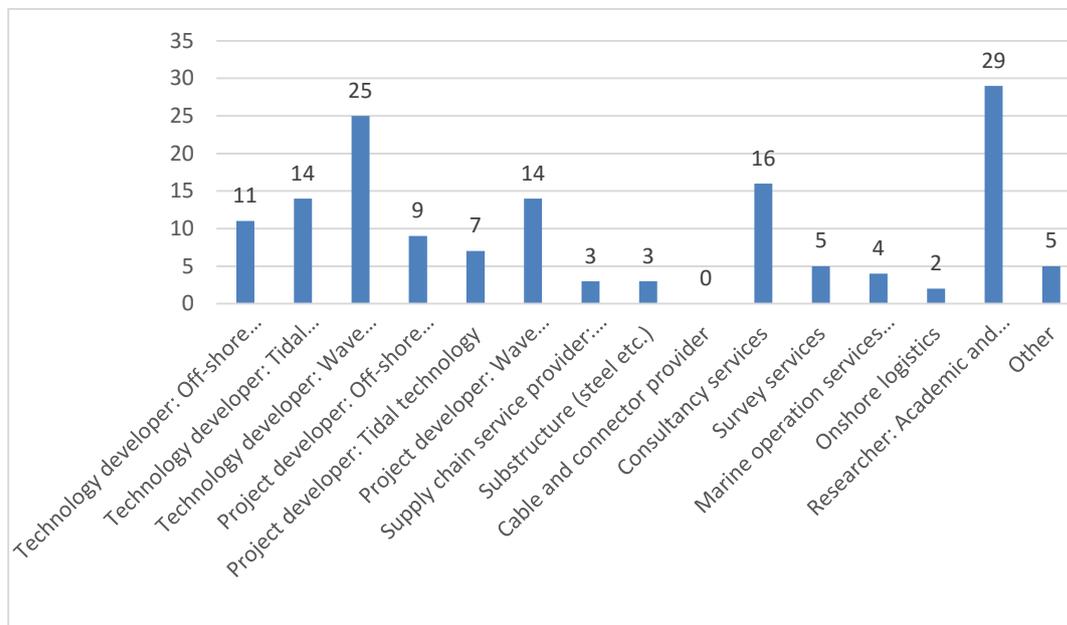
**End-Users**

**Q1-What is your main field of activity in the domain of Offshore renewable energy?**

*(Please choose one or more answers from the following list): \**

*Check all that apply.*

- Technology developer: Wave technology
- Technology developer: Tidal technology
- Technology developer: Off-shore wind technology
- Project developer: Wave technology
- Project developer: Tidal technology
- Project developer: Off-shore wind technology
- Supply chain service provider: Component provider (sub-components, anti-fouling, anticorrosion etc.)
- Substructure (steel etc.)
- Cable and connector provider
- Consultancy services
- Survey services
- Marine operation services (installation, operation, maintenance and decommission services)
- Onshore logistics
- Researcher: Academic and commercial research
- Other: \_\_\_\_\_



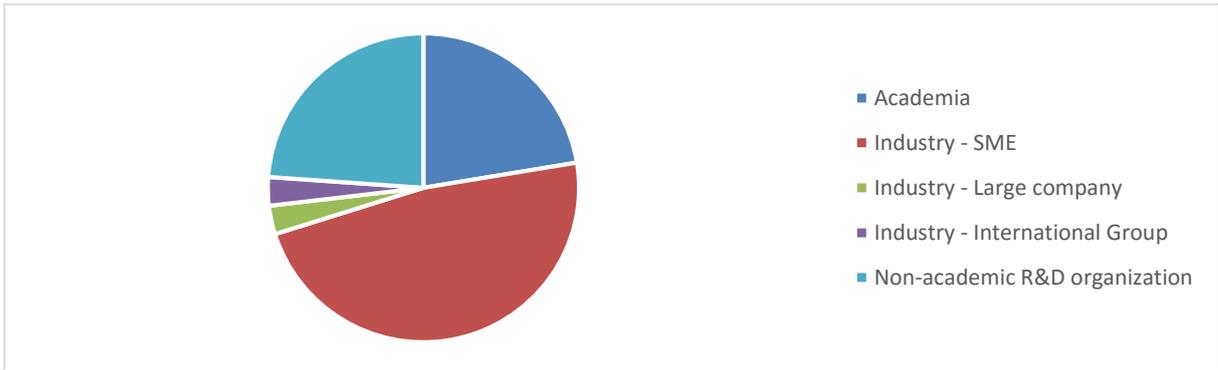
Other responses were:

- Energy related Knowledge Exchange
- MARINET 1 and 2 infrastructure manager
- Test and validation of wind turbine technology
- Test centre
- Within Wave energy

**Q2-What type of organisation do you represent? (Please choose one from the following list): \***

**Mark only one oval.**

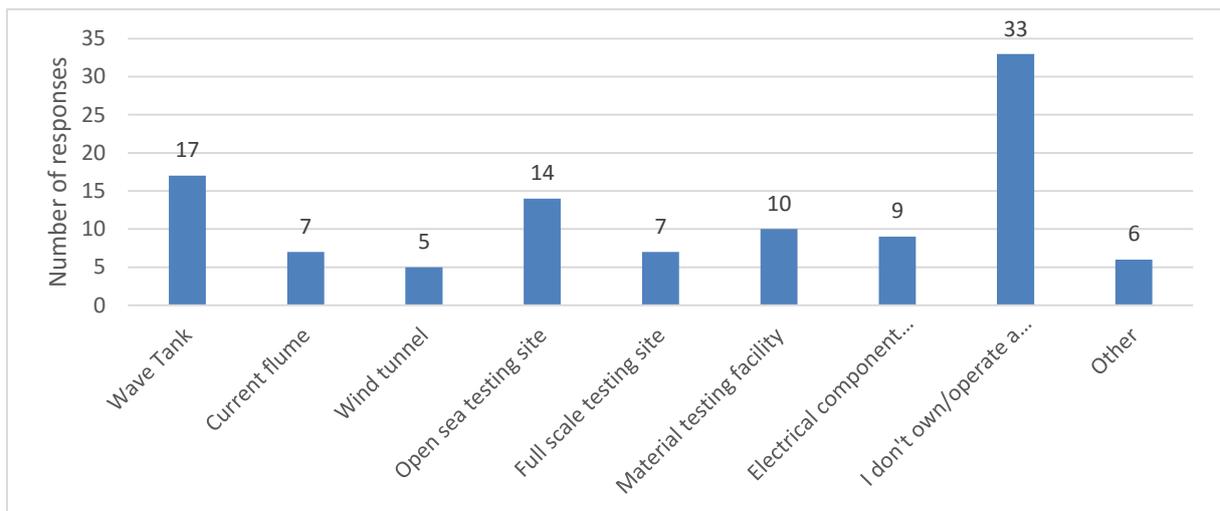
- Academia
- Industry - SME
- Industry - Large company
- Industry - International Group
- Non-academic R&D organisation



**Q3-Does your organisation own/operate a research facility? (Please choose one or more answers from the following list): \***

**Check all that apply.**

- Wave Tank
- Current flume
- Wind tunnel
- Open sea testing site
- Full scale testing site
- Material testing facility
- Electrical component testing facility
- I don't own/operate a research facility
- Other: \_\_\_\_\_



Other responses were:

- dry test benches
- Large climatic test chamber
- legal
- OBLO (<https://oblo.w.uib.no/>)
- Some drivetrain (rotational) test equipment
- Turbine test rig for OWC

**Technology Readiness Level (TRL) and Commercial Readiness Index (CRI)**

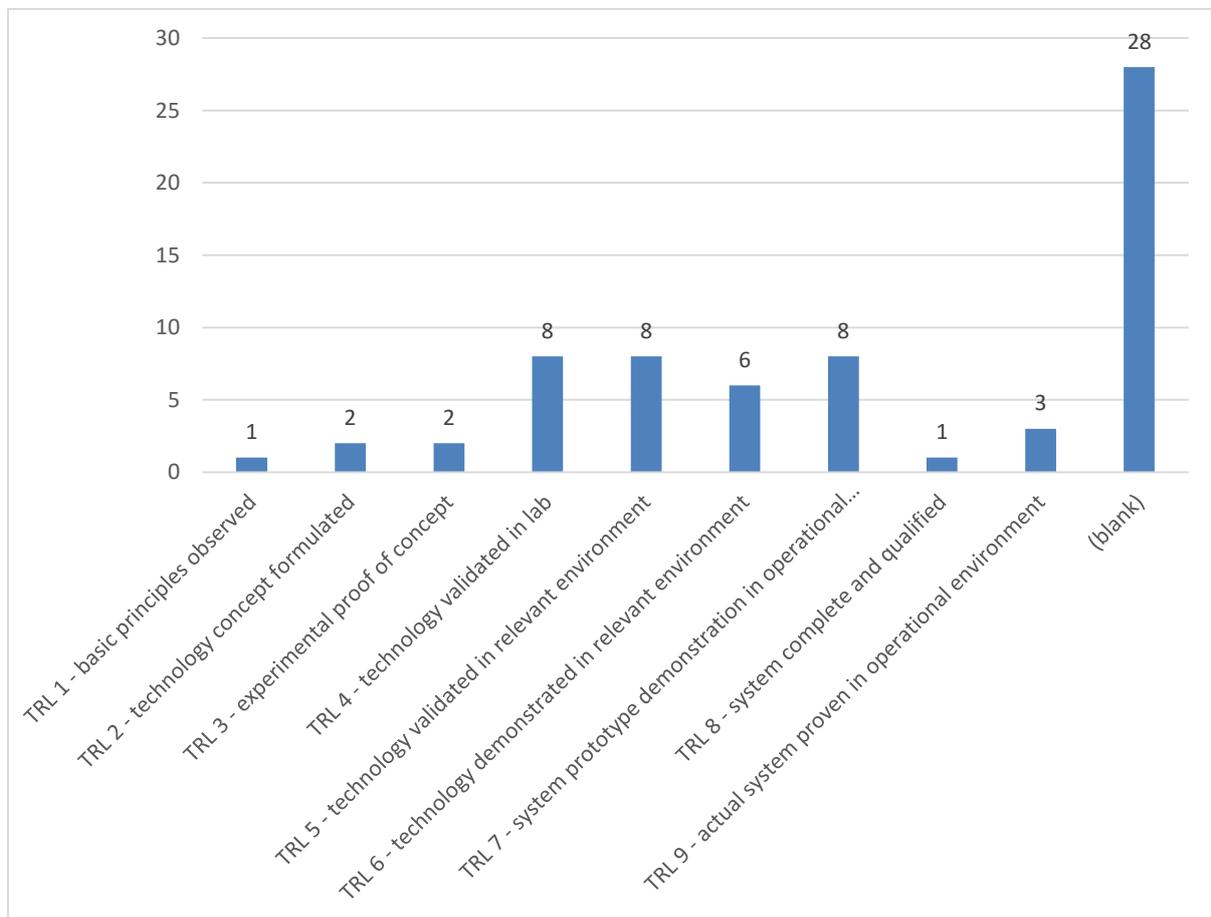
The Technology Readiness Level (TRL) index is a globally accepted benchmarking tool for tracking progress and supporting development of a specific technology through the early stages of the technology development chain. The CRI extends to when the technology or application is being commercially deployed and has become a bankable asset class. More information on the definition of each of these levels can be found by following the link and is summarised in the image below:

<https://arena.gov.au/assets/2014/02/Commercial-Readiness-Index.pdf>

**Q4-If you are an offshore renewable energy device developer, please indicate the stage of technological development of your concept. (Please choose one from the following list):**

**Mark only one oval.**

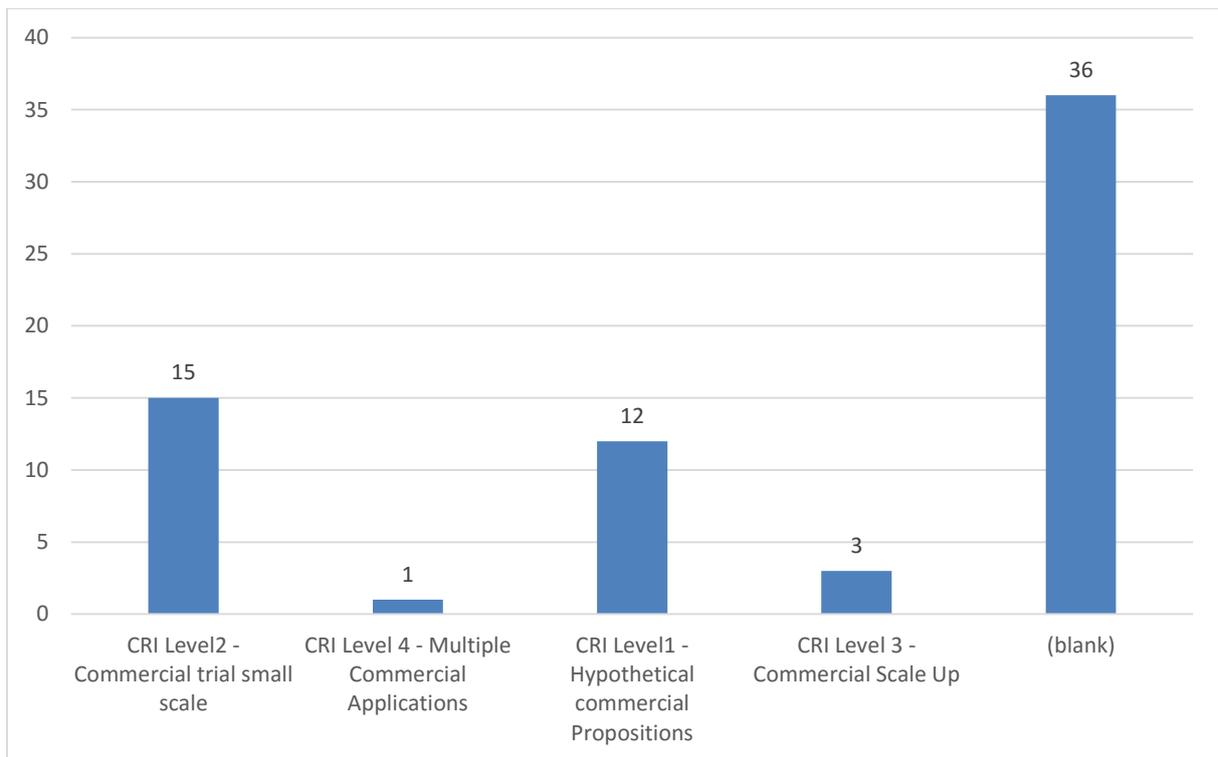
- TRL 1 – basic principles observed
- TRL 2 – technology concept formulated
- TRL 3 – experimental proof of concept
- TRL 4 – technology validated in lab
- TRL 5 – technology validated in relevant environment
- TRL 6 – technology demonstrated in relevant environment
- TRL 7 – system prototype demonstration in operational environment
- TRL 8 – system complete and qualified
- TRL 9 – actual system proven in operational environment



**Q5-If you are a technology developer or a company that is part of the offshore renewable energy supply chain, please indicate your Commercial Readiness Level. (Please choose one from the following list):**

**Mark only one oval.**

- CRI Level1 – Hypothetical commercial Propositions
- CRI Level2 – Commercial trial small scale
- CRI Level 3 – Commercial Scale Up
- CRI Level 4 – Multiple Commercial Applications
- CRI Level 5 – Market Competition driving widespread development
- CRI Level 6 – Bankable Asset Class

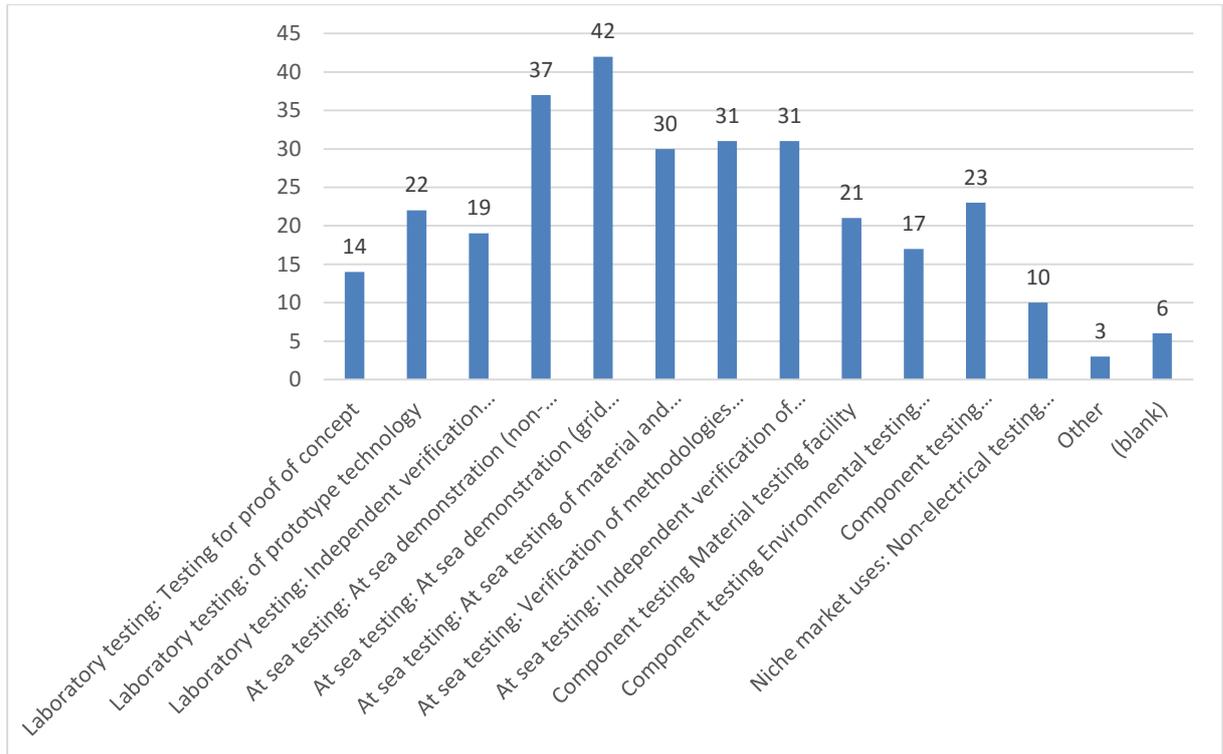


**Testing facilities**

**Q6-What kind of experimental testing will be necessary/helpful in your business development activity over the next 5 to 10 years? (Please choose one or more answers from the following list):**

**Check all that apply.**

- Laboratory testing: Testing for proof of concept
- Laboratory testing: of prototype technology
- Laboratory testing: Independent verification of performance evaluation
- At sea testing: At sea demonstration (non-grid connected)
- At sea testing: At sea demonstration (grid connected)
- At sea testing: At sea testing of material and components
- At sea testing: Verification of methodologies and techniques (deployment etc.)
- At sea testing: Independent verification of performance evaluation
- Component testing Material testing facility
- Component testing Environmental testing facility (corrosion, fouling etc.)
- Component testing Deployment/development of monitoring sensors and instrumentation
- Niche market uses: Non-electrical testing facility (water pumping for desalination)
- Other: \_\_\_\_\_



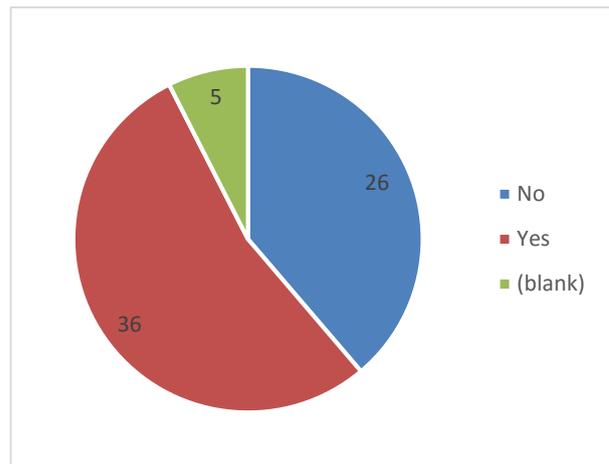
Other responses were:

- Ability to remotely follow the testing
- I am researching social acceptability of MRE, so all 'at sea' testing
- we need help to overcome the bureaucratic difficulties to obtain the permissions to test our device at sea

**Q7a-Have you already used any European testing facility?**

Mark only one oval.

- Yes
- No



**Q7b-If yes, please provide details of the facility used (location, country etc.)?**

- AAU Denmark
- Cabo Verde
- DanWEC - Denmark - Nissum Bredning - Hanstholm
- DHI tank (Denmark), CIEM Flume (Barcelona)
- ECN Nantes, Flowave Edinburgh, Galway Bay Ireland, Marei Ireland.
- ECN Nantes; OCEANIDE Toulon; FIHAC Santander
- ECN, France;
- Oceanide-First BGO, France
- Edinburgh University, Nantes, Cork
- EMEC
- EMEC wave flume, Plymouth CoAST lab ocean basin
- ESRF, Grenoble
- European Marine Energy Centre
- Ghent University, Belgium
- HMRC Cork, Nantes
- HMRC Cork, Strathclyde tank
- HMRC Ireland , QUEENS Portaferry Northern Ireland (Marinet and Marinet 2)
- I have not used a facility, however we are now testing in the Bay of Fundy with the NSDE (5MW Demonstration). ORE Catapult wrote a very positive report on the Jupiter Hydro technology in 2016 so they are very aware of us.
- IH Cantabria (Spain), Marin (The Netherlands), HR Wallingford (UK)
- INSEAN - Italy
- LHEEA Nantes, France,
- Lir National Ocean Test Facility, Cork, Ireland
- Lir NOTF
- Marin, Netherlands
- Mutriku, BiMEP, Several wave tanks (CEHIPAR, IHC, LIR, Brest, ...)
- Ocean basin, MaREI, University College Cork, Ireland
- Porto, Portugal

- Runde environmental centre at Runde in Norway
- Spain (IHCantabria, CEHIPAR, BiMEP), France (IFREMER), Ireland (HMRC-Cork),
- Tow test tanks at the University of Glasgow (Acre Road); Flowave
- Various
- Wave tank, Cork, Ireland
- (Also 32 blank responses)

***Q7c-Is there anything about these facilities that could be improved?***

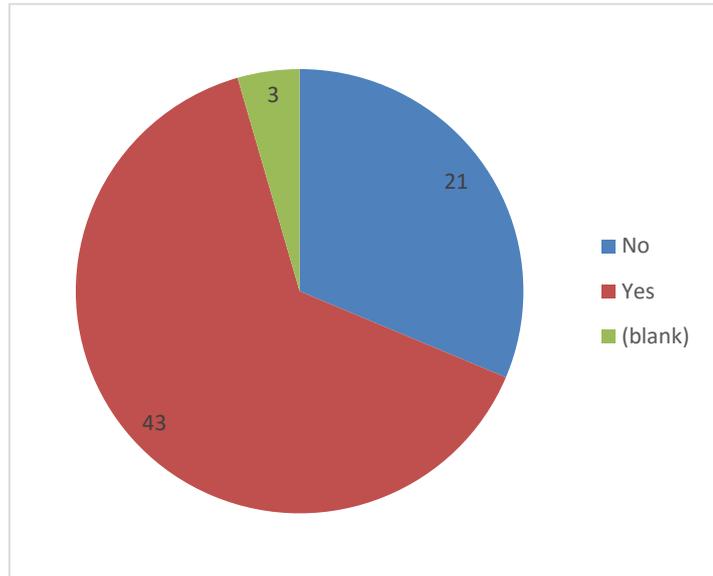
- A better wave paddle will be good.
- Additional Technical resources to undertake testing and workshops & materials for on-site modifications to models
- All excellent
- All facilities can be improved, but these were among the best we've used.
- Background data, electrical infrastructure
- definition of waves with respect to reflections
- ECN - Reliability of wave maker
- Oceanide - Underwater video capture facility would be a nice addition
- facilities are good, but more support infrastructure would be ideal (e.g. model build, independent analysis)
- Good facilities for what they are
- Hanstholm could have a grid connection
- High berth fees make commercial demonstrations difficult due to impacts on business cases. 3-5yr berth fee waiver would alleviate this for early commercial demo projects and leap the current 'valley of death' to commercial demonstration.
- I am not sure on that.
- Improvement of wind generator, system identification of wind/wave basin components (wind field, waves, sensors)
- In open sea test facilities, I miss more information about conditions (resource, seabed) which can be directly used for improving designs (extreme loads for example).
- I also miss in general more knowledge about standardisation procedures which can help to get more valuable information from tests
- Much activity and public funding to date has focused on test centres rather than real-world projects. For tidal energy at least, if the industry is to commercialise, then there is an urgent need to develop the next generation of in-sea marine energy demonstration projects beyond test centres. The industry needs to move beyond test centres.
- Test centres should provide services to the emerging tidal energy industry (as they do for the wind energy industry). At present, to far too great an extent, test centres *\*are\** the industry. Test centres should also compete with each other to provide services to the industry, rather than competing with project developers for public funding.
- no
- No they have developed well
- possibly modernization
- Provide result analysis reports
- The Data Acquisition system at Queens, timing of data collection

- Yes
- Yes:
  - More consideration should be given to the markets that technologies, equipment and services developed at test sites will be targeting to ensure that test programmes are fit for purpose
  - Increased consideration of the development of supporting structures, monitoring equipment and operations - not just the generation technology (whole system approach)
  - Data sharing with researchers, industry and stakeholders
  - Documentation of the effects of the development and operation of larger test facilities on the industry, market and host communities (the latter would be extremely useful for industry planning and project consenting)
  - Ensure that environmental monitoring is focussed on key questions and risks and that it is aimed at reducing scientific uncertainty to de-risk the consenting process for the industry moving forward - work with key groups such as the UK's Offshore Renewables Joint Industry Programme for Ocean Energy ([www.orjip.org.uk](http://www.orjip.org.uk))
- (Also 43 blank responses)

***Q7d-If not, any specific reason?***

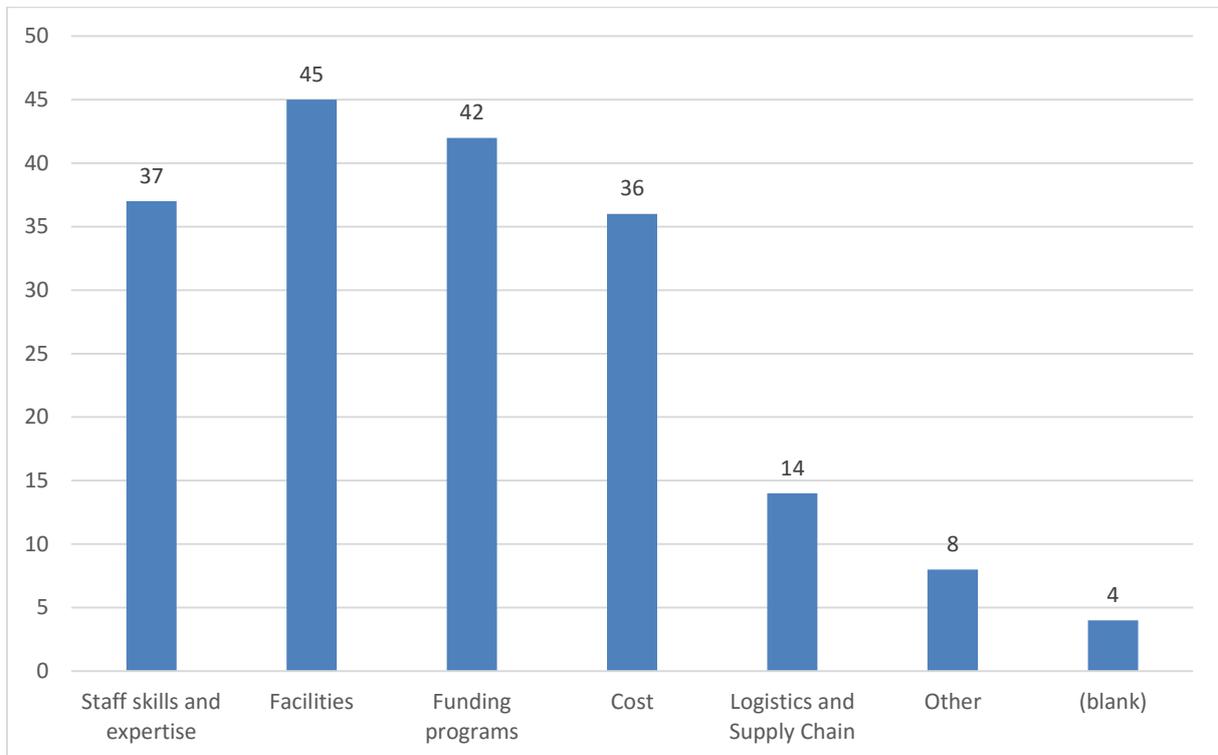
- Add waves in the flume tank
- Have not used the new lab
- I got everything I needed.
- Most sites haven't met our requirements
- No
- Project still in its infancy, testing expected within the next 24 months to increase TRL.
- There has not been any need yet.
- we presented our candidature to Marinet but we were excluded twice.
- we tested in open sea at our charges
- (Also 58 blank responses)

**Q8-In your opinion are there enough adapted offshore renewable energy testing facilities available across Europe?**  
**Mark only one oval.**  
 Yes  
 No



**Q9-What would be the main decision drivers for you using one of these facilities? (Please choose one or more answers from the following list):**  
**Check all that apply.**

- Staff skills and expertise
- Facilities
- Funding programs
- Cost
- Logistics and Supply Chain
- Other: \_\_\_\_\_



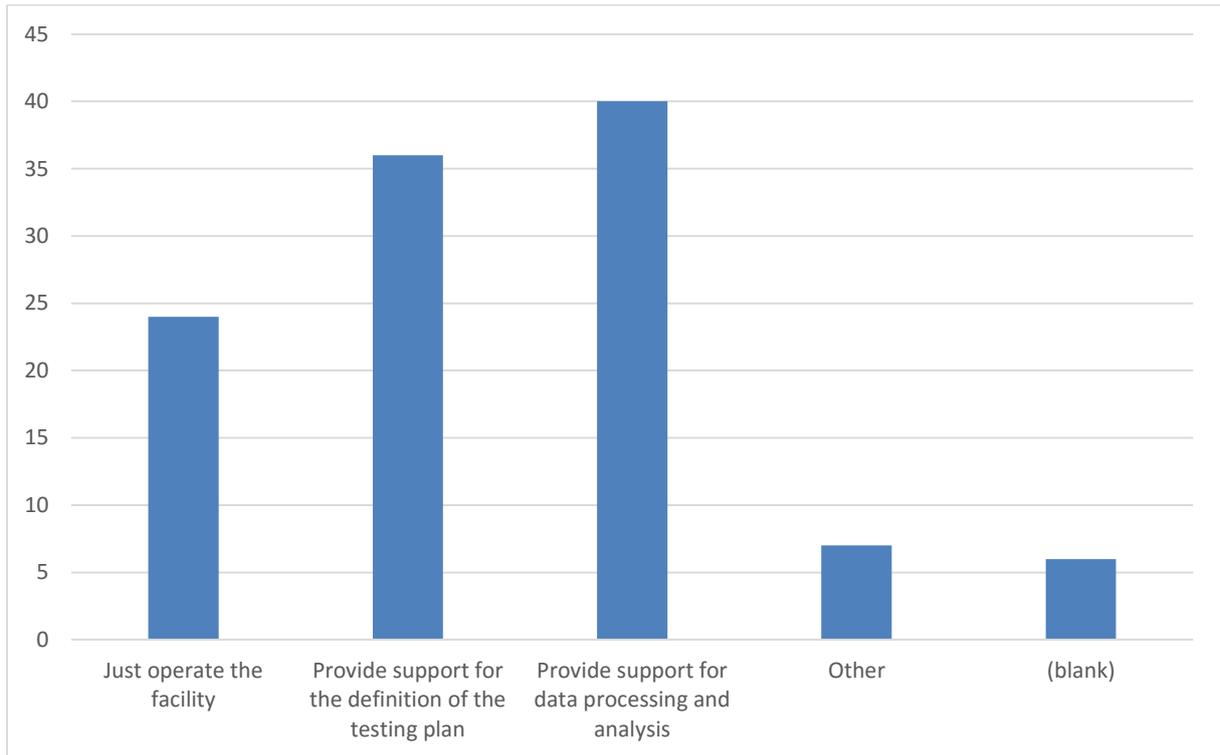
Other responses were:

- Ability to scale target environment to suitable model scale
- Consenting and infrastructure already in place
- Deeper knowledge on standardisation / certification
- location, grants
- Permits and consents
- Professionalism and commercial awareness
- Social aspects
- to be accepted

**Q10-What kind of support do you expect from staff operating testing facilities? (Please choose one or more answers from the following list):**

**Check all that apply.**

- Just operate the facility
- Provide support for the definition of the testing plan
- Provide support for data processing and analysis
- Other: \_\_\_\_\_



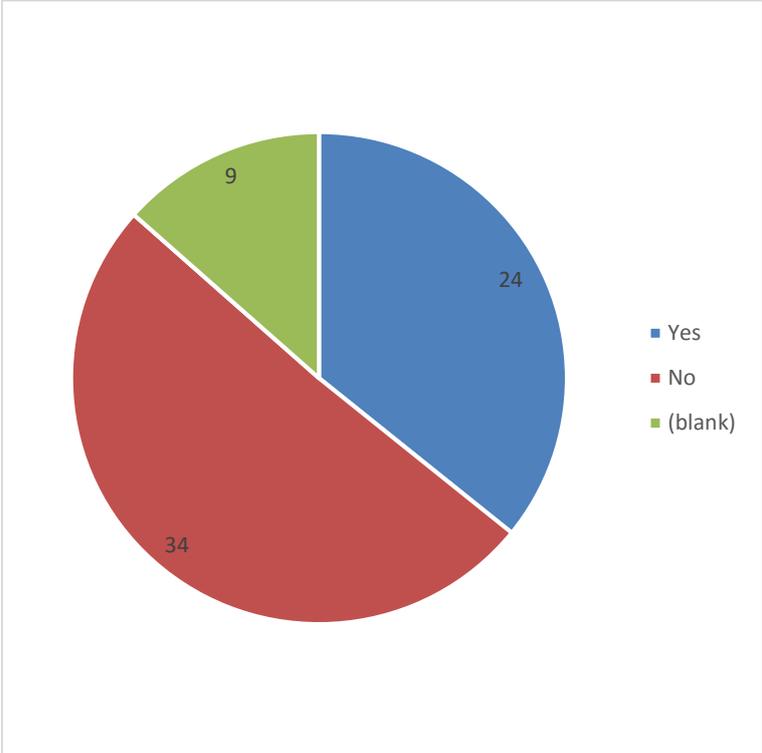
Other responses were:

- arrange license to test
- Completely dependent on the aim of the testing programme you are undertaking and what stage you are at in the development process
- Could try to facilitate co-operation between other facility users
- model build at lower TRL levels
- Provide support to collect measured data in a standard format
- Recommendation on improving the technology to achieve more reliable devices
- Sensor calibration

***Q11-In your opinion, are existing standards for testing of offshore renewable energy devices adequate?***

***Mark only one oval.***

- Yes
- No



***Q12-What would be your requirements for the development of adapted common standards on testing procedures?***

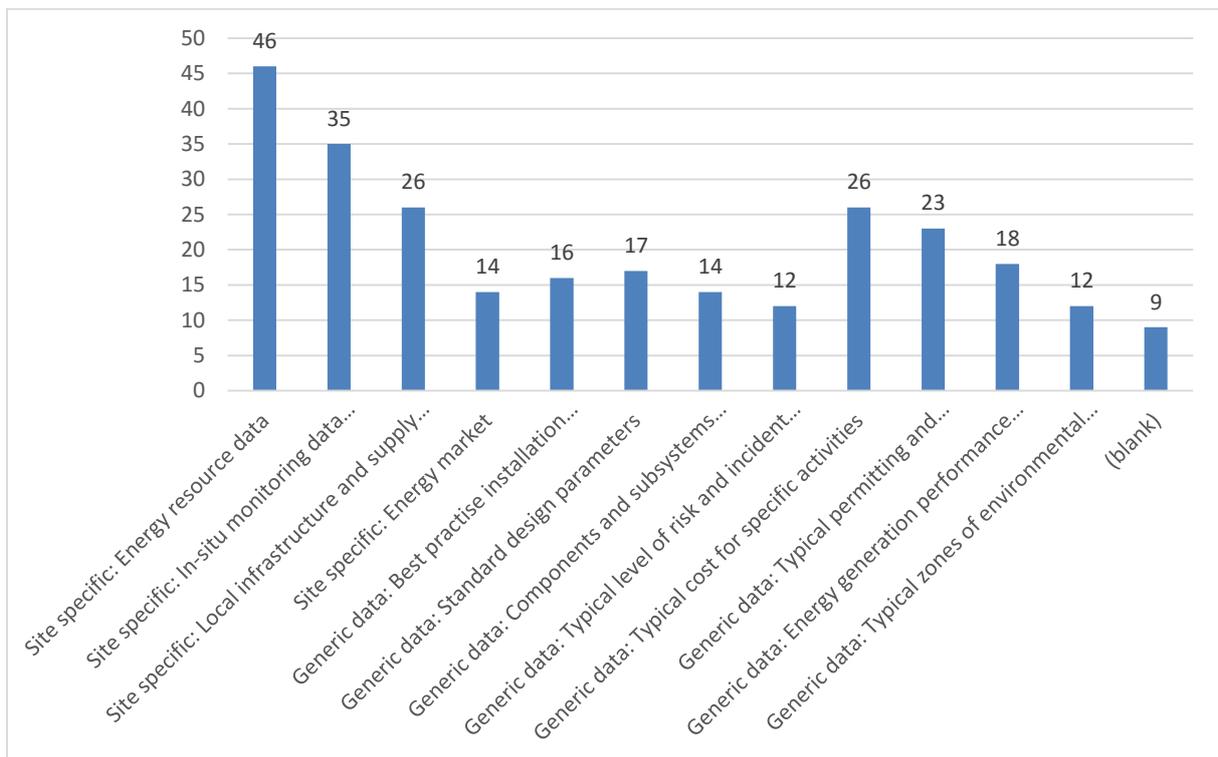
- A global approach supporting a long term development of projects from TRL 1 to TRL 9
- Adequate knowledge of sea conditions and platforms response
- Approaches to standardise cost of energy estimation, though care needed to not over restrict large variability between intended uses of different devices.
- As developer it would be great to receive the time series of data in a format compatible with i.e. Excel
- Definitions of survivability are poor. Standards for polymer components in MRE are poor
- detailed performance measurement, energy capture, mooring loads, structure stresses, accelerations
- Difficult to say until technologies converge into a common design. Currently too many variable designs due to immaturity of sector.
- Enable self-validation
- Full scale in-door nacelle testing and validation
- Industry and supply led approach with buy in from regulators and researchers
- International consensus
- legal and regulate
- No immediate comment
- None
- Patronos de fabrica credenciados
- Real effective scale by relation of: dispositive size/wave dimension/power processed in energy
- Should extend to verifying the integrity of the test environment only (ie: calibration and verification of instruments and systems); platform related elements can only effectively be decided upon by the development team.
- Standards are adequate for the current state of the industry, but will continue to evolve as the industry matures. A degree of technological and commercial maturity is required before useful standards can be developed. Pressure to standardise prematurely an inhibit technology development.
- Technology comparison based on simultaneous tests of various MHK prototypes in equivalent resource area, instead of individual unit performance, to determine comparative effectiveness. Developer responsible for technology being tested. Certified testing facility responsible for mooring, data/power connection, and observation. Goal is to enable reduction of variables.
- Test area including anchors and mooring system
- The available standards are still not mature since no common guidelines are given. It would be helpful to have standard testing procedures (and testing plans) to follow during laboratory and at-sea testing.
- There are some standards but not very used (there is a lack of experience in using standards about testing)
- uncertainty quantification
- We need to apply the existing standards as they have not been utilised fully to date.
- We support the development of standards and the detailed study of actual costs of turbines.

- (Also 42 blank responses)

**Q13-What kind of data source would be most useful to you for your deployments? (Please choose one or more answers from the following list):**

**Check all that apply.**

- Site specific: Energy resource data
- Site specific: In-situ monitoring data (weather, water temperature etc.)
- Site specific: Local infrastructure and supply chain resources
- Site specific: Energy market
- Generic data: Best practise installation techniques
- Generic data: Standard design parameters
- Generic data: Components and subsystems specifications and performance
- Generic data: Typical level of risk and incident frequency
- Generic data: Typical cost for specific activities
- Generic data: Typical permitting and monitoring requirements
- Generic data: Energy generation performance metrics
- Generic data: Typical zones of environmental impacts for different technology components



## Appendix B Infrastructure Survey Report

ORE Infrastructure Questionnaire  
*Overview*

Sent 5/24/18 10:27

### 88 Recipients

List: MARINERG-i newsletter (Segment: Campaign  
 Pasted Segment - 24 May 2018 10:14:10 am)

Delivered: Thu, May 24, 2018 10:27

Subject: ORE Infrastructure Questionnaire

<b>0</b> Orders	<b>\$0.00</b> <u>Average order revenue</u>	<b>\$0.00</b> <u>Total revenue</u>
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Open rate	44.3%	Click rate	11.4%
<div style="width: 44.3%; border: 1px solid black; height: 10px;"></div>		<div style="width: 11.4%; border: 1px solid black; height: 10px;"></div>	

List average	38.5%	List average	11.3%
Industry average (Education and Training)	14.5%	Industry average (Education and Training)	1.5%

<b>39</b> Opened	<b>10</b> Clicked	<b>0</b> Bounced	<b>0</b> Unsubscribed
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Successful deliveries	88 100.0%	Clicks per unique opens	25.6%
Total opens	217	Total clicks	2,500.0
Last opened	6/26/18 9:21	Last clicked	6/22/18 11:17
Forwarded	0	Abuse reports	0

ORE Infrastructure Questionnaire  
*Opens by location*

Sent 5/24/18 10:27

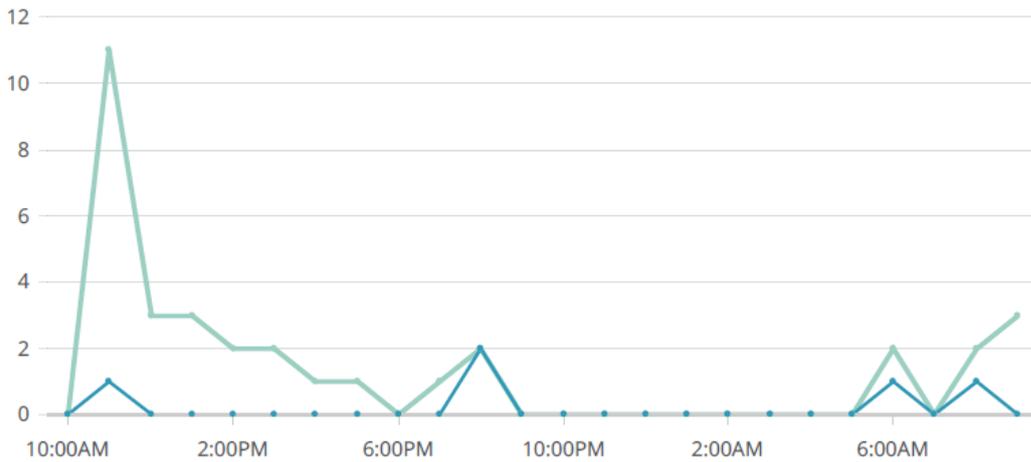
Country	Opens	Percent
 France	88	40.9%
 Portugal	47	21.9%
	21	9.8%
 Italy	18	8.4%
 USA	15	7.0%
 Spain	9	4.2%
 Germany	6	2.8%
 Netherlands	2	0.9%
 Bosnia and Herzegovina	2	0.9%
 Belgium	2	0.9%

ORE Infrastructure Questionnaire  
*Subscriber activity*

Sent 5/24/18 10:27

**24-hour performance**

Opens      Clicks



**Top links clicked**

<a href="https://gallery.mailchimp.com/e92af7e383cfbde6369528e1c/files/dd41f786-456e-4788-9924-25e787437bd0/MARINERG_i_Infrastructure_questionnaire.docx">https://gallery.mailchimp.com/e92af7e383cfbde6369528e1c/files/dd41f786-456e-4788-9924-25e787437bd0/MARINERG_i_Infrastructure_questionnaire.docx</a>	24
<a href="http://www.marinerg-i.eu">http://www.marinerg-i.eu</a>	1
<a href="http://www.facebook.com">http://www.facebook.com</a>	0
<a href="http://www.twitter.com/">http://www.twitter.com/</a>	0
<a href="http://www.marinergi.eu">http://www.marinergi.eu</a>	0

**Subscribers with most opens**

<a href="mailto:anne.blavette@ens-rennes.fr">anne.blavette@ens-rennes.fr</a>	19
<a href="mailto:i.m.viola@ed.ac.uk">i.m.viola@ed.ac.uk</a>	13
<a href="mailto:mjoao.marques@lneg.pt">mjoao.marques@lneg.pt</a>	20

ORE Infrastructure Questionnaire  
*Advanced reports*

Sent 5/24/18 10:27

*Email domain performance*

Domain	Email	Bounces	Opens	Clicks	Unsubs
gmail.com	8 (9%)	0 (0%)	2 (25%)	0 (0%)	0 (0%)
ri.se	2 (2%)	0 (0%)	1 (50%)	0 (0%)	0 (0%)
tecnico.ulisb...	2 (2%)	0 (0%)	1 (50%)	0 (0%)	0 (0%)
ifremer.fr	2 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
unige.it	2 (2%)	0 (0%)	1 (50%)	1 (50%)	0 (0%)
Other	72 (82%)	0 (0%)	34 (47%)	9 (13%)	0 (0%)

ORE Infrastructure Questionnaire  
*Click performance*

Sent 5/24/18 10:27

URL	Total	Unique
<a href="https://gallery.mailchimp.com/e92af7e383cfbde6369528e...">https://gallery.mailchimp.com/e92af7e383cfbde6369528e...</a>	24 (96%)	10 (91%)
<a href="http://www.marinerg-i.eu">http://www.marinerg-i.eu</a>	1 (4%)	1 (9%)
<a href="http://www.facebook.com">http://www.facebook.com</a>	0 (0%)	0 (0%)
<a href="http://www.twitter.com/">http://www.twitter.com/</a>	0 (0%)	0 (0%)
<a href="http://www.marinergi.eu">http://www.marinergi.eu</a>	0 (0%)	0 (0%)
<a href="http://mailchimp.com">http://mailchimp.com</a>	0 (0%)	0 (0%)

**How would you classify your infrastructure?**

Response	Small labs conduct design validation and optimisation testing at small scale (1:25 – 1:100).	Large labs conduct performance verification and component testing and monitoring at medium scale (1:10 – 1:25).	Medium-scale sites are benign sea or equivalent environments for medium scale (1:2 – 1:10) prototype or sub-system testing.	Large-scale sites are open sea sites for full and large-scale testing (1:1 – 1:2) of devices.
EMEC			Yes	Yes
UCC	Yes	Yes		
Runde				Yes
IFREMER		Yes		
Bassins		Yes		
SEM-REV				Yes

**To which sectors do you provide services to?**

Response	Wave Energy	Tidal Stream Energy	Offshore Wind	Other Sectors	Other Sectors (please specify):
EMEC	Yes	Yes			
UCC	Yes	Yes	Yes		
Runde				Yes	Maritime equipment, material testing
IFREMER	Yes	Yes	Yes	Yes	Cross-Cutting (material testing)
Bassins	Yes	Yes	Yes		
SEM-REV	Yes		Yes		

**Is the infrastructure part of a larger organisation (e.g., university)?**

Response	Is the infrastructure part of a larger organisation (e.g., university)?
EMEC	No
UCC	Yes
Runde	No
IFREMER	Yes
Bassins	Yes
SEM-REV	Yes

**If yes, please describe the nature of the legal relationship to the parent body. E.g. constituent part, wholly owned subsidiary, Service Level Agreement etc.**

Response	If yes, please describe the nature of the legal relationship to the parent body. E.g. constituent part, wholly owned subsidiary, Service Level Agreement etc.
EMEC	NA
UCC	Wholly owned by the University
Runde	NA
IFREMER	Constituent part of National Research Institute

Bassins	ECN tank facilities are included in the French Research Infrastructure THEoREM created by Ifremer et Ecole Centrale de Nantes in 2017. THEoREM is anticipated to be the main French member of the future MARINERG-i organisation.
SEM-REV	The SEM-REV sea test site is one of the large experimental testing facilities owned and operated by Ecole Centre de Nantes. SEM-REV is included in the French Research Infrastructure THEoREM created by Ifremer and Ecole Centrale de Nantes in 2017. THEoREM is anticipated to be the main French member of the future MARINERG-i organisation. <a href="http://theorem-infrastructure.org/">http://theorem-infrastructure.org/</a>

**What equipment/facilities are available at your infrastructure?**

Response	Wave Tank	Current flume	Wind tunnel	Open sea testing site	Full scale testing site	Material testing facility	Electrical component testing facility	Third party access ?
EMEC				Yes	Yes	Yes	Yes	Yes
UCC	Yes	Yes					Yes	No answer
Runde				Yes	Yes	Yes		No answer
IFREMER	Yes	Yes	Yes	Yes		Yes		Yes
Bassins	Yes	Yes						Yes
SEM-REV				Yes	Yes			Yes

**Investment costs**

**Are initial investment costs accounted for when determining access costs?  
If yes, how are the initial investment costs factored in the access costs?**

Response	Are initial investment costs accounted for when determining access costs?	If yes, how are the initial investment costs factored in the access costs?
EMEC	No	NA
UCC	No	NA
Runde	No	NA
IFREMER	Yes	Amortization cost pour the period (2016), 200K€
Bassins	Yes	Depreciation costs, 100% of annual depreciation costs
SEM-REV	Yes	Depreciation costs, 1.5 M€/year for the full site

What was the total initial investment for the facility?

Year of payment of costs detailed above (for conversion into EUR2018)?

Response	Total initial investment	Year of payment of costs detailed above (for conversion into EUR2018)?
EMEC	£36M	Initial investment in 2003, split over five phases in total each around £5M
UCC	Approx €20M	2013-2018
Runde	3 mill €	2009-2016
IFREMER	Brest : 3.7M€ (adjusted for inflation) Boulogne Sur Mer : 1.9M€ (adjusted for inflation)	Brest : 1975 Boulogne : 1991
Bassins	Tank facilities = 8M€	1981 = 1.35M 2001 = 6.15 M€ 2010 = 0.5M€
SEM-REV	24 M€ since 2007 including SEM-REV grid connection (offshore cables, onshore substation), environmental sea monitoring system, research base (technical workshops and office) : - 1 M€ for the environmental impact study, permitting process - 1.5 M€ for the sea monitoring system and the onshore research station - 12 M€ for the offshore export cable and onshore substation - 4.5 M€ for the subsea multi connection system (hub) and the first dynamic umbilical - 5 M€ for the global mooring system (designed for a floating wind turbine at full scale)	2012 : 14.5 M€ 2015 : 4.5 M€ 2017 : 5 M€

Concerning the initial investment for the facility, how were the values distributed across the categories below

Response	Permits needed for land / sea use	Project management	Civil construction cost (e.g., buildings)	Plant and machinery	Other equipment	Other costs
EMEC	2%	3%	15%	70%	10%	
UCC	No answer	No answer	No answer	No answer	No answer	No answer
Runde	5%	5%	50%	10%	30%	
IFREMER			50%	40%	10%	
Bassins		2%	30%	50%	18%	
SEM-REV	5%	2%	8%	67%	18%	

**What timeframe was envisioned to amortize the initial investment costs?**

Response	What timeframe was envisioned to amortize the initial investment costs?
EMEC	15 to 20 years
UCC	No answer
Runde	5 to 10 years
IFREMER	Over 20 years
Bassins	5 to 10 years 15 to 20 years
SEM-REV	5 to 10 years 15 to 20 years

**What is the expected percentage return on investment during that timeframe?**

Response	What is the expected percentage return on investment during that timeframe?
EMEC	Not for profit organisation – not setup to deliver a return on investment Financially self-sufficient from 2011 for OPEX costs
UCC	No answer
Runde	NA
IFREMER	NA
Bassins	100%
SEM-REV	80% of the equipment has been supported by public funding (French state, Regional Council including ERDF, Europe) 20% are funded by Ecole Centrale de Nantes

**Can you provide base costs for the plant and machinery equipment directly used for R&D and services?**

Response	Can you provide base costs for the plant and machinery equipment directly used for R&D and services?
EMEC	No. Would take quite some time to go through 15 years of investment costs
UCC	No answer
Runde	Sea cables, transformer, hub 1.6 M €
IFREMER	Passerelle Boulogne 27.3K€ Passerelle Boulogne 53K€ Hexapode Brest 271K€ Ventilateurs Brest 19.6K€ Anémomètre Brest 4.3K€ Générateur de houle Brest 156K€ Soufflerie Brest 32.3K€
Bassins	Oceanic Tank 5000€ per day Towing Tank 4000€ per day Current Tank 2000€ per day
SEM-REV	Access to the sea tests site with connection to the grid 100 k€ / month Access to the sea tests site without connection to the grid 15 k€ / month Use of the test site to develop environmental monitoring 5 k€ / month

**Is there any budget for or estimation of expenses related with infrastructure upgrade (i.e., expenses with acquiring new equipment or construction of new facilities, not regular maintenance or repair)?**

Response	Is there any budget for or estimation of expenses related with infrastructure upgrade (i.e., expenses with acquiring new equipment or construction of new facilities, not regular maintenance or repair)?
EMEC	Yes
UCC	No answer
Runde	Yes
IFREMER	Yes
Bassins	Yes
SEM-REV	Yes

**If yes, how much and within what time frame (budget for 1 year, 5 years, etc)**

Response	Upgrade purposes:	Value:	Time frame:
EMEC	1. Contingency for cable replacement 2. Expansion of EMECs tidal test site to support array demonstration	1. Up to €1M / offshore cable 2. ~€15M	1. As required 2. 2019+ (Subject to market incentives)
UCC	No answer	No answer	No answer
Runde	Expand test area, more equipment	4 Mill €	2018-2020
IFREMER	Deep wave tank wave generator and gantries	1.5 M€	2 years
Bassins	Deep wave tank wave generator and gantries	1.5 M€	2 years
SEM-REV	1. Extension of the grid connection facilities 2. Wind monitoring system based on floating lidar	1. 3M€ 2. 300k€	1. 2021 2. 2019

**How is the infrastructure upgrades budget determined?**

Response	How is the infrastructure upgrades budget determined?
EMEC	Budgeted as needed
UCC	No answer
Runde	Budgeted as needed
IFREMER	Budgeted as needed
Bassins	Budgeted as needed (50%) % of revenues generated (50%)
SEM-REV	Budgeted as needed (50%) % of revenues generated (50%)

**Are access costs updated to account for upgrade costs?**

Response	How is the infrastructure upgrades budget determined?
EMEC	No
UCC	No answer

Runde	No
IFREMER	Yes
Bassins	Yes
SEM-REV	Yes

**If yes, how are the initial investment costs factored in the access costs?**

Response	If yes, how are the initial investment costs factored in the access costs?
EMEC	NA
UCC	No answer
Runde	NA
IFREMER	% Budget set for upgrade work
Bassins	Depreciation costs Rough estimate: 100 % of annual depreciation costs
SEM-REV	Depreciation costs Rough estimate: 100 % of annual depreciation costs

This section aims to understand how running costs for the infrastructure are structured – especially in fixed and administrative costs, and costs directly related with running research activities, and how it translates into access costs.

**Are running costs accounted for when determining access costs?**

Response	Are running costs accounted for when determining access costs?
EMEC	Yes
UCC	No answer
Runde	Yes
IFREMER	Yes
Bassins	Yes
SEM-REV	Yes

**What is the total value of running costs?**

Response	What is the total value of running costs?
EMEC	Commercial in confidence – approximate range €2-5M
UCC	No answer
Runde	NA
IFREMER	Brest : Running costs - staff excepted : 63K€ per year (2016) Staff costs : 264K€ Administrative costs : 167K€ (63% of staff costs)  Boulogne : Running costs - staff excepted : 62K€ per year (2016) Staff costs : 365K€ Administrative costs : 230K€
Bassins	For 2016 : Tank facilities = 950k€
SEM-REV	Close to 1 M€ per year

**If yes, how are the initial investment costs factored in the access costs?**

Response	How are the initial investment costs factored in the access costs?
EMEC	No answer
UCC	No answer
Runde	No answer
IFREMER	Expenses associated with the activity/work + fixed rate
Bassins	% of running costs Rough estimate (%): 50% (remaining 50% = research activities)
SEM-REV	% of running costs Rough estimate (%): 50% (remaining 50% = research activities)

**What is the personnel distribution within your institution?**

**EMEC**

Category*	Number	Base salary (month)	Administrative [y/n]	Research [y/n]
Manager / Director	7	5,000	~	~
Senior Consultant	12	2,900	N	Y
Consultant	6	2,500	N	Y
Technician / Engineer	4	2,400	N	Y
Officer	8	2,000	Y	~

**Runde**

Category*	Number	Base salary (month)	Administrative [y/n]	Research [y/n]
Manager	1		y	y
Mechanical Technician				
Instrumentation Technician	1		y	n
Test engineer				
IT and Data technicians	1		y	y

**IFREMER**

Category*	Number	Base salary (month)	Administrative [y/n]	Research [y/n]
CL1 (technician/assistant)	2.9	3758€	n	y
CL2 (engineer/researcher or qualified technician)	4.8	5379€	n	Y
CL3 (senior engineer/researcher)	2	4829€	n	Y
CL4 (project manager)		8649€	n	Y
Scholarship holder	2	2912€	n	y

**Bassins**

Category*	Number	Base salary (month)	Administrative [y/n]	Research [y/n]
Manager	1	5000€	y	y
Mechanical Technician	3	3500€	n	Y

Instrumentation Technician	1	3500€	N	Y
Test engineer	8	5000€	n	Y
IT and Data technicians				
Administrative support	1	3000€	y	N

SEM-REV

Category*	Number	Base salary (month)	Administrative [y/n]	Research [y/n]
Manager	1	8 k€	y	Y
Mechanical Technician	1	3 k€		Y
Instrumentation Technician	2	3 k€		Y
Test engineer	2	4 k€		Y
IT and Data technicians	1	3.5 k€		Y
Administrative support	1	3 k€	y	

Are there personnel contracted only when the infrastructure is in use?

Response	Are there personnel contracted only when the infrastructure is in use?
EMEC	No
UCC	No answer
Runde	No
IFREMER	No
Bassins	No
SEM-REV	No

If Yes, can you specify category, number and base salary?

NA

How are the management/administrative (i.e., not research related) costs distributed across the categories below?

EMEC

Cost Item	Cost per year	% of total running costs	% of administrative costs
Rent	£50k est		
Non-research personnel	£300k est		
Utilities (not directly related to research) <sup>1</sup>	Would take time to calculate		
Insurance	£100k est		
Other administrative costs	Would take time to calculate		

IFREMER

Cost Item	Cost per year	% of total running costs	% of administrative costs
Rent	12K€	1%	
Non-research personnel	212K€	18,4%	
Utilities (not directly related to research) <sup>1</sup>	87K€	7,6%	
Insurance	5K€	0,4%	
Other administrative costs	80K€	7%	

**Bassins**

Cost Item	Cost per year	% of total running costs	% of administrative costs
Rent			
Non-research personnel	50 000€	5.3%	
Utilities (not directly related to research) <sup>1</sup>	25 000€	2.6%	
Insurance			
Other administrative costs	15 000€	1.6%	

**SEM-REV**

Cost Item	Cost per year	% of total running costs	% of administrative costs
Rent	0		
Non-research personnel	50 k€	5 %	33 %
Utilities (not directly related to research) <sup>1</sup>	20 k€	2 %	
Insurance	80 k€	8 %	
Other administrative costs	100 k€	10 %	67 %

**How are research costs distributed across the categories below?**

**EMEC**

Cost Item	Cost per year	% of total running costs	% of research costs
Consumables		2	
Research personnel		50	
Maintenance, replacement and calibration of equipment		30	

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Utilities (only directly related to research) <sup>2</sup>		5	
Information technology costs		5	
Other research costs		8	

### IFREMER

Cost Item	Cost per year	% of total running costs	% of research costs
Consumables	16K€	1.4%	
Research personnel			
Maintenance, replacement and calibration of equipment	108K€	9.35%	
Utilities (only directly related to research) <sup>2</sup>			
Information technology costs			
Other research costs	1K€	0.1%	

### Bassins

Cost Item	Cost per year	% of total running costs	% of research costs
Consumables	50 000€	5.3%	
Research personnel	350 000€	36.8%	
Maintenance, replacement and calibration of equipment	25 000€	2.6%	
Utilities (only directly related to research) <sup>2</sup>	25 000€	2.6%	
Information technology costs	15 000€	1.6%	
Other research costs	190 000€	20%	

### SEM-REV

Cost Item	Cost per year	% of total running costs	% of research costs
Consumables	40 k€	4	
Research personnel	250 k€	25	
Maintenance, replacement and calibration of equipment	150 k€	15	
Utilities (only directly related to research) <sup>2</sup>	80 k€	8	
Information technology costs	15 k€	1.5	
Other research costs	50 k€	5	

### Revenue stream

What services do you provide? For each service, can you also indicate the typical selling price, the typical duration and the utilisation rate over the year?

Response	Service	Time basis (day, week, month)	Selling price per time unit	Utilisation rate over the year (%)
EMEC	Berth access / rental (15)	Monthly	Confidential / bespoke	50-80
Runde	Test site	Year	N/A	50
Bassins	Oceanic Tank	Day	5,000 €	35
	Towing Tank	Day	4,000 €	20
	Design and instrumentation of models	Per unit	TBD	NA
SEM-REV	Access to the tests site	Month	5 to 100 k€	Test site operational in 2018
	Expertise to prepare and to post-process the tests	Month	10 to 50 k€	Test site operational in 2018
	Technical assistance to deploy, to operate and to dismantle tests installation	Month	10 to 50 k€	Test site operational in 2018

**Is there a difference in service pricing between clients from industry or academia?**

Response	Is there a difference in service pricing between clients from industry or academia?
EMEC	No
UCC	No
Runde	No answer
IFREMER	Yes
Bassins	No
SEM-REV	No

If yes, how does pricing differ?

Response	If yes, how does pricing differ?
IFREMER	Adding a commercial margin for industrials

**What is the typical breakdown of financing of the infrastructure?**

EMEC

Amount	% of total	Financing type
	55	Revenue from services rendered to industry
	1	Revenue from services rendered to academia
	44	Funded research
		Public funding and grants (non-research)
		Private investments
		Debt financing
		Other financing

IFREMER

Amount	% of total	Financing type
345K€	37%	Revenue from services rendered to industry
40K€	4%	Revenue from services rendered to academia
540K€	58%	Funded research
		Public funding and grants (non-research)
		Private investments
		Debt financing
		Other financing

Bassins

Amount	% of total	Financing type
241 K€		Revenue from services rendered to industry
		Revenue from services rendered to academia
85 K€		Funded research
850 K€		Public funding and grants (non-research)
		Private investments
		Debt financing
		Other financing

SEM-REV

Amount	% of total	Financing type
	50	Revenue from services rendered to industry
		Revenue from services rendered to academia
	45	Funded research
	5	Public funding and grants (non-research)
		Private investments
		Debt financing
		Other financing

**Market and Future Business Development**

**Is there an active infrastructure promotion program?**

Response	Is there an active infrastructure promotion program?
EMEC	Yes
UCC	No answer
Runde	No
IFREMER	No
Bassins	Yes
SEM-REV	Yes

**If yes, how is it financed?**

Response	If yes, how is it financed?
EMEC	Budgeted as needed Rough estimate: €100,000+
UCC	No answer

Runde	NA
IFREMER	NA
Bassins	Budgeted as needed Rough estimate: 25 000€
SEM-REV	Budgeted as needed Rough estimate: 5% of running costs

**Have you identified business opportunities for developing new infrastructure services?**

Response	Have you identified business opportunities for developing new infrastructure services?
EMEC	Yes
UCC	No answer
Runde	Yes
IFREMER	No
Bassins	Yes
SEM-REV	Yes

**If yes, across which sectors?**

Response	If yes, across which sectors?
EMEC	Wave energy, Tidal stream energy, offshore wind, Other Sectors: Energy Systems, Hydrogen
UCC	No answer
Runde	Other Sectors: Maritime, research
IFREMER	No answer
Bassins	Wave energy, Tidal stream energy, offshore wind
SEM-REV	Wave energy, offshore wind, Other Sectors: Technical equipment for O&M and survey

**Can you specify these?**

Response	Can you specify these?
EMEC	No answer
UCC	No answer
Runde	Integration with larger national infrastructure near-by, in coop with maritime industry and academia. National RI.
IFREMER	No answer
Bassins	No answer
SEM-REV	Mooring systems, umbilical connectors, environmental impacts survey,

# marinerg-i

## Overview

The world is transitioning to more sustainable energy sources and Offshore Renewable Energy (ORE) has the potential to make a significant contribution. The MARINERG-i project is a first step in forming an independent legal entity of distributed testing infrastructures, united to create an integrated centre for delivering Offshore Renewable Energy.

The MARINERG-i H2020 project is coordinated by the MaREI Centre at University College of Cork Ireland. The consortium is comprised of 14 partners from 12 countries (Germany, Belgium, Denmark, Spain, France, Netherlands, Ireland, Italy, Norway, Portugal, the United Kingdom and Sweden). MARINERG-i brings together all the European countries with significant testing capabilities in offshore renewable energy.

## Objectives

Partners have joined together to complete the studies required to determine a comprehensive vision and model for this pan-European Research Infrastructure for Offshore Renewable Energy. The key aims include:

- Broaden the number of member states involved
- Create a design study and scientific plan
- Develop a business plan including governance, legal, financial and strategic issues
- Secure further national support from partners
- Create and agree an implementation plan that will bring the proposal to the European Strategy Forum on Research Infrastructures (ESFRI) roadmap in 2020

## Vision and Mission

MARINERG-i will produce a scientific and business plan for an integrated European Research Infrastructure (RI), designed to facilitate the future growth and development of the Offshore Renewable Energy (ORE) sector. This plan will ensure that the MARINERG-i RI model attains the



## **Appendix D    MARINERG-i    ERIC    –    Excerpt    of    third-party engagement process (governance)**

### **Agreements with third parties**

Due to the public nature of this deliverable, Appendix D is intended to be just an excerpt of the official MARINERG-I statute referred to third parties agreements, which will be adopted once the ERIC would be set up.

Once formed, the MARINERG-i ERIC will have legal capacity to enter into agreements with third parties.

A third party, such as an individual institution, or other commercial or non-profit organisation, may wish to enter into an agreement to contribute expertise, services and/or technology to MARINERG-i ERIC, for example, a:

- research and development agreement;
- collaboration agreement.

Alternatively, MARINERG-i ERIC may approach a third party to discuss entering into such an agreement.

All agreements with third parties should include minimum provisions (for example boilerplate provisions that cover issues such as governing law and jurisdiction). The agreements must also address confidentiality, intellectual property (IP) rights, including protection for the MARINERG-i ERIC's existing IP rights and any IP rights developed under the agreement, payments/funding, as well as any other commercial requirements that MARINERG-i ERIC may have.