

**C6534: SUPPORTING SERVICES TO  
THE OCEAN ENERGY FORUM**

**MEETING REPORT:  
MEETING OF THE STEERING COMMITTEES,  
PARIS, JUNE 22 2016**

**Prepared by: Cefas**

**Produced for: The European Commission - DG MARE and EASME**

Version 2 of the original report dated 08.08.2016 was updated 28.08.2016 to include minor modifications at pages:

10 – Additional info re Action Plan sign-off

25 – Additional references added as footnote #5 and 6

# 1. Event Overview and Context

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The three Steering Committees (SC)<sup>1</sup> (Environment & Consenting (E&C), Finance and Technology) of the Ocean Energy Forum met at l'Hotel Des Arts Et Metiers in Paris on June 22 2016. A list of delegates is included at Appendix 1. In advance of the meeting, all attendees were provided with the following papers:

- Meeting Agenda (included at Appendix 2);
- Summary Session Paper (Appendix 3);
- High-level final Strategic Roadmap structure;
- Session papers for the Steering Committees (Finance x 2; Technology x 1 and E&C x 2 papers).

The main purpose of the event was:

- to agree high-level outline structure of final Strategic Roadmap (draft published October 2015<sup>2</sup>);
- to validate / sign-off the Strategic Roadmap Action Plans (Key Recommendations noted in the *draft* Strategic Roadmap are now called "Actions"). Each Action in the final Roadmap will have an Action Plan (iro 2-pages);
- to agree next steps for finalisation of the Strategic Roadmap, expected Autumn 2016.

The purpose of this report is to provide a summary of the meeting, including notes from the SC discussions (see Appendix 4), and next steps. This report will be made available on the Forum website.

# 2. Event Structure

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The Agenda was developed and agreed with the Steering Committee Chairs, and was designed to make the best use of the time available, with a mix of both plenary and breakout sessions. The Chairs led the breakout sessions, with technical and administrative support provided for each SC by the Secretariat.

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<sup>1</sup> It was agreed with DG MARE to extend meeting invite to all Forum members given this expected to be was the last operational meeting prior to Roadmap publication.

<sup>2</sup> [https://webgate.ec.europa.eu/maritimeforum/sites/maritimeforum/files/OceanEnergyForum-report-v5.2\\_12-10-15\\_FINAL%20DRAFT.pdf](https://webgate.ec.europa.eu/maritimeforum/sites/maritimeforum/files/OceanEnergyForum-report-v5.2_12-10-15_FINAL%20DRAFT.pdf)

### 3. Summary of Plenary Session Information

The plenary session was Chaired by Ronnie Quinn of The Crown Estate Scotland (Chair of the Forum's Finance SC).

#### 3.1 Welcome

Patsy Falconer of the Secretariat welcomed attendees to the meeting on behalf of DG MARE and the SC Chairs.

#### 3.2 Secretariat Presentation – Roadmap Evidence-Base Review & Key Discussion Points

As part of the Secretariat contract, the University of Exeter has undertaken an evidence-base review of the draft Strategic Roadmap to ensure that relevant information, studies, projects and monitoring programmes were considered, and, where applicable, if further evidence is required to support Roadmap contents. The review was completed at the end of May 2016 and presented at a meeting with DG MARE and the Chairs on the 14 June 2016. Today's presentation summarises the conclusions of the work and the outcomes of the June meeting. For ease of reference, the conclusions are presented in the table below. It should be noted that the draft Strategic Roadmap was used as the benchmark and that the evidence-base work was not a full literature review.

Table 1. Summary of Draft Strategic Roadmap Evidence-Base review

	Area of Focus	Recommendations	Outcomes 14 June 2016
1	Review the language throughout the document to ensure applicable to all technologies	References should be made to 'plants' in addition to arrays and farms when outlining the challenges and recommendations in the Roadmap.	<b>AGREED</b> – ensure Roadmap covers full scale power plants where applicable
2	Establish a realistic target for 2050 installed capacity based on the practical resource	Should be based on a realistic average capacity factor (theoretical, technical and practical resource were outlined).  Consider intermediate targets?	OEE - 100 GW reflects vision of ocean energy sector now  <b>ACTION</b> – Ocean energy Europe (OEE) to consult with OEE Board
3	Set a realistic target for LCOE using figures from a range of literature	Many analyses performed to estimate potential LCOEs for ocean energy technology. Industry target figure should be	<b>AGREED</b> - Clarify in final Roadmap:  LCOE linked to installed capacity and

		based on a consensus view of these rather than an outlier.	€100 MW/h is common consensus across industry.  Update Roadmap Figure 1 and Section 1.3.
4	Revise the wording of the wind power comparison to reflect the sectoral differences	Valid comparison to make, but differences between the sectors make it unlikely that ocean energy will follow same development trends and timescales as wind.	<b>CLARIFIED</b> - Wind example was used to provide a contemporary comparison  <b>AGREED</b> - Exeter University to propose revised text for Roadmap
5	Modify the reference TRLs for each development phase to better represent industry guidelines	At present these are misaligned with standard TRL and ocean energy definitions, and should be revised to avoid confusion.	<b>CLARIFIED</b> – Commission TRLs already referenced in Glossary Footnote 20 of draft Roadmap.  <b>ACTION</b> – ensure also referenced in main body of Roadmap at Figure 3.
6	Revise Figure 4 ( <i>draft Roadmap</i> ) Development Timeline to ensure consistency with text and realistic representation of status of all technologies	Simplified representation of development timescales is useful, but complexities regarding development of different technology types within some sectors. Further discussion needed to ensure accurate representation of all technologies.	<b>AGREED</b> – Roadmap Figure 4 could be better represented – i.e. continuous development and innovation made clearer  Show (timeline) of transition between the phases  Use Roadmap Figure 3 for TRLs to show where technologies are currently.  <b>ACTION</b> – Clarify for consistency in Roadmap text - “.....tidal stream demonstration underway by 2020.....” - Roadmap Figure 4 shows this to be 2015.
7	Revise Figure 5 ( <i>draft Roadmap</i> ) Public-Private Distribution of Funding) to ensure that funding levels	The curve should vary smoothly between phases, and the total levels of funding should continue to rise with industrial roll-out (end up with S-curve).	<b>CLARIFIED</b> – Roadmap needs to explain clearer that Figure 5 relates to individual devices <b>not</b> industry. Draw “smoother” diagram.

	continue to increase with industrial roll-out		<p>Where diagram refers to “Cumulative”, this should be Cumulative <b>of private and public</b>.</p> <p>Show transition point better.</p>
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Key discussion following the presentation, was centred around targets and deployment levels.

- OEE reminded all that the plans presented in the Roadmap are industry documents not Commissions documents;
- Caution on targets and deployments levels, can’t be sure you will hit the targets until they are levels that are agreed. 100GW by 2050 is currently projected, industry need to validate this but historically targets have not been achieved. *OEE advised that Industry have already been consulted and largely agree on targets.*
- Ambitious targets are required to attract buy-in but you have to be able to meet them. Credible interim targets and milestones should be provided to help keep momentum and build up to the 100GW by 2050. Maintain 100GW but caveat to state that we need certain policies in place to achieve. *Could a breakdown of how the 100GW is available be included?* It was confirmed there is no breakdown of this figure, it’s a mix of various studies and a consensus target more than a specific study. Figures are limited to support the 100GW figure. 50GW is a figure that is more realistic if only taking into account the literature that is out there. We should be looking to link LCoE and targets with deployment. Could propose 20GW by 2020 as an interim figure? It’s too easy to simply put in place a caveat that states policy needs to be in place in order to meet the targets. Roadmap should be explicit in stating what we need in order to achieve the figures we have presented.
  - OEE commented that any target’s success is dependent on the industry and support and policy implementation to achieve. 100GW installed capacity by 2050 is the industry consensus – there was no European model, however, the UK and the IEA have also looked at this area and 100GW is credible (subject to the right policies and framework being in place).

The plenary Chair concluded there was *“unease amongst some of the attendees concerning the 100GW installed capacity target. This could be mollified if it was accompanied with a breakdown of how this could be achieved or with intermediate targets.”*

Agreed for an OEE to speak with the OEE Board at their meeting in July and respond to the Secretariat accordingly.

### 3.3 Secretariat Presentation – Final Roadmap Structure (High-Level)

The main updates, as agreed with the Chairs and shown in the meeting paper, were outlined.

- General
  - Refinements will be made but no major changes to current structure;
  - Figures and images will be re-worked to ensure high quality;
  - Thorough final QA review to deal with typos;
  - Executive summary to be refined – aim for 2-pages with a double-page spread aimed at policy-makers;
  - Updates as per evidence-review;
- Section 4 is where most refinement will happen:
  - Previous “Key Recommendations” will now be called “Actions” and will form a sector “Implementation Plan”;
  - The 6 key recommendations will become 4 actions. Collaboration is a continuous theme throughout the development phases (it is essential, not an option) and will be highlighted via a case-study. Grid Connection will be highlighted more as a challenge in Section 3 (issues are country-specific than EU-wide).
  - Each Action will have a 2-page Action Plan (directed at policy) – with a consistent structure for the reader. More detail could be included as an option for the online version of the Roadmap (extended papers in Annex) - tbc.
  - There will be a visual summary of actions to show how they “fit” in the development timeline and are part of a plan for the sector.
- Timeline
  - Actions Plans to be finalised with Chairs – aim for 31 July 2016;
  - The Secretariat will prepare a document for the Chairs and DG MARE detailing all changes for the Roadmap as an audit trail;
  - The final Roadmap will be prepared during August and September for submission as final draft to the Chairs and DG MARE. It is expected that the Roadmap will be ready for publishing and presentation mid-October (see below).
  - Date for Roadmap launch event Autumn 2016 tbc.

### 3.3 Chairs’ Overview of Sessions

#### 3.3.1 A Gap Fund for first projects - Remi Gruet, Finance SC Co-Chair

- Reminder – this is for Demonstration and Pre-Commercial phases of development; deploy first arrays to make them investable; €250-300M pipeline-dependent.

- Main points from Forum Edinburgh meeting, February 2016<sup>3</sup> - leveraging of private funding, further clarity needed on scope, what makes this fund “different” and discussion on “recycling/re-evolving” fund to extend wider than first arrays.
- For today’s session - consider timescale for the Action Plan, which projects are being targeted, validate text, define budget and understand sources of funding, understand finance terms (debt, enquiry, repayable grant?) and how flexible and ambitious we want to be.

### 3.3.2 Design for an Insurance Fund for first arrays - Remi Gruet, Finance SC Co-Chair

- Reminder – this is for Demonstration and Pre-Commercial phases of development; de-risk the first arrays to bridge the gap between device manufacturers and project developers; €50-70 pipeline-dependent.
- Main points from Edinburgh meeting – make deployment stage clearer in proposal and that the Fund is covering gap between OEM and project developer. More work needed on Risk Matrix and definitions – understand what is currently available and assess the gap. Aim for Roadmap document (Action Plan) to be clear and simple for decision-makers but note that Industry need the detail (consider having separate expert paper).
- For today’s session - validate text, assess best target projects for insurance fund, articulation of other sources of finance (private/public).

### 3.3.3 Establish a Europe-wide Phase-Gate procedure – Jacopo Moccia, Technology SC Secretary General

- Reminder – this is for R&D and Prototype phases of development. Critical components and subsystems are tested and effectively validated; a public / private fund requiring management. All phases need stage gates and due diligence is required at all stages.
- For today’s session - validate text; understand timeline, governance and phase matrix; the number of calls (for proposals) and budget.

### 3.3.4 De-Risking Environmental Consenting – Phil Gilmour, E&C SC Chair

- Reminder – this is for how we make sure projects get through – i.e. are publicly acceptable and provide return back to the sector. We will do this through a programme of measures.

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<sup>3</sup> <https://webgate.ec.europa.eu/maritimeforum/en/node/3920>



- For today's session, agree the content of the project scopes (5 emerging projects) that have been prepared to facilitate sustainable development, addressing environmental and consenting issues: Planning, Consenting, Research, Socio-Economic and Demonstration.

## 4. Outputs, Session Summaries and Next Steps

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### Outputs

The following outputs are being generated from the meeting:

- This Meeting Report;
- Updated Strategic Roadmap for submission to DG MARE - expected by 30 September.

### Session Summaries

Each of the Steering Committee Chairs provided feedback on their individual sessions. Notes on the Steering Committee Sessions can be found at Appendix 4.

#### *Environment & Consenting Summary*

The Action Plan consists of five projects – developing techniques and advice on planning, consenting, research, socio economics and demonstration strategy.

Specification and details on how each will work would be required – i.e. if we move forward towards project commissioning, project specifications would need to be developed and agreed.

*Should we mention this in Action Plan?*

The projects fulfil the intention of the over-arching issue – to de-risk environmental consenting through an integrated programme of measures.

The **Planning** has to be done for compliance. **Consenting** seems to be linked to planning but separate studies are still needed to get buy-in at a European level. **Socio-economics** – two types of assessment should be pursued. A strategic assessment of emerging technologies (what would a practical scenario look like and what would the benefits be on economies?) and then a mechanism to develop a toolbox for consenting and planning processes. **Demonstration strategy** – initially for the MeyGen project - how would you apply demonstration strategies? Recognise this is a single site in Northern Europe – can we get demonstration projects coming out of France/Ireland – ideally aim for a demonstration strategy process with a funding pot (Fund) that can be applied for several sites in the future so we have “sound science” (**Research**) to reduce consenting review.

## *Finance Summary*

**Insurance Fund** – The key point of the Action Plan is to addressing current market failure whereby it is impossible to insure at reasonable costs. Some aspects of the proposal need revised - more rationale and clearly defined impacts (benefits and why) are required as well as consistent language. Opening Fund up to prototype level or lower TRLs may be an option though bulk is targeted at demonstration and pre-commercial.

**Gap Fund** – Objective (plus for Insurance Fund) is to provide pathways on how to implement the process. Implementation detail comes later if ideas taken on. Discussed examples on how it could work; how far do we go, how many projects, fair to varying technologies etc.? Metrics to ensure enough cash but not too much goes to an individual project.

## *Technology Summary*

We will check title to ensure appropriate. As mentioned previously, Action Plan is a pathway – we will note that further detail on criteria is required. Talked about the need for including a budget (or not) at this stage. Timeline can be removed – we should state how long the whole process could take (7 years starting ASAP). Benefits need to be teased out better - strengthen collaboration element; paragraph about why having it at EU-level is useful, why there is a gap and the added-value Fund could bring.

## **DG Research Update on Strategic Energy Technology (SET) Plan<sup>4</sup>**

The Commission used the meeting as an opportunity to provide an update on the above – for which there is a current consultation process. An issues paper on Ocean Energy is important (already exists for other MREs). Important also to have targets for ocean energy in the political setting. The Secretariat had advised Forum members of the consultation through the Forum website though was not involved in the process. OEE was collating feedback. A meeting to be held 12<sup>th</sup> July on targets and how to set targets. It was clarified that the Roadmap would be in line with SET-Plan, though deals with much broader issues.

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<sup>4</sup> <https://webgate.ec.europa.eu/maritimeforum/en/node/3926>

## **Next Steps**

- Complete final draft 2-page Action Plans for each Action and discuss with Chairs, including further input by Steering Committee Members post-meeting, in particular for final sign-off of the Finance Action Plans;
- Updates to final Roadmap during August and September 2016 by Secretariat with Chairs;
- Submit Strategic Roadmap to DG MARE by 15 September 2016\*\* for final review;
- Final draft Roadmap available by 30 September\*\*;
- Roadmap launch event in Brussels and taking the Roadmap's Implementation Plan forwards – Autumn 2016.

*\*\* subject to date of final Forum event being October; if November 2016, these dates may change*

## Appendix 1; Delegates Attending

Name	Organisation
Kelly Baker	Cefas
Stijn Billiet	European Commission
Claudio Bittencourt Ferreira	DNV GL
Victor Bouissou	DCCNS
Michael Bullock	Renewable Risk Advisors
Sarah Carter	Cefas
Simon Cheeseman	ORE Catapult
Peter Connor	University of Exeter
Ferdinand Dees	BT Projects
Patsy Falconer	Cefas
Karen Fraser	Scottish Enterprise
Phil Gilmour	Marine Scotland
Remi Gruet	Ocean Energy Europe
Pierre Guilpain	France Energies Marines
Ian Hutchison	Aquatera Ltd
Pierre Ingmarsson	SP Technical Research Institute of Sweden
Henry Jeffrey	Wave Energy Scotland
Janine Kellett	Scottish Government
Tony Lewis	MaREI UCC
Catherine McDonald	Department of Energy
Clodagh McGrath	DP Energy
Declan Meally	SEAI
Jacopo Moccia	Ocean Energy Europe
Kieran O'Brien	CWE
Anne Marie O'Hagan	MaREI UCC
Etienne Pourcher	Agence Régionale Pays de la Loire
David Pratt	Marine Scotland
Ronnie Quinn	The Crown Estate
Jon Rees	Cefas
Lindsay Roberts	Scottish Renewables
Pablo Ruiz-Minguela	TECNALIA
Lisa Sivyer	Cefas
Andrew Smith	Scottish Investment Bank
Helen Smith	University of Exeter
Matthijs Soede	European Commission
Natalie Tiggelman	FUJIFILM Manufacturing Europe B.V.
Jose Luis Villate	TECNALIA
Armandine Volard	Ouest Normandie Energies Marines
Tom Walsh	Atlantis Resources Ltd
Caroline Whybrow	Cefas

## Appendix 2; Agenda

# Ocean Energy Forum



EMAIL [OceanEnergyForum.Secretariat@cefas.co.uk](mailto:OceanEnergyForum.Secretariat@cefas.co.uk)

WEBSITE <https://webgate.ec.europa.eu/maritimeforum/en/frontpage/1036>

## STEERING COMMITTEE MEETING

### Wednesday 22 June 2016

### Les Salons De L'Hôtel Des Arts Et Metiers, Paris, France



TIME/LOCATION	SESSION CONTENT	TIME/LOCATION (of parallel sessions below)	PRESENTER
0830-0900 Hall D'Honneur	Registration and Networking		
0900-0910 Salon Club	Welcome & Context		DG MARE
0910-0940 Salon Club	Outline agreed plans for Strategic Roadmap updates: Evidence-Base Conclusions – Summary Presentation Overview of "look" of final Roadmap – paper will be supplied		Meeting Chair with Secretariat
0945-1030 Salon Club	Overview of session plans – Chairs to provide outline of what they want out of each session and include key points on how they have progressed the plans since Edinburgh		Meeting Chair with Steering Committee Chairs
1030-1045 Hall D'Honneur	Coffee Break		
1045-1230 Salon Club	Environment & Consenting Steering Committee session – start	1045-1230 Salon Delage	Finance Steering Committee session – start Chairs
1230-1330 Hall D'Honneur	Lunch & Networking		
1330-1400 Salon Club	Environment & Consenting Steering Committee session – continues	1330-1400 Salon Delage	Finance Steering Committee session – conclude Chairs
1400-1445 Salon Club		1400-1445 Salon Delage	Technology Steering Committee session – start Chairs
1445-1505 Hall D'Honneur	Coffee Break		
1505-1550 Salon Club	Environment & Consenting Steering Committee session – conclude	1505-1550 Salon Delage	Technology Steering Committee session – conclude Chairs
1600-1700 Salon Club	Steering Committee session feedback – validation of action plans and key points from Chairs Outline / agree final steps		Tbc with Chairs

Tidal Stream

Tidal Range

OTEC

Salinity Gradient

Wave

## Appendix 3; Summary Session Info

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<b>Document produced by:</b>	Ocean Energy Forum Secretariat
<b>Document produced for:</b>	Ocean Energy Forum Steering Committee Meeting Paris, 22 June 2016
<b>Context:</b>	This paper provides a summary overview of the Steering Committee sessions for information only, and is ordered by Steering Committee.
<b>Issue Date:</b>	17 June 2016, Forum Secretariat
<b>Distribution:</b>	Non-restricted – All Forum members
<b>Outputs</b>	Finalised papers ( <b>agreed text and content</b> ) for inclusion in Section 4 ' <i>A sector implementation plan for ocean energy</i> ' of the final Strategic Roadmap (due October 2016).

ROADMAP ACTION <i>(previously referred to as Key Recommendations)</i>	ACTION PLAN TITLE	CONTEXT	KEY DISCUSSION POINTS FOR PARIS	CHAIR / LEAD PERSON
<p><b>Technology Steering Committee</b></p> <p><b>ACTION 1</b></p> <p>1 x paper</p> <p>(R&amp;D and Prototypes)</p>	<p>Establish a Europe-wide Phase Gate Procedure</p>	<p>For subsystems, components and devices, whereby funding is only made available once clear performance indicators, determined by an independent multi-disciplinary panel of experts from a variety of stakeholders, have been achieved.</p> <p>An <b>ACTION PLAN</b> paper has been developed to help realise the creation of a new co-operative R&amp;D funding instrument.</p>	<p>Discuss paper and agree final content / text.</p> <p>Post-Paris, Chairs will update the document as agreed.</p> <p>Post-Paris, the Secretariat, with the Chairs will take the key points from the agreed document and convert into a 2-page <b>ACTION PLAN</b> (suitable for the Roadmap reader and using a generic structure) for inclusion in the final Roadmap.</p> <p>The final agreed document (i.e. longer version) can be part of the final Roadmap <u>Annexes</u> in <u>online version</u> of the Roadmap.</p>	<p>Fiona Buckley, ENGIE (Forum Technology Chair) &amp; Jacopo Moccia, Ocean Energy Europe (Technology Secretary General)</p>

<p><b>Finance Steering Committee</b></p> <p><b>ACTION 2</b></p> <p>1 x paper</p> <p>Demonstration and Pre-Commercial</p>	<p>A Gap Fund for First Projects</p>	<p>To set up a fund based around the REIF/EIB InnovFin model. A gap funder aiming to lever private and other public sector funding. Delivered by a team with direct experience of the Ocean Energy sector, with an announced fund of about €300m with the ability to meet some or all of the reasonable deal costs (e.g. due diligence).</p>	<p>Discuss paper and agree final content / text.</p> <p>Post-Paris, Chairs will update the document as agreed.</p> <p>Post-Paris, the Secretariat, with the Chairs will take the key points from the agreed document and convert into a 2-page <b>ACTION PLAN</b> (suitable for the Roadmap reader and using a generic structure) for inclusion in the final Roadmap.</p> <p>The final agreed document (i.e. longer version) can be part of the final Roadmap Annexes in <u>online version</u> of the Roadmap.</p>	<p>Remi Gruet, Ocean Energy Europe (Finance Co-Chair) &amp; Ronnie Quinn, The Crown Estate (Chair) &amp; with Andrew Smith, Scottish Investment Bank</p>
<p><b>Finance Steering Committee</b></p> <p><b>ACTION 3</b></p> <p>1 x paper</p> <p>Demonstration and Pre-Commercial</p>	<p>Design for an Insurance Fund for First Arrays</p>	<p>Lack of empirical experience and deployment data results in uncertainties about ocean energy projects' operation and production – meaning ocean energies bear a higher technological and financial risk compared to more mature energy technologies. This paper sets out how an insurance fund could be set-up, how it could function and which private and public stakeholders would be required to participate.</p>	<p>Discuss paper and agree content/text, esp. for Risk Matrix.</p> <p>Post-Paris, Chairs will update the document as agreed.</p> <p>Post-Paris, the Secretariat, with the Chairs will take the key points from the agreed document and convert into a 2-page <b>ACTION PLAN</b> (suitable for the Roadmap reader and using a generic structure) for inclusion in the final Roadmap.</p> <p>The final agreed paper (i.e. longer version) can be part of the final Roadmap Annexes in <u>online version</u> of the Roadmap.</p>	<p>Remi Gruet, Ocean Energy Europe (Finance Co-Chair) &amp; Ronnie Quinn, The Crown Estate (Chair) &amp; with Andrew Smith, Scottish Investment Bank with Michael Bullock, Renewable Risk Advisors Ltd.</p>



<p><b>Environment &amp; Consenting Steering Committee</b></p> <p><b>ACTION 4</b></p> <p>1 x paper</p> <p>Demonstration to Industrial Roll-out</p>	<p>De-risk environmental consenting with an integrated programme of measures:</p> <ol style="list-style-type: none"> <li>1 Planning</li> <li>2 Consenting</li> <li>3 Monitoring (information sharing)</li> <li>4 Demonstration Strategy</li> <li>5 Socio-economics</li> </ol>	<p>An <b>E&amp;C IMPLEMENTATION PLAN</b> paper has been prepared <b>summarising</b> the integrated programme of measures (5 projects). The final Implementation Plan will include a summary for the other actions (Technology and Finance 1-3 above) to produce a <b>SECTOR IMPLEMENTATION PLAN</b> for the final Roadmap.</p>	<p>Discuss <b>E&amp;C IMPLEMENTATION PLAN</b> paper and agree detail of content / text.</p> <p>Post-Paris, the Secretariat, with the all Steering Committee Chairs will produce a <b>SECTOR IMPLEMENTATION PLAN</b> for inclusion in the final Roadmap.</p>	<p>Phil Gilmour, Marine Scotland (E&amp;C Chair) &amp; David Pratt (E&amp;C CO-Chair) with Jon Rees, Cefas and Helen Smith, University of Exeter</p>
<p><b>Environment &amp; Consenting Steering Committee</b></p> <p><b>ACTION 4</b></p> <p>1 x paper</p> <p>Demonstration to Industrial Roll-out</p>	<p>De-risk environmental consenting with an integrated programme of measures via 5 projects:</p> <ol style="list-style-type: none"> <li>1. Planning</li> <li>2. Consenting</li> <li>3. Monitoring (information sharing)</li> <li>4. Demonstration Strategy</li> <li>5. Socio-economics</li> </ol>	<p>An <b>ACTION PLAN</b> paper has been prepared providing detail on the 5 projects that will form the integrated programme of measures. The <b>ACTION PLAN</b> provides detailed relevant information on the projects' aims and objectives and is in addition to the Implementation Plan. The five projects are:</p> <ol style="list-style-type: none"> <li>1. Planning</li> <li>2. Consenting</li> <li>3. Monitoring (information sharing)</li> <li>4. Demonstration Strategy</li> <li>5. Socio-economics</li> </ol>	<p>Discuss <b>ACTION PLAN</b> paper and agree the <b>detailed wording</b> for <b>each</b> of the 5 projects. The 5 projects are listed separately though should form a <b>single E&amp;C ACTION PLAN</b> – the Secretariat feels this is the best way to present in the final Roadmap. <b>NB.</b> The ACTION PLAN is to provide detail for the policy makers to help take the projects forwards.</p> <p>Post-Paris, the Secretariat, with the E&amp;C Chairs will produce a final <b>E&amp;C ACTION PLAN</b> for inclusion in the final Roadmap.</p>	<p>Phil Gilmour, Marine Scotland (E&amp;C Chair) &amp; David Pratt (E&amp;C CO-Chair) with Jon Rees, Cefas and Helen Smith, University of Exeter</p>

## Appendix 4; Notes from the Steering Committee Sessions

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### Technology Steering Committee Establish an EU-wide Phase-Gate Procedure (Action Plan 1)

Jacopo Moccia of the Technology Steering Committee Chaired the session. Key feedback on the meeting paper is as follows:

#### **General**

- Consider amending title to Phase-Gate: an approach for technology development;
- Noted that concept is a pre-commercial process;
- The risk matrix is a useful due diligence tool for funders to make decisions; separate from finance mechanisms for lower TRLs.
- Starting approach could be to identify a topic / call (e.g. critical sub-systems) and push through this new fund as opposed to the existing systems;
- Not currently clear how to tick the boxes in the matrix and what is needed to move to the next phase. Need to ensure adequate criteria to assess. As with other Action Plans, this paper is a pathway to get to demonstration of farms. If the Commission decides to go ahead with proposal, then further work is needed.
- Check colours of any Figures to avoid using same colours as ocean energy development phases in Roadmap;
- Confirmed that a developer can come into the phase-gate at any stage;
- Calls will be over a period of time to allow updates to catch-up. Several projects could be working on same sub-system.
- A Secretariat would manage all parts of the process to select which projects are funded and where proposals are similar;
- Hierarchy in terms of decision-making is not defined in the flow chart. Experts nominated by the Member States would prepare and manage the calls. Multiple industries adopt this approach already and it works successfully but this is new for Ocean Energy. Highlight gap that Horizon 2020 and other schemes can't cater for and then review what this Fund is for.
- Either this Fund or low-level TRLs H2020 funding. Consider illustrating using an international example in Roadmap.
- Can work for sector under EU and Member State rules.
- Needs to be at EU level as one Member State can't successfully do it on their own.

## **Operations**

- Not a call for each gate. You are committed to one project consortium throughout the life cycle but some would have to drop out or the project would need to end (if the concepts can't be proven). Can only move on to the next phase when the criteria from previous phase reached. Once the phase has ended you write a report and propose the next phase.
- At the outset all successful calls could have appropriate budget ear-marked and then as projects fall out then those funds could be made available again OR derive and set a figure that assumes only a percentage of projects would be successful to the end phase to ensure the mechanism can work. Need to cost profile whole project at the beginning to ensure budget in future years. Although you would not have to re-apply to a new call to move to another phase you would still be in competition with all the other projects that have also successfully completed in the previous phase criteria.
- Different calls will be run at various times for different topics and projects can come in at any stage if they can prove that they have already met previous phase criteria (but would have to come in at the beginning of that specific call).

## **Budget / Funding**

- Budget needs to be proportionate consider what we put into the paper. Propose iro €300m in public support over 7 years (with public funding of around 50% of project cost). Figure based on other "benchmarks" e.g. €100m in wave and tidal investments required to bring a single device from drawing board to TRL5; similar concept to Wave Energy Scotland, €50m over 5years x 6 countries; Catapult study re £200m (wave) and £100m (tidal) needed to get sector through to commercialisation. Include budget benchmark in paper.
- Assuming funding over 3-5 years and 50% funding then no individual project should get more than €10m per year over the life of the project;
- What amount would we need for the first call? Process has to be proven fit for purpose over a longer term basis and then decided whether it could be a longer term collaborative initiative.
- Do we need to go into detail at this moment? Asking to derive figures now is not feasible.
- Paper should demonstrate why system that we have now not good enough? In an ideal world this Fund would top up existing funds but the reality is that this probably won't happen so we need to decide whether this process has any additional benefit to those already in place.

## **Ambition**

- The ambition of this fund is supporting prototypes and critical sub-systems to help investors feel comfortable in using – de-risking (so the critical bits of kit work).

## **Collaboration & Lessons Learned**

- Everyone will collaborate unless it's considered their core business/IP;
- Fund trying to avoid duplication or replication in effort and strengthen collaboration. E.g. Where there is cross-over, ensure that knowledge sharing and lessons learned are passed on. To set up a robust review process in place to ensure proposals are reviewed regularly and lessons learned / acted upon.

## **Summary**

- Check title is appropriate;
- Note in paper that further detailed on criteria is required (action plan is a pathway);
- Update process and calls for proposals in paper using comments under Operations section above as required;
- Update budget information using comments under Budget / Funding section above as required;
- Strengthen collaboration element;
- Paragraph about why having it at EU-level is useful, why there is a gap and the added-value Fund could bring;
- Timeline can be removed – just state how long the whole process could take (7 years starting ASAP).

## Finance Steering Committee Session

### A gap fund for first projects (Action Plan 2)

Ronnie Quinn and Remi Gruet of the Finance Steering Committee Chaired the session. Key feedback on the meeting paper is as follows:

#### **General**

- Comments on structure. Secretariat reminded attendees that there would be a standard structure for the Roadmap for each Action as well as a summary introduction (preamble in Section 4 of Roadmap).
- Needs to include rationale and what we are trying to achieve (this can easily be re-introduced from existing Roadmap). There is no other fund at the moment that supports the demonstration phase, addressing the missing link between research funding and demonstration.
- Source of funding isn't clear – who makes up the €300m envelope? Would be an EU wide Fund. All funds don't have to be available on "day 1" and they don't have to be spent right now – we can look to projects that will be ready to be supported in the next few years. Roadmap Action Plans are designed to give pathways in the first instance for the detail to then be taken up.
- Form of support is flexible, potentially a scheme that would be refundable at some point (2 and 5 years) which would enable some element of re-use.

#### **Scope**

- The paper proposed "first of a kind - FOAK" an "second of a kind – SOAK" projects. How many first of a kind projects should be funded? MeyGen 1A was seen as a catalyst - why are we now asking to fund more than one of a kind? Industry can get there on its own but this Fund will speed things up, accelerate the industry and progress it. Could fund MeyGen 1B. Funding multiple, disparate, turbines is not the same as funding a MeyGen-type project. Gap funding seems more appropriate for larger scale projects (10 array projects) whereas the Insurance Fund seems more appropriate for smaller scale. The ambition is to get a number of array projects in the water. The Roadmap clearly states that the solutions are aimed at demonstration and first arrays. Do we need to differentiate between first or second of a kind?
- Should we fund projects or technologies? Everyone will argue that their project is first of a kind to get funding. Wording and criteria need to be in place to define exactly how this is quantified.
- Lessons learned from projects should be used and implemented in subsequent projects so we are not doing the same learning and there can be a sliding scale of support from Member

States. Each FOAK must progress the industry and reduce risk for future projects. Reporting for each project must be consistent in order to successfully achieve this. Development and learning in a project must be different to anything that has come before to be classed as FOAK. Increased/continuous learning and cost reduction is what we are looking for and this should be included in the scope.

### **Project Selection**

- Needs to be definitive. Current market state is likely that first 10 arrays would be tidal current projects which would leave out other technologies unless there was either criteria about FOAK in place or funds are ring-fenced for the various technologies. Competition necessary, but the industry needs to be building all the time.
- Definition of what is and isn't eligible for funding needs to be made totally clear as it isn't currently – this will be made clear in the assumptions section of the Roadmap. For example, Horizon 2020 LCE15 projects not applicable to Gap Fund.
- Fund Advisory Group could assess emerging technologies on an annual basis to help address this without the need to ring-fence funds up front.
- Clarify VFM – LCOE, innovation. Needs working out in the sub-criteria. What's the value that we put on competition?

### **Summary**

- Include rationale and what Fund is trying to achieve and source of funding.
- Clarification better First/Second of a Kind (FOAK/SOAK) projects and what will be funded / what is eligible.
- Include a focus on increased and shared learning and cost reduction.
- Clarity on number of projects, technologies and solutions (e.g. same machine, different projects?).

## **Finance Steering Committee Session**

### **A design for an insurance fund for first arrays (Action Plan 3)**

Ronnie Quinn and Remi Gruet of the Finance Steering Committee Chaired the session. Key feedback on the meeting paper is as follows:

#### **General**

- Due diligence - needs to be clear in paper (part of the criteria).
- Consider including formal review points.
- Clarified that the assessment criteria are essentially “phase-gating” and there needs to be provision for this. Note that for the Insurance Action Plan this is about technology deployment than development (Phase Gate Action Plan).
- Need mechanism to establish the criteria (e.g. could set up a committee as in other Action Plans). Criteria should be flexible enough with progression to move forward in place (it is not either demonstration or pre-commercial but both). Understand what makes you eligible to move from one phase to the next. Consider assessment criteria from other bodies doing similar (e.g. USA).
- Ensure there is clear consistency between Insurance and Gap Funds terminology / approach re criteria to assess risks.
- Recognition that existing funding streams/mechanisms (e.g. H2020) are in place. This Fund will integrate with existing, not replace – to bridge the “gap”. Roadmap text to address integration via a general assumptions statement rather than in individual Action Plans. Need to ensure “gap” is clearly reflected in both Phase Gate and Gap Fund Action Plans.
- Show existing funds and timeline and where potential leverage may be achieved.
- Adjust Action Plan title to “*A design for insurance fund for demonstration and pre-commercial projects*”.
- Fund can cater for any technology that can reach the appropriate stage so word paper to reflect this (i.e. not array) in the action plan document.

#### **Risk (Gap) Matrix**

- Matrix trying to define what the real gaps are between developer risks package against what financiers need to give confidence.
- Within matrix, ensure demonstration **and** pre-commercial referenced as per previous comment.
- How will the insurance work? Most early array projects are receiving grants so what projects would this fund be suitable for? E.g. After MeyGen, Raz-Blanchard? Are we asking public to fund something when it goes wrong? Clause in the Gap Fund that says we should aim for a

percentage of the project being funded (privately) so Insurance Fund should state similar. The key point is to bring in commercial funding that wouldn't otherwise be available.

- Efficiency of capital – access to the Fund should bring down the CAPEX requirement needed for the overall project thus reducing other areas of ocean energy public funding / increasing impact of public funding.
- When does Fund start? Targeted at bringing in private sector insurance funds at the earliest opportunity (build up the track record); not a perpetual fund. Will also “ramp” down as success grows. Overall timeline needed for Fund.
- Governance detail has still to be worked out.
- Decommissioning – State picks up liability against decommissioning and “backs-off” against developer. Developers find it difficult to cover liability at deployment and State reluctant to deploy without liability covered. Fund is EU-wide so Member States taking the risk. (Further explanation needed offline of meeting as some not SC members clear how the provisions are going to be implemented at the moment.)
- Not expected would be re-payable once a technology moves into generation. E.g. In UK, subsidy system is that developer has to pay back public costs first. This is an insurance fund – you use it or you don't.

### ***Insurance Premiums?***

- There is a current market failure as developer can't go to the market for decommissioning. Have a public fund to take on a little bit of the risk to help developers/manufactures but who **would pay a premium** to receive this insurance. Developers still (need to) carry part of the risk.
- Fund should be structured in a way that commercial insurers can join-in and share risks with a view that in time public sector bows out (i.e. create a pathway to a self-sustainable fund). Sharing risks should make more attractive to insurers.
- Would developers pay premium? Some projects will carry higher risks than others, but generally there was consensus that this would be the case. Premium should be related to the risk profile of the specific project. A scenario illustration for the Roadmap showing how fund would work for “Project A” would be useful.

### ***How does this Fund fit in with other Member State plans?***

- Important to have relevant governance in place but if risks are shared then the feeling is that other states would be happy to support.



- How will each state feed in/draw from this Fund? Outcomes and business case needs to be presented to Ministers so useful to illustrate how Fund will free up funds for innovation/development and how more private sector investment will be leveraged.

### ***Best target projects***

- Any deployments in the run up to financial close could be eligible. Any projects hitting the water could be considered.
- Risks/premiums will vary from project to project depending on risk profile; consider risk assessment to define premium. Decouple this Fund from risk profile that current insurers may provide.
- Financial exposure - agreed upper limit of €20m per project, but needs to include lower end of spectrum (small-scale) also - include representative figures in Action Plan.

### ***Roadmap Updates***

- Update paper to produce 2-page Action Plan with key points in main text of Roadmap (could include Gap Matrix);
- Include more detailed (expert) paper within annexes of online version of Roadmap.

### ***Summary / Actions***

- Assessment criteria needs to be flexible and allow for phase-gating;
- Consistent and clear terminology needed for risk criteria for both Insurance and Gap Funds.
- General statement of assumptions in Roadmap where action plans fit into current context (Secretariat noted);
- Include timeline for Fund, showing (if possible) where existing funds and leverage could be achieved;
- Revise Action Plan title (to make clear it is demonstration and pre-commercial) and ensure text reflects fund wider than arrays;
- Include maximum amount per project / % cap (same as Gap Fund);
- Make clear that developers need to pay insurance premium;
- Include project scenario to illustrate how fund would work and how it could free up / better use existing ocean energy funds.

# Environment & Consenting Steering Committee Session

## De-Risking Environmental Consenting through an Integrated Programme of Measures (Action Plan 4)

Phil Gilmour Chaired the session. Key feedback on the meeting is as follows:

### **General**

The meeting agreed that the Implementation Plan paper that was provided ahead of the meeting correctly summarised the issues, and the five areas identified for projects were a good basis for the associated Action Plan for the final Strategic Roadmap.

The five areas for projects for the Action Plan are noted as follows:

- **Project 1:** Ocean energy development within the context of Marine Spatial Planning;
- **Project 2:** Guidance on consenting in ocean energy developments;
- **Project 3:** Maximising the use of licence-specific and strategic environmental monitoring;
- **Project 4:** Maximising socio-economic benefits;
- **Project 5:** Socialised empirical data collection and analysis of micro, meso and macro marine animal interaction with ocean energy development.

The Chair indicated that DG ENV & DG MARE were supportive of the approach outlined.

General points across all five projects - which will become the Action Plan:

- work needed to be done to ensure the Issues described were more clearly reflected in the 'Actions' and 'Outcomes', as well as describing linkages between Projects;
- future proofing needed to be addressed;
- revise language to ensure it reflected ocean energy, not only arrays and devices, but includes, e.g. salinity gradient;
- 'Timeline & Ownership' should also reflect other actors (stakeholders);
- the five projects were summary outlines of work to be done, *not* project specifications, and so did (& would) *not* have details (e.g. metrics) about exactly what or how work would be undertaken. The time for project specifications would be if the projects were to be commissioned in the future.

- examples (case studies?) to be included, e.g. A project was mentioned by Jose Villate (Tecnalia) and Armandine Volard (ONEM).<sup>5</sup>

Post-meeting, in discussion with the Chair, that the Secretariat would condense the Projects and the Implementation Plan to produce the 'two-page' Action Plan document needed for the Strategic Roadmap. The Chair was content for this to be sent only to those present at the Paris meeting (all attendees, not limited to the E&C Session if required).

## ***Specific to Projects***

### **Project 1**

Aim was to identify the right area of resource to allow developers to move forward. Seeking join-up - regulators-developers-academics.

### **Project 2**

Chair explained independent consultant was needed to consider varying approaches of Member States, and identify best practice. Jose Villate (Tecnalia) outlined a project<sup>6</sup> which had looked across 14 countries for just such best practice - not in great detail, but meeting agreed this could be a good starting point.

### **Project 3**

Important to recognise this was an issue for the industry, not only developers, to enable fit-for-purpose applications.

### **Projects 3 & 5**

Joining (i.e. not just linking) Projects 3 & 5 was raised and discussed. The Chair firmly reiterated the need to keep the 'research' focus of Project 3 separate from the work under Project 5 which was to allow a demonstration project to get to completion. Ensure lessons learnt in delivering Project 5 feedback into development of Project 3.

### **Project 4**

Outcomes should link to Project 3. Indicative budget should be considerably increased. Ian Hutchinson (Aquaterra) explained the work would be transferable outside Europe, and also that international examples should be considered as background (i.e. supporting info) for the project.

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<sup>5</sup> [www.ocean-energy-systems.org/oes-projects/task-4-assessment-of-environmental-effects-and-monitoring-efforts-for-ocean-wave-tidal-and-current-energy-systems](http://www.ocean-energy-systems.org/oes-projects/task-4-assessment-of-environmental-effects-and-monitoring-efforts-for-ocean-wave-tidal-and-current-energy-systems)

<sup>6</sup> [www.ocean-energy-systems.org/library/oes-reports/annex-i-reports/document/consenting-processes-for-ocean-energy-on-oes-member-countries](http://www.ocean-energy-systems.org/library/oes-reports/annex-i-reports/document/consenting-processes-for-ocean-energy-on-oes-member-countries). A new report with recommendations is expected in September/October.

Note that some socio-economic info would already be held, albeit for another use, e.g. information on port infrastructure needs and potential would already be in place.

## **Project 5**

Immediate funding was required for work presently outlined under Project 5 - *Can we design & implement monitoring that proves avoidance has taken place?* - to support MeyGen because that project was closest to breakthrough. Work supported travel from best available science to empirical data. The long-term aim for Project 5 would be the creation of a Fund which developers could bid into for 'anything' in future to allow similar breakthrough in their project.

Simon Cheeseman (ORE Catapult) gave a short introduction to the Environmental Data Exchange, stressing the ability for businesses to retain ownership of data, but use the portal to allow access to, and sharing of, information and data. Lessons have been learnt in building the portal.

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