The European context; an overview of the Ocean Energy (Europe) strategic roadmap

Kasparas Kemeklis, OEE
Ocean Energy Europe
- 120 members
Lead Partners:
Ocean Energy Strategic Roadmap

- First all-encompassing document on the sector
- Identifies challenges
- New solutions, focus on risk
Ocean Energy Forum

- 2.5 years of work
- 150+ experts
- Cross-sectoral consultations

Per development phase
- Identify investor risks
- Propose solutions
Ocean Energy Forum Roadmap

- Objective: industrial roll-out
- Industry consensus on challenges and solutions
- Informing decision-makers
- In depth look at targeted financing
### 4 Phases to industrial roll-out

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R&amp;D</strong></td>
<td>- Small-scale or component testing</td>
</tr>
</tbody>
</table>
| **Prototype** | - Single full-scale devices with full-scale components  
- Deployed at sea  
- Producing power  
- Not necessarily grid connected  
*TRL 1-4* |
| **Demonstration** | - Series (3 or more) of full-scale devices  
- Deployed in real sea condition  
- Grid-connected  
- For OTEC and salinity gradient: full-functionality down-scaled power plant  
*TRL 5-7* |
| **Pre-Commercial** | - Series (4 or more) of full-scale devices experiencing wake interactions  
- Connected to a hub or substation (array)  
- Deployed in real sea condition  
- Feeding power to the grid  
- For OTEC and salinity gradient: scalable  
*TRL 6-8* |
| **Industrial Roll-Out** | - Full-scale commercial ocean energy power plant or farms  
- Deployed in real sea condition  
- Mass production of off-the-shelves components and devices  
*TRL 7-9* |
4 solutions to de-risk path to commercialisation

- **R&D**
  - EU wide phase-gate technology development process
- **Prototype**
  - TRL 1-4
- **Demonstration**
  - TRL 3-6
  - Investment Fund for demonstration farms
- **Pre-Commercial**
  - TRL 5-7
  - EU Insurance & Guarantee Fund to underwrite demonstration risks
- **Industrial Roll-Out**
  - TRL 6-8
  - TRL 7-9

De-risking environmental consenting through an integrated programme of measures
Private / Public **funding** and **financing** requirements
Streamlining R&D – A phase-gate process for innovation

- Model/starting point – Wave Energy Scotland
- EU “vessel” – Horizon 2020 WP 2018-2020

Demonstration farms – an investment fund for Ocean

- Model/starting point – modified Scottish REIF
- EU “vessel” – EFSI Investment Platform
  - European Fund for Structural Investment (Juncker Plan)
  - Very similar to the OEF Roadmap Investment Fund
Background and EU “vessels”

Demonstration farms – Insurance Fund

- Model – none, never been done before
- EU vessel?
  - NER 300 Leftovers – EC wants to spend the money fast
  - Horizon 2020 – would hamper financing earlier TRLs
  - Could be a sub-part of an investment platform?

De-risking environment and consenting

- No model – Best practices
- EU vessel – EU Maritime and Fisheries Fund
  - => DG MARE putting together a funding programme for environment and consenting in ocean energy
Achievements

Phase-gate:
- H2020: €20m for phase-gate for wave energy

Investment fund
- Improvements to InnovFin EDP
- EC pipe-line study on “Investment Platform”

Insurance and Guarantee Fund
- Discussions advancing in EC and EIB

De-risking environment and consenting
- Results of DG MARE market study end 2017
- DG MARE will fund 2 environmental studies
Roadmap recommendations recognised

SET-Plan Temporary Working Group on Ocean Energy

- Cooperation and coordination between MS and EC
- Establish phase-gate procedure
- Discussing on possible financing for Investment fund and for Insurance and Guarantee fund
Thank you