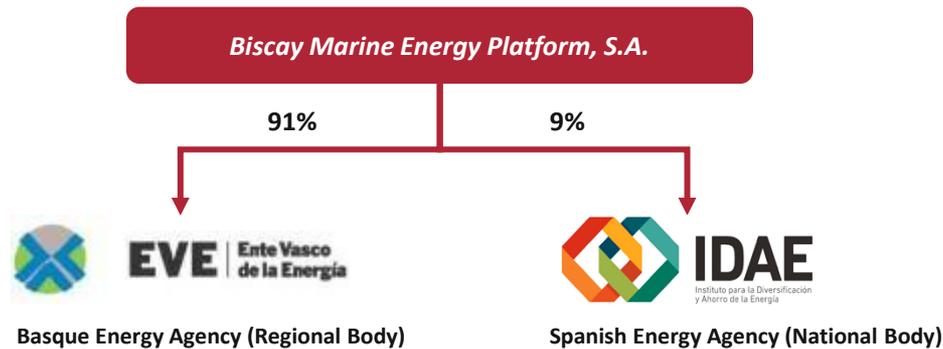


Biscay Marine Energy Platform, *bimep*



MANAGING BODY

- Biscay Marine Energy Platform, S.A.
 - Established in December 2011
 - To develop, install, operate and manage the *bimep* facility.
- The development and construction of this infrastructure amounted a total investment of €20 million.



Biscay Marine Energy Platform



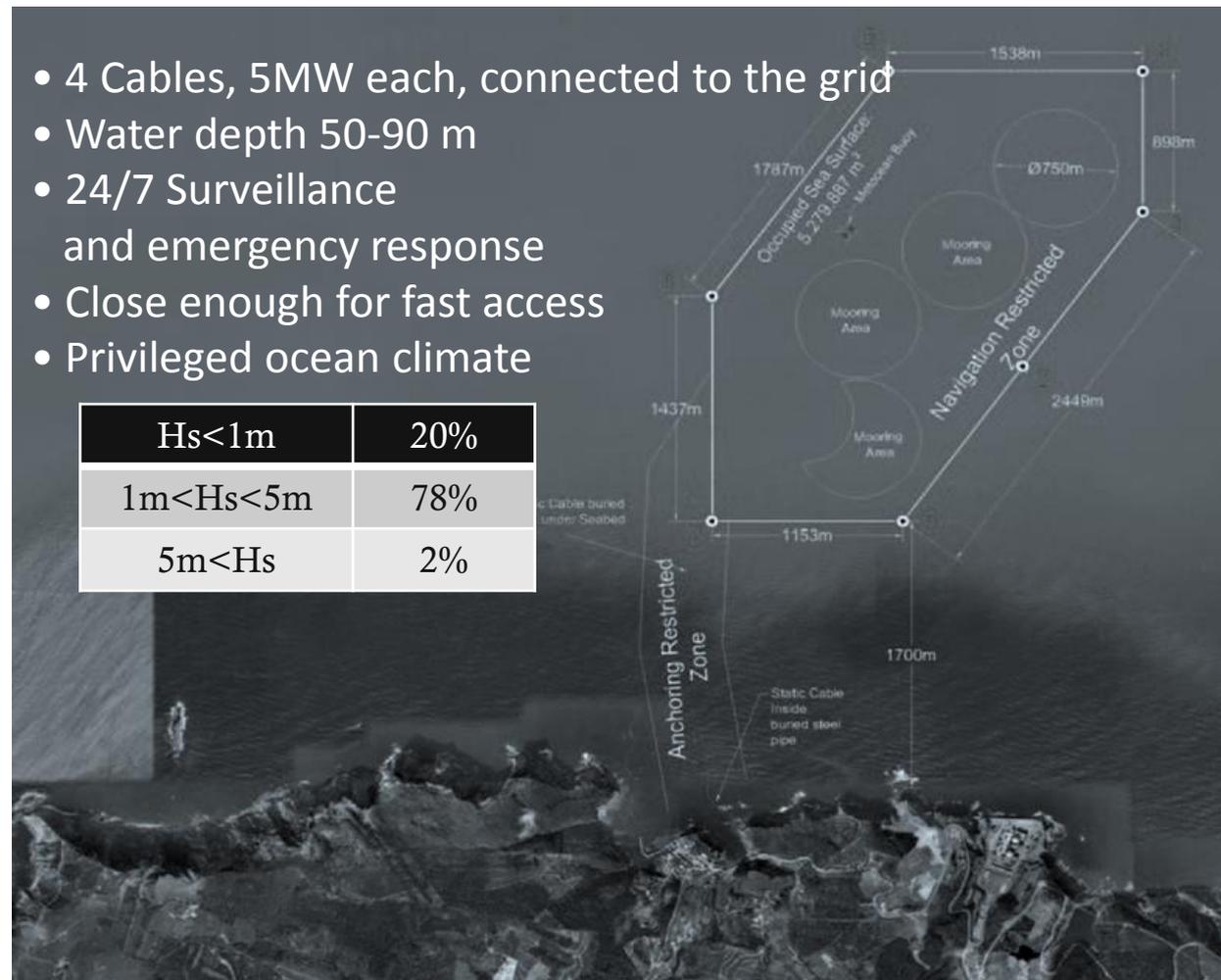
A highly industrialized and dynamic region of Europe



Open sea test centre

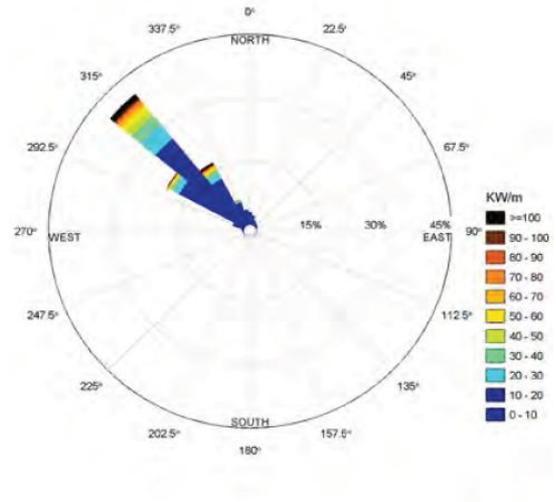
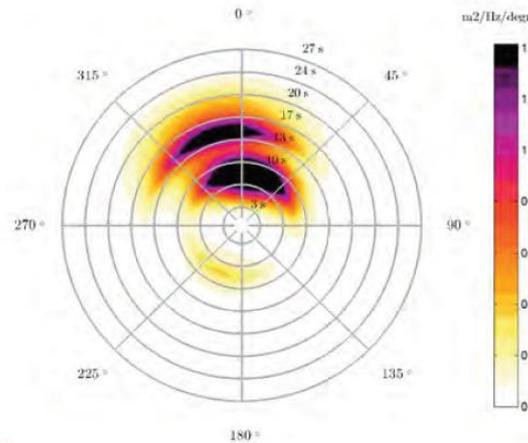
- 4 Cables, 5MW each, connected to the grid
- Water depth 50-90 m
- 24/7 Surveillance and emergency response
- Close enough for fast access
- Privileged ocean climate

Hs<1m	20%
1m<Hs<5m	78%
5m<Hs	2%



RESEARCH CHARACTERISATION

Example of a composed spectrum in the study area. Three different spectral components are observed: one wind swell from the NNE, one swell from the NNW and one sea from the SSW.



Mean annual wave power rose at the BiMEP buoy location.

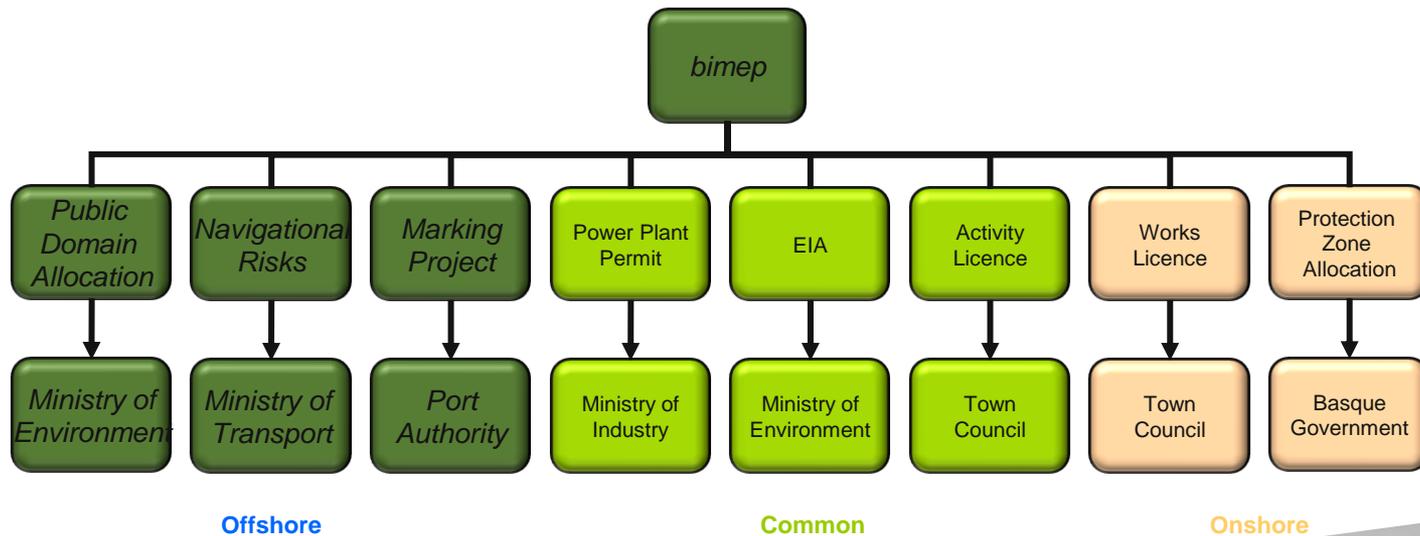
Return Period (yrs)	1	10	50	100	200
<i>H_s</i> (m)	6,54	8,39	9,68	10,23	10,79
<i>95% confidence interval</i>	[6,23-6,84]	[7,67-9,09]	[8,6-10,75]	[8,99-11,47]	[9,39-12,19]
<i>T_e</i> (s)	14,78	16,51	17,72	18,24	18,76
<i>95% confidence interval</i>	[14,5-15,1]	[15,9-17,13]	[16,79-18,64]	[17,18-19,29]	[17,57-19,95]

Return Level estimates of *H_s* and *T_e*.

OTHER ASPECTS

Pre-permitted test site

- Minimum red tape
- *bimep* liaises with and reports to the authorities (before and after the trials)



High safety standards

- **Risk based approach to identifying potential risks**
- **Preventive measures**
 - Cardinal buoys according to IALA
 - SCADA system to monitor WECs' position and alarms
 - Surveillance of the area (by means of personnel, video and rapid intervention boat)
 - Tow boats available 24/7 for emergencies
- **Guidance on Safety Considerations for the installation of MREDs at *bimep***
 - Developers to provide a detailed risk assessment and full documentation
- **Protocol to Respond to Navigational Risks Incidents**



ALLIANCE WITH IH CANTABRIA

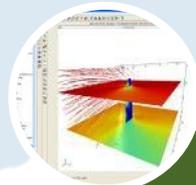


OUR PROPOSAL | **TRL+**

Our joint technological offer covers the life cycle of MRE new concepts:

- Metocean conditions assessment
- Advanced numerical models
- Commission and decommission plans
- Operation and Maintenance
- Techno-economical feasibility assessment

01 >



TRL 1 - 3

Short and long term metocean condition assessment, Advanced numerical models, Design Engineering, techno economic feasibility

02 >



TRL 4 - 5

Concept validation, Small and large scale testing, numerical model calibration/validation

03 >



TRL 6 - 8

Proof of concept, sea trials, detailed monitoring, advanced engineering

Installation strategies, plan, O&M Business model assessment...

04 >



TRL 9



BASQUE COUNTRY VALUE CHAIN



DESIGN AND ENGINEERING OF WAVE GENERATION SYSTEMS



TESTING AND EXPERIMENTATION INFRASTRUCTURES



KNOWLEDGE/R&D PLAYERS



OUR FIRST WEC

- OCEANTEC



- 3 year trials starting this summer
 - The last 2 under Open Sea Experience to Reduce Wave Energy Cost, OPERA, project (H2020)



An excellent place to get your feet wet

Thank you very much

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