Atlantic Stakeholder Platform Conference

Knowledge clusters to drive investment and employment

Marine South East (UK)
Pole Mer Bretagne Atlantique (FR)
OCEANO XXI (PT)
Campus do Mar (ES)

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Workshop Content

• Introduction: clusters & the blue economy
  – Jonathan Williams (MSE)
• Growth in offshore renewable energy
  – Phil Monbet (PMBA)
• Growth in offshore aquaculture
  – Carla Domingues (OCEANO)
• Skills in entrepreneurship and innovation
  – Cristina Quelle (Campus do Mar)
• Open discussion
  – Facilitated by Jonathan Williams
• Summary conclusions & actions
Introduction:
How cluster organisations can drive investment in the Blue Economy

Jonathan Williams
Marine South East (UK)

Atlantic Action Plan Priorities

- Promote entrepreneurship & innovation
  - Sharing knowledge
  - Enhancement of competitiveness and innovation capacities
  - Fostering adaptation and diversification
    - Especially fisheries & aquaculture
- Protect, secure and develop the potential of the Atlantic marine and coastal environment
  - Improving maritime safety & security
  - Exploring and protecting marine waters and coastal zones
  - Sustainable management of marine resources
    - Especially seabed mining & blue biotech
  - Exploitation of the renewable energy potential
- Improve accessibility and connectivity
- Create a socially inclusive and sustainable model of regional development
Key Question

- How to achieve the high level of business engagement needed to attract investment and job creation?

Future Markets

<table>
<thead>
<tr>
<th>Value-chain markets</th>
<th>Market categories</th>
<th>Market segments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vessel construction, propulsion &amp; fuels</td>
<td>Transport &amp; logistics</td>
<td>Ports &amp; logistics</td>
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<tr>
<td>Marine equipment &amp; instrumentation</td>
<td>Leisure</td>
<td>Leisure craft, marinas</td>
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<tr>
<td>Marine autonomous systems</td>
<td>Defence &amp; security</td>
<td>Cruise</td>
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<tr>
<td>Maritime ICT ('Smart Ocean')</td>
<td>Energy resources</td>
<td>Surveilliance</td>
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<tr>
<td>Marine &amp; maritime services</td>
<td>Living resources</td>
<td>Coastal protection</td>
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<td></td>
<td>Mineral resources</td>
<td>Eco-systems</td>
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<tr>
<td></td>
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<td>Oil &amp; gas</td>
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<td>Offshore Wind</td>
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<td></td>
<td>Wave &amp; tidal</td>
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<td></td>
<td>Biofuels</td>
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<tr>
<td></td>
<td></td>
<td>Fishing</td>
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<tr>
<td></td>
<td></td>
<td>Aquaculture</td>
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<tr>
<td></td>
<td></td>
<td>Blue biotech</td>
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<tr>
<td></td>
<td></td>
<td>Aggregates</td>
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<tr>
<td></td>
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<td>Seabed mining</td>
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</tbody>
</table>

Mature | Growth-phase | Pre-development
**Clusters as Catalysts for Blue Growth**

- Cluster organisations can orchestrate new market-led projects and consortia
- Clusters can influence all strands of the triple helix:
  - Business (large & SMEs)
  - Science base
  - Public authorities
- Cluster collaboration across the Atlantic seabasin can exploit specialisations and share knowledge
  - Identify strengths along value chain

**Business opportunities:**
1) Map new markets & supply chains
2) Identify key buyer needs
3) Introduce SMEs to buyers

**Innovation:**
1) Define technology roadmaps
2) Manage collaborations to transfer knowledge
3) Influence RTD priorities

**Skills:**
1) Identify skills gaps
2) Make apprenticeships attractive to SMEs
3) Share good practices

**Finance:**
1) Enable cost-sharing
2) Reinforce case for investment
3) Peer-to-peer exchange

**Atlantic Network of Cluster Organisations**

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**Maritime Value Chains**

**Planning & feasibility**
- FEED & procurement:
  - Design, engineering, specification, contracting
- Feasibility & risk:
  - Environmental risk assessment, financial, consenting
- Modelling & surveying:
  - Resource assessment, physical & biological surveys

**Design & engineering**
- Main modules:
  - Structure, mooring system, power train, export system, onshore facility
- Sub-systems:
  - Sub-structures, machinery, cable & terminations, controls & umbilicals, pipelines & risers
- Components & materials:
  - Instrumentation, valves, fittings, connectors, composites

**Construction**

**Installation & operation**

**Decommission & EOL**
- Marine operations:
  - Specialist vessels, intervention planning
- Infrastructure:
  - Support fleet, port facilities, repair logistics
- Availability support:
  - Condition monitoring, inspection, maintenance

**Maritime Industrial & Science Base**
- Vessels & marine systems
- Autonomous systems & robotics
- RTD expertise & facilities
- Maritime ICT & big data
- Maritime services & advanced skills
What Next?

• Build on recent & current activities:
  – REMCAP Regions of Knowledge project (www.remcap.eu)
    • Building innovation activities in: Seabed anchoring; novel fuels; offshore aquaculture; autonomous systems
  – Atlantic Power Clusters Interreg project
  – Others

• Create market-led Atlantic project consortia that:
  – Offer clear commercial opportunities to firms
  – Draw on specialist expertise & knowledge across the sea-basin
  – Define specific support measures needed:
    • Research, facility access, training, financing, policy measures
  – Map onto H2020, ESIF, COSME and other programmes

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Opportunities for investment & growth in offshore renewable energy

Phil Monbet (PhD)
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1. A favorable context

One goal: become a low carbon economy

- Climate change issues
- Rising energy demand
- Increasingly scarce fossil fuels at fluctuating prices

20 – 20 – 20 targets (greenhouse gas emissions reduction, renewable production, improve energy efficiency)

OCEAN ENERGY is one of the 5 pillars from the BG Strategy

- Stimulate technological innovation
- Enhance Commercial activities
- Increase competitiveness
### 2. Where are we now?

*On the Atlantic European coastal area*

<table>
<thead>
<tr>
<th>Country</th>
<th>Currently Installed</th>
<th>Target 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ireland</td>
<td>25 MW</td>
<td>555 MW</td>
</tr>
<tr>
<td>UK</td>
<td>3653 MW</td>
<td>4200 MW</td>
</tr>
<tr>
<td>France</td>
<td>---</td>
<td>6000 MW</td>
</tr>
<tr>
<td>Spain</td>
<td>---</td>
<td>3000 MW</td>
</tr>
<tr>
<td>Portugal</td>
<td>---</td>
<td>27 MW</td>
</tr>
</tbody>
</table>

**TARGET 2020**

- **IRELAND**: 555 MW, 16% of renewables
- **UK**: 4200 MW, 15% of renewables
- **FRANCE**: 6000 MW, 23% of renewables
- **SPAIN**: 3000 MW, 20% of renewables
- **PORTUGAL**: 27 MW, 31% of renewables
2. Where are we now?

On the Atlantic European coastal area

- **IRELAND**
  - **Arklow Bank** project
    - **25 MW**
    - Operational
  - Westwave project / SMW
    - Design and planning phase

- **UK**
  - Seagen Convertor
    - **1.2 MW**
    - Operational
  - Swansea tidal lagoon / 240 MW
    - Planning phase

- **FRANCE**
  - Tidal plant La Rance
    - **240 MW**
    - Operational
  - Paimpol Brehat / 2 MW
    - Testing phase
  - Ocean Power Tech. OPT
    - Design phase

- **SPAIN**
  - Wave plant Mutriku
    - **300 kW**
    - Operational

- **PORTUGAL**
  - Wave plant PICO
    - **700 kW**
    - Operational

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**MAIN R&D INITIATIVES**

- **IRELAND**
  - MAREI Cluster of research, development and innovation for MRE
    - **29 M€**
  - Beaufort Institute UCC
    - Supporting development and innovation in the maritime and energy fields
  - AMETS Belmullet Test site
    - Prototype dev. Funds (SEAI)

- **UK**
  - Offshore Renew. Energy Catapult
    - Triple helix approach to bring new products
    - **46 M GBP – 5 yrs**
  - PRiMaRE Peninsula Research Institute for MRE
  - Wave Hub
    - Test site in Cornwall
    - 4 berths / 30 MW / 40 M GBP

- **FRANCE**
  - FRANCE ENERGIES MARINES Research Institute on MRE
    - **34 M€ – 10 yrs**
  - PRiMaRE R&D funding Innovation Clusters Regional dev. Agencies ADEME
  - SEM-REV
    - Test site 4 berths / --- MW / 11 M€

- **SPAIN**
  - OCEAN Lider Consortium of companies with strong academic capability
    - **30 M€**
  - BIMEP
    - Test site 4 berths / 20 MW / 20 M€

- **PORTUGAL**
  - WAVEC Private organization to develop offshore renewable energy
  - INEGI Interface Institution between University and Industry, oriented to R&D, Innovation and Technology Transfer
  - TECNALIA Research & Innovation
  - INEGI R&D institution oriented to respond to the needs of society and enterprises
3. Key innovations priorities

Overall: Cutting energy costs by innovating (by 50 -75%)
- Scale of array installation
- Supply chain optimisation
- Appropriate financing

R&D activities dedicated to:
1. First arrays
   - Cabling
   - Device interactions
   - Multi-array deployment
2. Technologies
   - New and better concept (wave)
   - Installation (drilled structures)
   - O&M activities (faster / lower specs – retrieval operations)
   - wet connections

4. Size of opportunities

Hard to tell! as it depends of:
- Policies (highly policy dependent) / targets raises risks and lower returns
- high capital expenditure requirements (risky investments)
- Regulatory framework and Incentives (FiTs…)

But…
Atlantic Stakeholder Platform Conference

Knowledge clusters to drive investment and employment

Opportunities for investment & growth in aquaculture

Carla Domingues
Porto
20th January 2014
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Aquaculture demands

- Global aquaculture production has grown by an average 8% per year for the last decade; production within the EU has decreased by approximately 10%.

- Europe requires a sustainable aquaculture sector capable of contributing to the current and future global demands for seafood.

- Lack of available maritime space for aquaculture activities should be overcome by identifying the most suitable sites.

- The production of farmed aquatic animals and the development of farming equipment must be supported by the most advanced R&D as well as innovative technology.

Innovation Capacity

To value the sea as a resource by developing a set of activities, products and services:

- Promote networking activities between companies and R&D partners.
- Stimulate new projects ideas and new business opportunities.
- Support and reinforce international cooperation.

- Open days and Info days
- Business Conventions
- Exhibition Forums
- Participation in Entrepreneurial Missions
- Participation in National and International Networks and Projects
International Cooperation

National and International Projects

Resource Efficient Maritime Capacity

FP7 REGIONS OF KNOWLEDGE

Imagine the marine bio-resources' sector for 2014-2020
INTERREG IVB

Cooperation in Fisheries, Aquaculture
and Seafood Processing

FP7 ERANET
Action lines - Aquaculture

Support research, development, innovation and business

- **Offshore technology** *(i.e. cage design, construction materials), maintenance and operations (i.e. technology for remote fish husbandry, feeding control software, fish processing, monitoring of water quality)*

- R&D strategy, technology capacity, innovative solutions and business model for **multi-use off-shore platforms**

- **Integrated multi-trophic aquaculture** (IMTA) systems such as finfish-seaweed-bivalves, as part of the solution for bio mitigation

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Action lines - Aquaculture

Support research, development, innovation and business

- Studies on the potential of **new high valued species** for offshore facilities towards supply diversification (especially for fish processing)

- Studies on **feeding formulation**, fish nutrient budget and waste dispersion, to maintain high performance and **reduce environmental impact**

- Aquaculture production **best practices**, logistic requirements and safer framework for workers in fish farms

- Improving **processing, labelling, traceability and certification**
Building cross-border educational and training programmes supporting entrepreneurship and innovation

Cristina Quelle
Campus do Mar (ES)
Efforts in Three Areas:

- Targeted Investment
- Increasing Research Capacity
- Higher Skills → Need of cross-border educational and training programmes supporting entrepreneurship and innovation

Priority 1:

Promote entrepreneurship and innovation

- **Knowledge sharing** Networking, cooperative research, knowledge transfer through maritime clusters/platforms..

- **Enhancement of competitiveness and innovation capacities** → cross border educational and training programmes, specialized skill training...

- **Fostering adaptation and diversification in the Atlantic Area**
Atlantic clusters to implement Atlantic Action Plan: The Campus do Mar experience

**International Campus of Excellence** consisting of the aggregation of universities, research Centres, institutes and technology platforms of the Euroregion Galicia-N of Portugal.

**Cross-border network** of research, teaching and technology transfer units in the field of Marine Science and Technology in order to provide industry with the best tools to competing on a global scale.
Atlantic clusters to implement Atlantic Action Plan: The Campus do Mar experience

DOMINIQUE FORAY

Fisheries and the marine industry in Galicia, Spain, are again not a smart specialisation, even if this sector is economically important in this region. However, the creation of a university in Vigo (Campus do Mar) to develop applied science and technological solutions to improve the operational efficiency and productivity of traditional fisheries has given some kind of smart specialisation if a population of firms specialising in the development of these solutions emerges and grows from the merger of the traditional sector and certain applied science domains (ocean engineering, chemical engineering, ICT).

DO*MAR International PhD programme

- Multidisciplinary training in the marine sciences with international projection
- 6 universities from Spain and Portugal
- The sea from a global and cross-border perspective
- Advanced courses taught by the best specialists
Thanks for your attention

www.campusdomar.es

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Open Discussion

Panel:
Jonathan Williams (facilitator)
Phil Monbet
Carla Domingues
Cristina Quelle

Feedback to: admin@mseuk.org