The Portuguese Maritime Mega Cluster: Assessment and Innovation

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The Portuguese Maritime Mega Cluster: Assessment and Innovation

Summary

✓ Introduction
✓ The strategic value of Portuguese sea
✓ Cluster formation: input-output methodology in maritime sector
✓ Analysis of maritime activities in Portugal
✓ Mega cluster sectorial assessment
✓ Inter sectorial relations in the mega cluster
✓ Analysis of technical coefficients
✓ Analysis of indirect effects
✓ Multiplier effects of the maritime activities
✓ Conclusions
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INTRODUCTION

- For centuries, the sea was perceived as a source of infinite resources.
- During 15\textsuperscript{th} century, the maritime jurisdiction began to get shape and the “territorial sea” concept.
- Alfred Mahan (\textit{The Influence of Sea Power upon History} 1890), sustained the idea of naval power superiority over land power.
- In the 20\textsuperscript{th} century, the advance of science and technology leaded to new policies.
- During the current century, sea will be given a particular emphasis, especially due to resource scarcity.
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THE STRATEGIC VALUE OF PORTUGUESE SEA

• Portugal’s geostrategic Atlantic position;
• The presence of the maritime element was a key factor across Portugal’s History;
• Portugal has at its disposal the 11th biggest surface of jurisdictional waters;
• In this way, the maritime area under Portuguese jurisdiction:
  – it will be bigger than India’s land surface;
  – it will cover 40 times more territory than Portugal’s land space;
  – it will represent more than 80% of EU 27 member states terrestrial area.
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THE STRATEGIC VALUE OF PORTUGUESE SEA
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THE STRATEGIC VALUE OF PORTUGUESE SEA

~ 2,150,000 km²
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**CLUSTER SECTORS**

European Commission Maritime Cluster

10 maritime sectors:

- shipping
- ports
- marine equipment
- shipbuilding
- offshore
- dredging
- fishery
- maritime services
- pleasure craft

Key facts of the 2001 Valencia Plenary
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**CLUSTER STRUCTURE**

- Research and Development Institutions
- Suppliers/Producers/Buyers
- Product Markets: National and International
- Support Organizations: Services, Logistics, Financial, etc.
- Infrastructures and Technologies
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**CLUSTER FORMATION**

**Learning-knowledge-innovation**

Identify:
- Management
- Entrepreneurs
- Governments
- Factors of collective responsibility

**Support organizations**

**Services**

**Opportunities**

**R&D institutions, university, education**

**Knowledge**

**Suppliers**

**Producers**

**Buyers**

**Complements**

**Global market, Technology**
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**INPUT-OUTPUT METHODOLOGY**

- **Domestic Products** (from the cluster)
- **Final Product Demand** (Exports, Families, Government Spending, Investments, etc.)

**Domestic Inputs**

**Import Inputs**

**Basic Inputs** (Labor, Capital, Land,)

**Import Products**
• Sea Input/Output Matrix (SIOM). The following sectors were considered separately:
  – Fisheries and aquaculture
  – Preparation and storage of fish, crustaceans and molluscs
  – Shipbuilding
  – Ship repair
  – Transport by water
  – Auxiliary transport activities by water (maritime ports)
  – Activities of recreational boating and marinas
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MEGA CLUSTER SECTORIAL ASSESSMENT

Turnover, GVA and Intermediate Consumption
MEGA CLUSTER SECTORIAL ASSESSMENT

Exports and Employment
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MEGA CLUSTER SECTORIAL ASSESSMENT

Number of enterprises
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MEGA CLUSTER SECTORIAL ASSESSMENT

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INTER SECTORIAL RELATIONS IN THE MEGA CLUSTER

Commercial Relations Inside the Mega cluster (in millions of euros)
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### MEGA CLUSTER SECTORIAL ASSESSMENT

<table>
<thead>
<tr>
<th>National GVA (M€)</th>
<th>Direct Value - 7 sectors</th>
<th>Estimated Value – remaining sectors</th>
<th>Total - Sea</th>
</tr>
</thead>
<tbody>
<tr>
<td>149.311,1</td>
<td>1.749,7</td>
<td>2.446,7</td>
<td>4.196,5</td>
</tr>
<tr>
<td>100%</td>
<td>1,17%</td>
<td>1,64%</td>
<td>2,81%</td>
</tr>
</tbody>
</table>

**GVA (SIOM, 2008)**
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## ANALYSIS OF TECHNICAL COEFFICIENTS

<table>
<thead>
<tr>
<th>Homogeneous Economic Branches</th>
<th>Fisheries and aquaculture</th>
<th>Preparation and storage of fish, crustaceans</th>
<th>Shipbuilding</th>
<th>Ship Repair</th>
<th>Transport by Water</th>
<th>Auxiliary Transport Activities by Water</th>
<th>Activities Recreational boating and marinas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fisheries and aquaculture</td>
<td>0.05</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparation and storage of fish, crustaceans</td>
<td>0.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ship building</td>
<td></td>
<td></td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ship Repair</td>
<td>0.02</td>
<td></td>
<td></td>
<td>0.09</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport by water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.14</td>
<td></td>
</tr>
<tr>
<td>Auxiliary Transport Activities by Water</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.15</td>
<td>0.01</td>
</tr>
</tbody>
</table>

### Technical Coefficients Matrix

*Orange* – strong relation; *green* – average relation; *blue* – weak relation
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ANALYSIS OF INDIRECT EFFECTS

<table>
<thead>
<tr>
<th>Homogeneous Economic Branches</th>
<th>Fisheries and aquaculture</th>
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<th>Auxiliary Transport Activities by Water</th>
<th>Activities Recreational boating and marinas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fisheries and aquaculture</td>
<td>1,06</td>
<td>0,03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparation and storage of fish, crustaceans</td>
<td>1,14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ship building</td>
<td></td>
<td></td>
<td>1,01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ship Repair</td>
<td>0,02</td>
<td></td>
<td>1,09</td>
<td>0,01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport by water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary Transport Activities by Water</td>
<td>0,01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0,17</td>
<td>1,01</td>
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<tr>
<td>Activities Recreational boating and marinas</td>
<td>0,01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Direct and indirect interdependency coefficients relations

(Orange – strong relation; green – average relation; blue – weak relation)
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### ANALYSIS OF INDIRECT EFFECTS

<table>
<thead>
<tr>
<th>Homogeneous branches</th>
<th>Fisheries</th>
<th>Fish Preparation</th>
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<th>Ship Repair</th>
<th>Transport by Water</th>
<th>Ports</th>
<th>Boating / Marinas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Products subject to type-1 multiplier (dir+indir)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevant Number of Products (Coefficient &gt; 0,01)</td>
<td>13</td>
<td>14</td>
<td>9</td>
<td>11</td>
<td>21</td>
<td>7</td>
<td>24</td>
</tr>
<tr>
<td>Highly Relevant Number of Products (Coefficient &gt; 0,05)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Number of Products Significantly Influenced**
(direct + indirect effects)
## ANALYSIS OF EFFECTS

<table>
<thead>
<tr>
<th>Homogeneous branches</th>
<th>Fisheries</th>
<th>Fish Preparation</th>
<th>Ship building</th>
<th>Ship Repair</th>
<th>Transport by Water</th>
<th>Ports</th>
<th>Boating and Marinas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type 1</strong></td>
<td>1,459</td>
<td>1,625</td>
<td>1,447</td>
<td>1,591</td>
<td>2,066</td>
<td>1,564</td>
<td>1,769</td>
</tr>
<tr>
<td><strong>Indirect Effect</strong></td>
<td>0,459</td>
<td>0,625</td>
<td>0,447</td>
<td>0,591</td>
<td><strong>1,066</strong></td>
<td>0,564</td>
<td>0,769</td>
</tr>
<tr>
<td><strong>Type 2</strong></td>
<td>2,588</td>
<td>2,343</td>
<td>2,509</td>
<td>2,751</td>
<td><strong>3,090</strong></td>
<td>2,662</td>
<td>3,075</td>
</tr>
<tr>
<td><strong>Induced Effect</strong></td>
<td>1,129</td>
<td>0,717</td>
<td>1,061</td>
<td>1,160</td>
<td>1,025</td>
<td>1,097</td>
<td><strong>1,306</strong></td>
</tr>
</tbody>
</table>

### Multipliers
## MULTIPLIER EFFECTS OF THE MARITIME ACTIVITIES

<table>
<thead>
<tr>
<th>Maritime Sectors</th>
<th>Multiplier – Type - 1</th>
<th>Multiplier – Type - 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Relevant &gt; 0,01</td>
<td>Highly relevant &gt; 0,05</td>
</tr>
<tr>
<td>Fisheries and Aquaculture</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>Preparation and Storage</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>Shipbuilding</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Ship Repair</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Transports by Water</td>
<td>21</td>
<td>5</td>
</tr>
<tr>
<td>Auxiliary Transport Activities</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Boating / Marinas</td>
<td>24</td>
<td>3</td>
</tr>
</tbody>
</table>

Number of Products/Multipliers Type-1 and Type-2
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MULTIPLIER EFFECTS OF THE MARITIME ACTIVITIES

Multipliers: Type – 1 and Type - 2
CONCLUSIONS

• Sectors of maritime activity represent only 2 to 3% for the national economy;

• Technical coefficients allowed to verify a low level of intersectorial linkages;

• Interdependence coefficients, confirm the absence of strong linkages;

• Analysis of direct, indirect and induced impacts (type 1 and type-2), verify the relevance to the transports by water, followed by boating and marinas;

• Emergence of new maritime sectors (mining; carbon storage; wave and tide energy; wind energy), which can have, in the short run, a significant impact over the national economy.
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Thank you for your attention