

# STUDY ON DEEPENING UNDERSTANDING OF POTENTIAL BLUE GROWTH IN THE EU MEMBER STATES ON EUROPE'S ATLANTIC ARC

CLIENT: DG MARITIME AFFAIRS AND FISHERIES

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## DRAFT FINAL COUNTRY PAPER

## IRELAND

18<sup>TH</sup> OCTOBER 2013



# Contents

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<b>Preface .....</b>	<b>1</b>
<b>0. General overview.....</b>	<b>2</b>
Country overview:.....	2
Coastal regions:.....	3
<b>1. Marine and maritime economic activities .....</b>	<b>6</b>
1.1. from BIM, 2012: Annual Aquaculture Survey 2012. Overview of relevant maritime economic activities in a Member State .....	6
1.2. Breakdown of maritime economic activities at regional level (NUTS 1 or NUTS 2) and allocation to different sea-basins .....	28
<b>2. Listing of the 7 largest, fastest growing and most promising marine and maritime economic activities .....</b>	<b>31</b>
2.1. Listing and ranking the largest marine and maritime economic activities.....	31
2.2. Ranking order for the 7 fastest growing marine and maritime economic activities over the 3 past years.....	31
2.3. Ranking order of the 7 most promising marine and maritime economic activities.....	32
<b>3. Identification of the most innovative components of Blue Growth .....</b>	<b>35</b>
3.1. Assess the innovation score of the maritime economic activities / sectors .....	35
3.2. Assessment of innovation reports compiled at national level .....	36
<b>4. Identification and analysis of maritime clusters .....</b>	<b>37</b>
4.1. Maritime clusters in Ireland .....	37
4.2. Cluster analysis .....	38
<b>5 Analysis of measures, policies and strategies to stimulate growth and good practices in Ireland.....</b>	<b>47</b>
<b>Annex I – Detailed description of the sources and the methodology on maritime economic activities.....</b>	<b>58</b>
<b>Annex II - Compound Annual Growth Rates (CAGR) of the maritime economic activities.....</b>	<b>69</b>

## Preface

This country fiche forms part of the Atlantic Arc sea basin study. Parallel sea-basin studies are being carried out on the North-Sea and the English Channel and the Mediterranean, Adriatic and Ionian and Black Sea and the Baltic Sea. The data definitions and template are adapted in such a way that exchange between the different sea-basins is made possible.

This country fiche contains all information that has been collected by the country editors. Results will be integrated in a seas basin report in which also a number of maritime economic activities are retained for in-depth analysis. This analysis and other analysis at a sea-basin level may provide further insights that can be incorporated in the country fiches at a later stage.

Comments received up to date have been incorporated in the present draft. A final version will be prepared based on the last round of comments. This final version will also be designed and edited to provide an easily accessible document.  
country editors

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## 0. General overview

### Country overview:

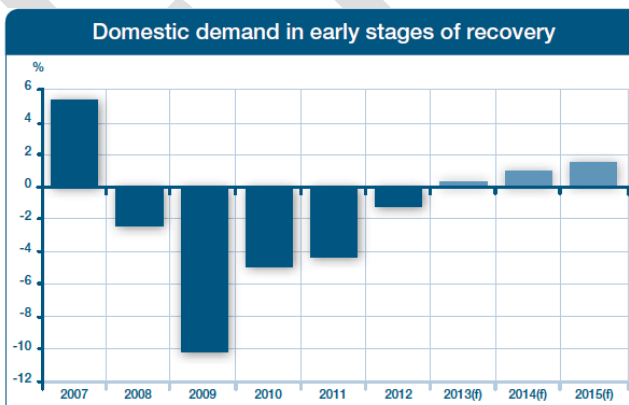
The Irish economy recorded a second consecutive year of GDP growth of 0.9% in the first half of 2013. Despite the future economic outlook remaining uncertain and with some worrying signs for the Irish economy, the overall forecast remain positive with a growth rate of 1% in 2013 and increasing to 3% in 2015. This constitutes one of the highest growth rates in the Eurozone (Germany in the same period grew by 0.6%, while the GDP of the Eurozone as a whole fell by -0.3%).

Picture Source: Bank of Ireland, Ireland overview July2013



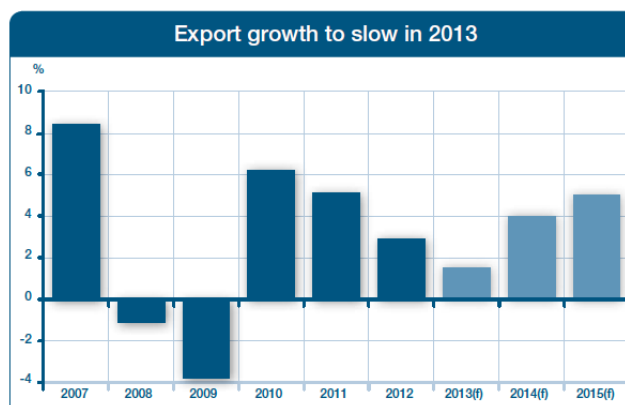
On the back of economic weakness of Ireland's biggest trading partners the growth in exports grew by just 0.5% in the second half of 2012, while imports expanded by 2.7%. The domestic demand has partly compensated this slow growth in exports by growing in the second half of 2012 (by accumulative 1.7%) with this growth expected to continue in 2013. Industrial production has dramatically dropped as a consequence of a number of patent expirations since August 2012 hitting particularly hard the chemical and pharmaceutical sector. Government spending is expected to continue to decline (-2% in 2013) as austerity measures continue.

Picture Source: Bank of Ireland, Ireland overview July2013



Unemployment has continued to decline since the peak at the start of 2012 (15%) a trend that is to continue, while employment has started to also increase in the second half<sup>1</sup> of 2012 and is expected to continue to show signs of recovery in 2013 (growth of 0.2%). The continued net emigration that has started in mid 2009 is expected to continue, thus decreasing the pressures on the domestic labour market.

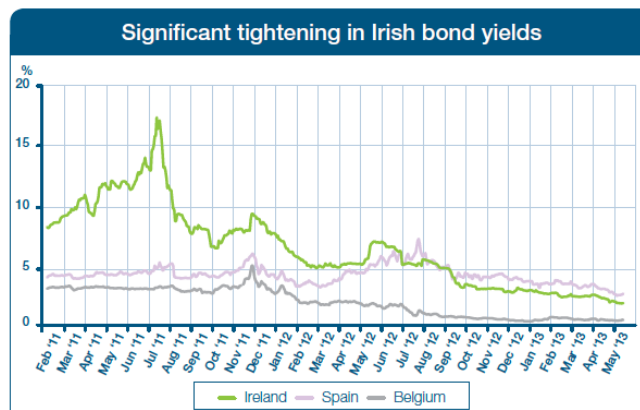
Picture Source: Bank of Ireland, Ireland overview July2013



<sup>1</sup> Employment figures recover more slowly than unemployment figures.

The government debt to GDP ratio is expected to peak in 2013 at 123% before falling to a more sustainable 110% by 2016. Due to the on-going austerity measures, structural reform and improving economic outlook, the yields on Irish bonds have been continuously falling to a manageable 2.2% on 5 year government debt. Such lower yields will have a further positive impact on the economy as businesses and consumers will be able to access loans at lower interest rates than in the peak in July 2011

Picture Source: Bank of Ireland, Ireland overview July2013

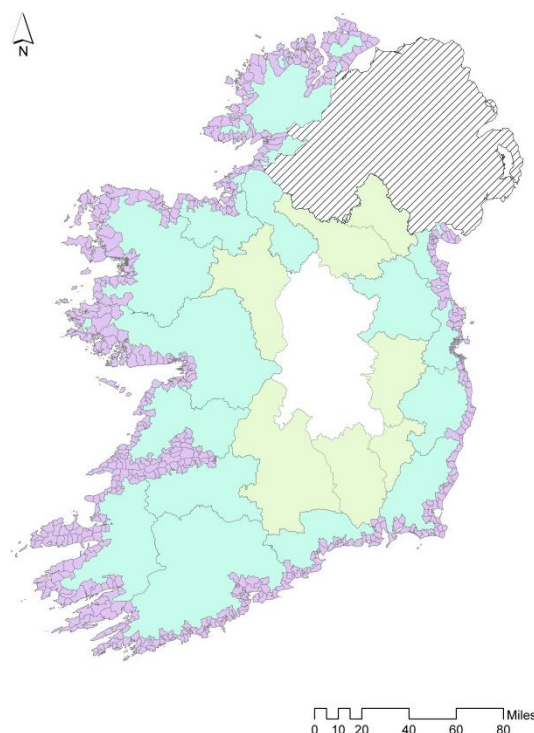


### Coastal regions:

Ireland being a coastal country has only a single region, which cannot be considered a coastal region (Midlands region). The purple special regions highlighted on the map illustrate the shoreline electoral districts. Beneath this (cream layer) are coastal counties, while beneath that still (in green) are the Eurostat defined NUTS3<sup>2</sup>.

Ireland is a truly maritime nation with around 2800km of shoreline and sovereign rights to over 900,000km<sup>2</sup> (10 times the size of the land area of Ireland)<sup>3</sup>. Being an island, Ireland receives 99% of the total volume of its traded goods by sea-based transport and approximately 95% of its value. In fact the GDP of Ireland's EU coastal (defined by NUTS3) regions accounts for 95% of all economic activity in the state in 2007. In 2009, the volume of trade by sea was highest with the UK (8 million tonnes), followed by the Netherlands (about 1.5 million tonnes), France (1.1 m tonnes) and Germany 0.9m tonnes).<sup>4</sup>

Figure 0.1 Coastal regions in Ireland



Coastal population living at 10km from sea amounts to 1,900,000 which represents 52.8% of total population<sup>5</sup>.

<sup>2</sup> Source: Hynes, S. and Farrelly, N. (2012). Defining standard statistical coastal regions for Ireland, Marine Policy, 36: 393–404.

<sup>3</sup> Ireland's Ocean Economy, SEMRU, December 2010

<sup>4</sup> IMDO, 2011: The Irish Maritime Transport Economist, Vol. 8.

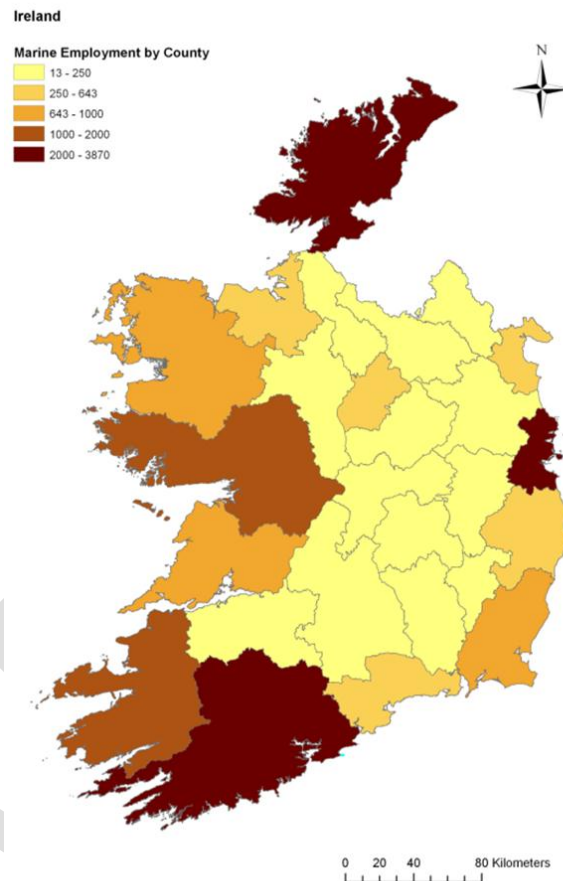
<sup>5</sup> Landscan Coastal population living at 20km from sea is 2,420,000m which is 67.2% of the total population.



In a study in 2007 the direct economic value of Irish Ocean economy was isolated and calculated.<sup>6</sup> It was estimated to be worth €1.44 billion or about 1% of the GDP, while the combined direct and indirect value of the sector was €2.4 billion.<sup>7</sup> The sector directly employed about 17,000 people. Compared to 2003 the sector saw (in 2007) a 34% increase in turnover, 6.5% rise in employment and 40% growth in direct gross value added (GVA).<sup>8</sup> This was however, during Ireland's boom years, which would have had a significant impact on especially shipping, tourism and leisure sectors.

The main ports in Ireland are located in :Dublin, Howth (near Dublin), Drogheda, Rosslare, Waterford, Cork, Baltimore, Shannon Foynes and Galway. This also reflects the main employment locations in ocean energy (see figure<sup>9</sup> below).

The sector is dominated by marine tourism and maritime transport (GVA of €453million and €329million respectively)<sup>10</sup>. Together they account for 54% of the sector's direct GVA. They are followed by: oil & gas, marine manufacturing and fishing as the five major sub sectors.<sup>11</sup> The graph below illustrates the proportion of the different sub-sectors within Ireland's ocean economy.



<sup>6</sup> updated figures due out from SEMRU shortly will indicate a reduction in the value of marine activity over the period 2007 to 2010 in line with the general economic picture in the country over that same period

<sup>7</sup> Ireland's Ocean Economy, SEMRU , December 2010

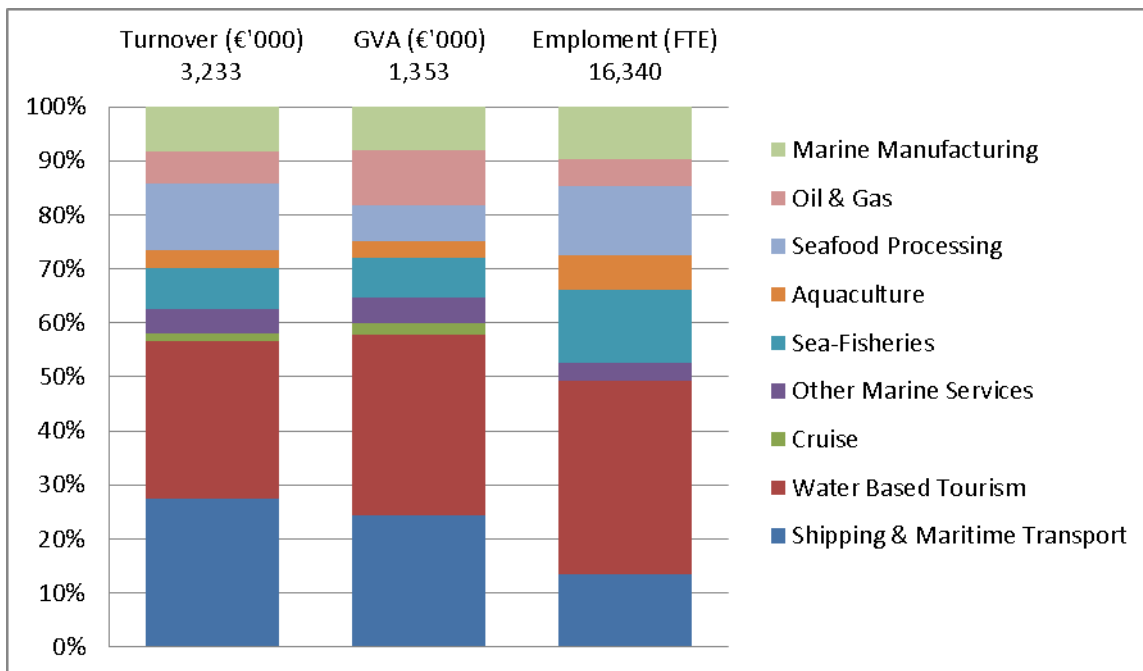
<sup>8</sup> Ireland's Ocean Economy, SEMRU , December 2010

<sup>9</sup> Source: SEMRU (2010). Ireland's Ocean Economy, SEMRU Report (of 2010, using 2007 data), NUI Galway, [http://www.nuigalway.ie/semru/documents/final\\_report\\_small.pdf](http://www.nuigalway.ie/semru/documents/final_report_small.pdf), ISBN-13: 978-0-9546835-6-2

<sup>10</sup> SEMRU (2011). Ireland's Ocean Economy, SEMRU Report, NUI Galway.

<sup>11</sup> Ireland's Ocean Economy, SEMRU , December 2010

**Figure 3 - Proportional Contribution of each category to the established Irish Marine Market**



Source: SEMRU (2011). Ireland's Ocean Economy, SEMRU Report, NUI Galway, [http://www.nuigalway.ie/semru/documents/final\\_report\\_small.pdf](http://www.nuigalway.ie/semru/documents/final_report_small.pdf), ISBN-13: 978-0-9546835-6-2

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# 1. Marine and maritime economic activities

## 1.1. from BIM, 2012: Annual Aquaculture Survey 2012. Overview of relevant maritime economic activities in a Member State

This section provides an overview of the main maritime activities and their related socio-economic impacts in **Ireland as a whole (NUTS 0) level**. These economic activities are analysed, described and updated according to the NACE rev. 2 classifications.

The analysis is carried out in two steps:

- The first step focuses on the collection of **quantitative data** on the maritime economic activities. As far as possible data are based on Eurostat and official national statistics, where relevant (or necessary) complemented with alternative secondary sources. The methodology is harmonised across the different parallel sea basin studies.
- The second step provides a **qualitative review** of the maritime activities and their status. The information presented builds on the data collected, supplemented with specific inputs and analysis by the country editors.

### Quantitative overview of maritime economic activities

Table 1 provides an overview of the most reliable data for each of the maritime economic activities<sup>12</sup>. More detailed information from all relevant sources is provided in **Annex I**. A separate Methodology Annex provides further explanation on the methodological assumptions and the underlying definitions that have been used.

There are several data gaps where information is simply unavailable. In the case of Ireland this has been a particular issue as it had the least amount of publicly available data on Eurostat out of all the countries studied. This has put a greater emphasis on the use of other sources (please see Annex I for further details on the origins of the sources).

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<sup>12</sup> The maritime economic activities are consistent with the activities discerned in the Blue Growth Study. In deviation to this study Shipbuilding and the Construction of Water projects are added as separate economic activities.



**Table 1 - Overview of relevant maritime economic activities in Ireland (NUTS-0)<sup>13</sup>**

Maritime economic activity		GVA (EUR, million)	Employment	Number of enterprises	Further indicators	Sources & References
<b>0. Shipbuilding</b>						
0.1	Shipbuilding and ship repair	7.1	155	40		Eurostat, data for 2010, ship repair (NACE 33.15) only. No data in Eurostat for NACE 30.11 (new building) and 3012 (Building of pleasure and sporting boats) for IE
0.2	Construction of water projects	4.3	17	23		Eurostat, data for 2010
<b>1. Maritime transport</b>						
1.1	Deep-sea /long haul shipping <sup>14</sup>	23.0	154	18		SEMRU; Ireland's Ocean Economy 2010 // 2007 data: includes GVA: shipping: 194, Port and maritime logistics 134; NACE 1.1.: 61.10 (61.10 : Sea and coastal water transport) 63.11 (Cargo handling), 63.22 (Other supporting water transport activities), 71.22 (Renting of water transport equipment) CSO – Annual Services Enquiry 2007, in: Ireland's Ocean Economy, 2010; Empl = FTEs
1.2	Short-sea shipping (incl. Ro-Ro)	282.9	1,886	226		SEMRU; Ireland's Ocean Economy 2010 // 2007 data: includes GVA: shipping: 194, Port and maritime logistics 134; NACE 1.1.: 61.10 (61.10 : Sea and coastal water transport) 63.11 (Cargo handling), 63.22 (Other supporting water transport activities), 71.22 (Renting of water transport equipment) CSO – Annual Services Enquiry 2007, in: Ireland's Ocean Economy, 2010; Empl = FTEs
1.3	Passenger ferry services	23.0	154	18		SEMRU; Ireland's Ocean Economy 2010
1.4	Inland waterway transport	n/a	n/a	n/a		Eurostat, data for 2010 (only NACE 50.40; no data in Eurostat on other NACE sectors relevant)
<b>2. Food, nutrition, health and eco-system services</b>						
2.1	Fish and fish processing for for human consumption <sup>15</sup>	258.5	6,391	399		JRC (fishing), Eurostat (fish processing), PRODCOM (share of human/animal), data for 2010. No data for NACE 46.38 wholesale and 47.23 retail available in Eurostat.
2.2	Catching fish for animal feeding <sup>16</sup>	n/a	n/a	n/a		JRC (fish processing), PRODCOM (share of human/animal), data for 2010 (share animal feeding is zero according to JRC)
2.3	Marine aquatic products	36.8	1,705 <sup>17</sup>	n/a		JRC, data for 2010 on GVA; employment data from BIM, 2012: Annual Aquaculture Survey 2012.

<sup>13</sup> Please note: according to our desk research, the availability of national statistics (publicly available) on the maritime economic activities seems to be more limited than compared to other EU Member States. Hence, in the table above, most reference is made to Eurostat data or 'alternative sources'.

<sup>14</sup> Please note that maritime commerce and insurance is not included in the maritime economic activity of deep-sea shipping. This economic activity is, to our knowledge, not covered via National Statistical Sources or Eurostat.

<sup>15</sup> Including processing and sale of fish.

<sup>16</sup> Please note that for Ireland, no Eurostat data was available for the NACE codes 03.11 (Marine fishing), 03.12 (Freshwater fishing) and 10.20 (processing and preserving of fish, crustaceans and molluscs).

<sup>17</sup> Please note: employment figures on marine aquatic products include those for salmon and trout, oyster, mussels and novel species. It excludes algae and seaweed. See also: BIM, 2012: Annual Aquaculture Survey 2012.

Maritime economic activity		GVA (EUR, million)	Employment	Number of enterprises	Further indicators	Sources & References
2.4	Blue biotechnology	8.7	185	n/a		SEMRU Company survey 2007, reported in: Ireland's Ocean Economy, 2010
2.5	Agriculture on saline soils	n/a	n/a	n/a		No activity in Ireland, sector data negligible
<b>3. Energy and Aquaculture</b>						
3.1	Offshore oil and gas	137.1	790	47		NACE 11.1. Based on CSO – Census of Industrial Production 2007; SEMRU Company Survey. In: Ireland's Ocean Economy, 2010
3.2	Offshore wind	4.4	101	n/a		SEMRU Company survey, reported in: Ireland's Ocean Economy, 2010
3.3	Ocean renewable energy	0.5	50	n/a		GVA based on: Morrissey, K. (2011). The Economic Opportunity of Ocean Energy for the Island of Ireland, MRIA, Ocean Energy Industry Forum 2011, covers whole renewable energy of 2 €m; expert judgement 0.25% on ocean ren. // empl: estimate of 5 FTE per MW in Ireland, in: Economic Study for Ocean Energy Development in Ireland. A report to the Sustainable Energy Authority of Ireland and Invest Northern Ireland. July 2010. P. 56.
3.4	Carbon capture and storage	n/a	n/a	n/a		No activity in Ireland, sector data negligible
3.5	Aggregates mining (sand, gravel, etc.)	n/a	n/a	n/a		No activity in Ireland, sector data negligible
3.6	Marine minerals mining	n/a	n/a	n/a		No significant activity, GVA and employment contribution negligible
3.7	Securing fresh water supply (desalination)	n/a	n/a	n/a		No significant activity, GVA and employment contribution negligible
<b>4. Leisure and tourism</b>						
4.1	Coastal tourism <sup>18</sup>	453.3	5,836	973		Water-based tourism, includes both Domestic and Overseas visitors. Derived from ESRI Report 2004, SEMRU Company Surveys, Failte Ireland Statistics, CSO Estimates for 2002-2007. Reported in: Ireland's Ocean Economy, 2010
4.2	Yachting and marinas	45.0	800	100		ICOMIA Statistics 2011 (2012) Statistics concerning July 2011 to June 2012
4.3	Cruise tourism	n/a	n/a	n/a		No Eurostat data available
<b>5. Coastal protection</b>						
5.1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats	4.4	44	n/a		Eurostat COFOG, data for 2010; PRC the Economics of Climate change, data for 2008
<b>6. Maritime monitoring and surveillance</b>						
6.1/6.2	Traceability and security of goods supply chains, prevention	n/a	n/a	n/a		Sector not visible in Eurostat.

<sup>18</sup> Please note that the Irish statistics exclude accommodation related to coastal tourism as part of the maritime economic activity.

Maritime economic activity		GVA (EUR, million)	Employment	Number of enterprises	Further indicators	Sources & References
	and protection against illegal movement of people and goods,					
6.3	environmental monitoring	n/a	n/a	n/a		Sector not visible in Eurostat.

### Wider economic impacts: Indirect economic effects and multipliers

In terms of the backward and forward linkages of the Irish economy, the SEMRU has compiled a comprehensive study with the use of Input/output diagrams.<sup>19</sup> Beneath is a summary of the results with regard to the maritime economic activities:

In terms of **backward linkages**, a broad examination of the linkages within the Irish economy indicates that within the Irish economy,

**Three marine sectors are ranked within the top ten sectors with the strongest backward linkages** – seafood processing (126),<sup>20</sup> Each of these sectors has a backward linkage greater than one, implying that these

- sectors are important input suppliers to other sectors. maritime transportation (109) and water construction (106).
  - Within the seafood processing sector, high backward linkages exist with the fishing sector, seafood processing sector and wholesale trade
  - In the water transportation sector, this is due to the strong links between the indigenous water transportation sector, auxiliary marine transport service sector (e.g. liner and port services) and computer services
  - The water construction sector has high backward linkages with the wider construction sector, wholesale trade and other non-metallic mineral products.
- The **ratio of imports to exports in these three maritime sectors** was 0.06% (seafood processing), 15% (water construction) and 16% (water transportation), which **is significantly lower than the average ratio of 60% for all Irish sectors**. This means, that large supply industries are sourced from within the country and/or are exported.
- Amongst those marine sectors with a negative backward linkage are fishing (77), boat building (73), auxiliary transport services and travel agencies (73), marine engineering (69) and marine retail (63).

In terms of **forward linkages**, the water transportation sector scores high in terms of forward linkages (7<sup>th</sup> of all sectors). In the context of the analysis, this indicates the small and open nature of the Irish economy.

<sup>19</sup> Morrissey Karyn, O'Donoghue Cathal, 2008 : The Role of the Marine Sector in the Irish National Economy: An Input-Output Analysis. SEMRU, National University of Ireland, Galway. Working Paper Series: 12-WP-SEMURU-08. Available here: <http://www.nuigalway.ie/semru/documents/12wpsemru08.pdf>

<sup>20</sup> Each of these sectors has a backward linkage greater than one, implying that these sectors are important input suppliers to other sectors. Seafood processing has the strongest backward linkage, €1.26, within the marine sector. This implies that for every €1 produced within the seafood processing sector, €0.26 is backward linked to the sectors direct and indirect upstream suppliers. These €0.26 can then be split into direct (€0.02) and indirect suppliers (€ 0.24) (e.g. the suppliers of its direct suppliers).

Due to its island status, sectors in the wider economy rely on water transportation as a way of importing and exporting goods. Hence, **maritime transport can be considered an important intermediary service for manufacturing industries**. The small forward linkages of marine sectors, e.g. marine retail, boat building, seafood processing etc. indicates that a large part of their goods and services are sold for final consumption.

The production inducing effects of the Irish Marine Sector can be assessed in terms of the repercussions generated by an increase in demand in a given sector. Aggregating the marine sectors of the study<sup>21</sup>, **the total production inducing effect for the marine sector in Ireland is €6.31**. Overall, the marine sectors has exerts the largest induced impact on the construction sector, other business services and financial intermediate services, insurance and pension services and wholesale trade. The study finds that **stimulating investment in the marine sector would positively affect those sectors that score highest in terms of impact on the overall economy**.<sup>22</sup>

Besides, the results of the input/output analysis indicate that the marine sector has the strongest linkages with the service-based sectors in Ireland.

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<sup>21</sup> The marine sectors analysed in the SEMRU study comprise: Seafood Processing, Water transport services, Water construction, fishing, boat building, auxiliary transport services and travel agencies, marine engineering and marine retail, oil & gas extraction

<sup>22</sup> Financial intermediation services, wholesale trade and construction work were among the top-5 sectors in terms of turnover (in 2007).

## Qualitative description of the maritime economic activities

In the following text a brief description of the main characteristics of the maritime economic activities in the country is presented.

### Shipbuilding

#### *Shipbuilding and ship repair*

In the 1970s the Irish shipbuilding sector still employed 1,633 persons of which 1,427 were involved in building new ships, whilst the rest were involved in repair and other activities. In the last 40 years, however, the sector has experienced a dramatic decline as production largely moved out of Ireland.

The Verholme site, now known as Cork dockyard, continues to provide some opportunities for repair and engineering businesses. Some companies in the port of Dublin also provide some minor ship repair services for recreational and fishing vessels.<sup>23</sup> In 2010 there were 155 fully employed persons engaged in ship repair.

Unfortunately there is no Eurostat data available for the construction of new ships or pleasure boats. Nevertheless we found two Irish companies that continue to specialise in shipbuilding. One of them specialises in custom made wooden pleasure boats, while the other on fishing, work and commercial boats.<sup>24</sup>

#### *Construction of water projects*

In 2010 there were only 23 companies in Ireland active in this field (mainly focused on repairs of current waterway infrastructure, dredging and minor water engineering projects) with a total employment of only 39 fully employed people.<sup>25</sup> The data available points towards a steady decline that has occurred in this field.

### Maritime transport

Almost 99% of Ireland's total imports and exports by volume (45m tonnes) and 95% by value (€128 m) are transported by sea. The majority of shipping activity occurs around the nine commercial ports on the coast of Ireland; Cork, Drogheda, Dublin, Dundalk, Dun Laoghaire, Galway, New Ross, Foynes and Wicklow. Dublin is by far the biggest port for freight<sup>26</sup> with 661,447 tons, followed by Rosslare (122,328) and Cork (3,820). Overall, during the economic crisis (2009 – 2010), the number of sailings between Ireland and European Ports has decreased by 35%.<sup>27</sup>

There was a 40% increase in the numbers of firms operating in the international shipping services sector between 2006 -2010<sup>28</sup>.

1. Shipping employed 1,149 individuals in 2007 while related Port and Maritime Logistics services employed 1,045 individuals. Marine commerce and the provision of marine financial services is a growing sector - marine commerce had a turnover of €99.5 million in 2007<sup>29</sup>.

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<sup>23</sup> Ecotec, 2006 : An exhaustive analysis of employment trends in all sectors related to sea or using sea resources Country report – Ireland. C3135 / August 2006.

<sup>24</sup> <http://www.rbbi.com/links/intpbl.htm#ireland>

<sup>25</sup> Eurostat statistics & CSO (BCI 2010) and currently under review by Eurostat

<sup>26</sup> In terms of Ro/Ro Freight Traffic by port 2010. See also IMDO, 2011: The Irish Maritime Transport Economist, Vol. 8.

<sup>27</sup> IMDO, 2011: The Irish Maritime Transport Economist, Vol. 8.

<sup>28</sup> Ireland's Ocean Economy, SEMRU , December 2010

<sup>29</sup> Ireland's Ocean Economy, SEMRU , December 2010

2. A more recent and smaller international market, consisting of ship-owners and shipping service providers has emerged and provides international shipping services. It is perceived that a more sustained and focussed strategy on creating a dedicated shipping service centre in Ireland could lead to growth in new employment. Drawing on Ireland's existing policy framework for existing international shipping services, IMDO projects that 170 new jobs could emerge by 2015 in international shipping services in Ireland.<sup>30</sup>

In 2006, 163 ships were owned, operated or managed from Ireland with an estimate that Irish based owners have invested in excess of \$1 billion dollars in new vessels and machinery over the past decade.<sup>31</sup>

Ireland is attempting to attract domestic and foreign companies to register in Ireland. They do this with offering a buoyant service industry tailored to deep sea shipping needs (such as maritime insurance, structured financing etc.) as well as very low corporation tax regime (12.5%). The Irish Maritime Development Office<sup>32</sup> is spearheading this effort.

### **Short sea shipping**

As a small nation, the bulk of the exports and imports are trans-shipped through larger European Ports. Currently, over 90% of Ireland's registered Merchant fleet is engaged in European short sea shipping activities.<sup>33</sup> In 2011 the gross weight of goods transported by short sea shipping accounted for 36.1 million tonnes in Ireland alone. Of which 22.8 million tonnes were imports and 14.4 million tonnes exports. Nevertheless, this was an overall decline of -2.6% on the previous year.<sup>34</sup>

### **Deep sea shipping**

Much like in the rest of the sector the size of the ships has dramatically increased as well as the loads that they carry. In fact only in the last decade the average size of container vessels calling at Irish Ports has increased by 300% in terms of unit capacity.<sup>35</sup> Nevertheless share of Ireland's trade that is carried by deep sea shipping is rather limited and accounts for only 16% of all the weight of goods transported (7.1million tonnes in 2011).

### **Passenger Ferry**

The (car) ferry business has gone through a difficult period.; the number of sea passengers traveling by ferry since 1995 has been estimated to have decreased at least by 14%, although in recent year their number has remained stable.<sup>36</sup> Despite this decline, ferry services transport still over a million passengers per year in Ireland.<sup>37</sup> The number of tourist passengers to and from Ireland amounted to 4,672,361 in 2009 and 4,875,334 in 2010 respectively.<sup>38</sup> In terms of the ranking of the ports of call for passenger traffic, Dublin, Rosslare and Larne are the most frequented. During 2007 and 2010, Dublin increased from 1.3m to 1.75m passengers (+34%), Rosslare decreased slightly from 1.2m to 0.9m (-33%) and Larne from 0.97m to 0.9m (-7%).<sup>39</sup> Tourist car volumes, declined in 2012, with volumes falling by 7% to 1.231 m for the Island of Ireland.<sup>40</sup>

<sup>30</sup> Our Ocean Wealth, Towards an Integrated Marine Plan for Ireland. Part II Sectoral Briefs

<sup>31</sup> IMDO-Ireland, STRATEGIC REVIEW OF IRISHMARITIME TRANSPORT SECTOR

<sup>32</sup> [www.imdo.ie](http://www.imdo.ie)

<sup>33</sup> IMDO-Ireland, <http://www.imdo.ie/imdo/shortsea>

<sup>34</sup> Eurostat

<sup>35</sup> IMDO-Ireland, STRATEGIC REVIEW OF IRISHMARITIME TRANSPORT SECTOR

<sup>36</sup> IMDO-Ireland, STRATEGIC REVIEW OF IRISHMARITIME TRANSPORT SECTOR

<sup>37</sup> TourismIreland, The Cruise Sector and Ferry Tourism: maximising its Potential in Ireland, presentation on the 17<sup>th</sup> November 2011

<sup>38</sup> IMDO, 2011: The Irish Maritime Transport Economist, Vol. 8.

<sup>39</sup> IMDO, 2011: The Irish Maritime Transport Economist, Vol. 8.

<sup>40</sup> IMDO, 2013: The Irish Maritime Transport Economist. Volume 10. April, 2013. P. 30.



### **Inland waterway transport**

There are 5 main canals that cross the country from East to West and North to South. These are mainly open to tourism and leisure cruising. In fact, Eurostat does not require Ireland to collect data on freight transport in inland waterways since it does not exceed one million tonnes.<sup>41</sup> Nevertheless the sector employs around 560 people maintaining and servicing the waterways.<sup>42</sup>

### **Food, nutrition, health and eco-system services**

The sea food industry is an important economic activity in Ireland, encompassing not only fishing activities but also further supply services to the seafood industry including primary and secondary processing, marketing and ancillary industry, e.g. net-making and vessel repair.<sup>43</sup> Overall, the seafood industry prevails not only in larger agglomerations, but also in remote rural areas, in which employment opportunities are usually scarcer. Hence, maintaining a vibrant fisheries sector remains an important subject to national policy debates. The recently launched Food Harvest 2020<sup>44</sup> blueprint, developed in 2013, aims at defining milestones for the development of the food sector in Ireland. Amongst the target areas with a bearing on maritime economic activities is the seafood targets.<sup>45</sup>

Previous actions comprised the Irish National Development Plan (2007 – 2013) with a total support of € 216 million for seafood development and €203 million for Fisheries and Coastal Infrastructure. Also, the Seafood Development Sub-programme entails further measures to stimulate the sustainable use of sea fisheries and aquaculture, whilst equally fuelling its value-added to the economy. Further aspects entailed seafood processing, marketing and training activities. The training activities cover for preparation activities of Irish stakeholders towards the rapidly changing EU and national fisheries policy and regulatory framework;<sup>46</sup> Within the Common Fisheries Policy, Ireland benefits from a certain protection of allocated quote (for certain species and fishing grounds) based on the Hague Preferences.<sup>47</sup>

### **Fishing and fish processing for human consumption**

The prime fish species in Ireland include round white fish, flat fish, cartilaginous fish, oil rich fish, as well as recent development of boarfish. Irish fishing grounds are mainly located in the North Atlantic, Irish Sea and Celtic Sea. The Irish Sea hosts fisheries abundant with demersal species. Foreign fisheries from Northern Ireland, England & Wales and Belgium are prominent actors in the Irish Sea.

Primarily, fish and shellfish are landed at the following five main harbours in Ireland: Killybegs, Castletownbere, Howth, Rossaveal and Dunmore East. Besides, the 40 secondary<sup>48</sup> ports and an additional 80 small locations for which landings are recorded.<sup>49</sup>

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<sup>41</sup> [Directive 2009/42/EC](#) & Eurostat

<sup>42</sup> <http://www.eurofound.europa.eu/eiro/studies/tn0809017s/ie0809019g.htm>

<sup>43</sup> European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 7.

<sup>44</sup> <http://www.agriculture.gov.ie/agri-foodindustry/foodharvest2020/> and also: Department of Agriculture, Food and the Marine: Food Harvest 2020. Milestones for Success 2013.

<sup>45</sup> See also chapter 5 – Analysis of measures, policies and strategies to stimulate growth and good practices in Ireland

<sup>46</sup> Ireland, National Development Plan, 2007-2013: Transforming Ireland, a Better Quality of Life for all. Sea-food Development Sub-Programme: P. 184 - 185.

<sup>47</sup> Applied to Ireland, this means that the straightforward application of the relative stability key will determine for Ireland takes precedence over the set quota once the TAC has gone below a certain level. In: European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 17.

<sup>48</sup> By secondary, the report means ports with fish and shellfish landings exceeding Eur 1m).

In terms of stocks, the Irish Sea cod stock has fallen to below safe biological limits, following regulatory measures for the recovery of cod stocks in the Irish Sea, through the European Union in Feb. 2004.<sup>50</sup> Equally so, the whiting stock, traditionally located in the Western Irish Sea has plummeted below safe biological limits. The plaice stocks, sole are considered outside this limit, and the Nephrops stock of the Irish Sea is fully exploitable. Notwithstanding that, the contribution of fishing to regional economies remains significant. The effect is partly due to their high contribution to GVA, and partly also due to the fact that the share of locally sourced inputs is rather high (high multiplier effect).<sup>51</sup>

In terms of spawning area, the Irish Sea is an important area for migratory fish species, notably mackerel and horse mackerel. On the continental shelf, the main pelagic species are herring, sardine and sprat.

The total volume of landings achieved by the by the Irish fleet in 2010 was 314,200 tonnes of seafood. The total volume of landing has increased by 27% (2008 – 2011), which is mainly due to the catches in boarfish (increase of 68,000 tonnes during the same period). In 2011, mackerel accounted for the highest value of landings (€ 44.7m) by the national fleet.<sup>52</sup> In terms of the value of the distribution of weight and value of landings, Killybegs was the most important port in 2011, leading by far with € 72,855 value in landings and a live weight of 149,321 tonnes, followed by Castletownbere with € 45,078 and 25,427 tonnes and Kilmore Quay with € 18,392 and 3,722 tonnes.<sup>53</sup> The majority of large vessels (over 36m) targeted pelagic species in 2012.<sup>54</sup>

In terms of seafood processing, the processing sector generated direct revenue of €559 million. Close to 70% of output from this sector goes for export to France, UK, Spain, Italy, Germany and commodity markets in Russia, Nigeria and Egypt.<sup>55</sup> The processing sector is concentrated in the coastal regions of Donegal, Cork, Kerry and in the South East. Currently, the industry is facing the need to scale-up to meet demand in competitive export markets. Currently there are some 138 companies engaged in handling, processing, distribution and marketing of seafood, out of which twenty account for 60% of the total turnover in the sector. The remaining 118 companies are small with turnover of less than €1 million and are focussed on the domestic and niche exports markets. Altogether the sector employs 2,867 people.

<sup>56</sup>The Seafood Benchmark Report 2009 underlines that the sector performs well in the manufacturing areas of production, quality management and logistics. However, the sector needs to address a number of strategic and development areas: 1) low sector profitability, 2) The leadership, strategic management and investment practices were scored low, and there is a lack of customer, consumer and market perspective with a poor focus on customer awareness. 3) The environmental management systems are not integrated into the core business functions.

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<sup>49</sup> European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 7.

<sup>50</sup> The measures included controls for the setting of total allowable catch (TAC), fishing effort limitation and restrictions on landing ports, stowage and transport of cod fish.

<sup>51</sup> In the Border, Midlands, West (BMW) and South East regions, Fishing contributed to GVA more than double the national average. See also EP, 2013: Fisheries in Ireland. P. 11

<sup>52</sup> European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 20.

<sup>53</sup> European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 22.

<sup>54</sup> European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 11.

<sup>55</sup> Our Ocean Wealth - Towards an Integrated Marine Plan for Ireland. Seeking Your Views on New Ways; New Approaches; New Thinking. See Pg 2:

<http://www.ouroceanwealth.ie/Briefing%20Documents/Our%20Ocean%20Wealth%20Briefing%20Documents%20for%20Consultation%20Part%20I%20Sectoral%20Briefs.pdf>

<sup>56</sup> Our Ocean Wealth - Towards an Integrated Marine Plan for Ireland. Seeking Your Views on New Ways; New Approaches; New Thinking. See Pg 2:

<http://www.ouroceanwealth.ie/Briefing%20Documents/Our%20Ocean%20Wealth%20Briefing%20Documents%20for%20Consultation%20Part%20I%20Sectoral%20Briefs.pdf>

In terms of retailing of fish for animal consumption, Ireland has seen recent growth in fresh fish in 2013: Overall, fresh fish shoppers are spending more on fish this year.<sup>57</sup> In addition, fresh fish has won switched spend from other protein meat, particularly fresh lamb, pork and frozen fish. The strong Year on Year growth comes about as shoppers buy into the category more often, purchase more volume and pay higher average prices than last year. Salmon, hake and cod are the most frequently bought fresh fish in 2013. This is contrasted by the decline in frozen fish in 2013. Frozen Fish shoppers are switching their spend to fresh fish, beef and lamb. The latter all cost more per kg.

In 2012, the fleet numbered 2,188 registered vessels. Out of that, 89% (equal to 1,959) were attributed to vessels of less than 12 metres in length.<sup>58</sup> The combined gross tonnage was 63,000 GT and the average year of the vessels amounted to 26 years.<sup>59</sup> Overall, the Irish fleet contributed with 3,119 FTE to the economy in 2010.<sup>60</sup> The size of the Irish fishing fleet increased between 2008 and 2012, with an increase of vessels by 12% (44 vessels).<sup>61</sup> Following the governmental scheme and “Strategy for a Restructured, sustainable and profitable seafood industry 2007 - 2013,<sup>62</sup> to permanently remove 75 fishing vessels from the fleet, further measures aimed to increase the quotas available to the modern competitive fishing vessels and ensure a more profitable fleet. In 2010, the total amount of GVA, gross profit and net loss (excluding subsidies) generated by the Irish fleet amounted to € 179.1m.<sup>63</sup>

### ***Catching fish for animal consumption***

#### ***Marine aquatic products - aquaculture***

The maritime economic activity is primarily comprised of farming of finfish species, e.g. salmon and trout. Besides, it extends to the Arctic char and perch and other shellfish species, e.g. mussels and oysters.<sup>64</sup> Aquaculture activities are located particular concentrations around the Western Seaboards with approximately 80% of total national production.<sup>65</sup> The main areas are Donegal, Connemara, West Cork, Waterford, Wexford and Carlingford Lough.<sup>66</sup> The Atlantic shorelines, e.g. the South west and West of Ireland harbour around 80 mussel farms and bottom-mussel fisheries.

In the pre-crisis period, 1,952 employees were recorded in the sector 2009 (both full and part time). In 2008 the sector accounted for approximately 20% of the volume of total primary production of fish and shellfish. The volume and value of output from the sector reached 47,400 tonnes valued at €104 million in

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<sup>57</sup> Kantar Worldpanel, 2013: Irish Retail Seafood Market Performance. Data 52 weeks ending to 7th July 2013. Available here: <http://www.bim.ie/media/bim/content/downloads/Irish%20Retail%20Seafood%20Sales%20-%20July%202013.pdf>

<sup>58</sup> European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 11.

<sup>59</sup> European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 11.

<sup>60</sup> European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 12.

<sup>61</sup> This is inclusive of all vessels registered and does not make compensations for inactive vessels. See also: EU Fleet Register, 1 Jan. for the reference year.

<sup>62</sup> The scheme was inspired

<sup>63</sup> European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 25.

<sup>64</sup> European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 7.

<sup>65</sup> European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 27.

<sup>66</sup> European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 7.

2009, representing an 11% increase on 2008. Of this amount shellfish production was valued at €36m, while the corresponding figure for finfish was €68m.<sup>67</sup>

According to latest publications<sup>68</sup>, in 2012 the production figures for marine aquatic products in Ireland amount to:

### **Oyster production**

- oyster production reached 7,313 tonnes (oyster) and 247 tonnes (edulis)
- There were 130 companies producing giga oysters in Ireland
- Counties Donegal and Waterford accounted for over two-third of national production
- Employment totalled 933 in 2012 (total full and part time) which represents a steady increase from 2011 (927) and 2010 (844).

### **Mussels**

- Mussel production declined in 2012 with production of just over 6,000 tonnes (bottom mussel production) and 9,000 tonnes (rope mussel)
- Mussel production is located in the counties Louth, Kerry and Wexford (bottom mussels) and Cork (rope mussels)
- Employment amounted to 444 jobs in 2012 (total full and part time), representing a slight decline from 2011 (469)
- 50% of all mussel production is certified organic

### **Salmon and trout**

- The total value of all finfish (including salmon and trout) has a sales value of €80m, making it Ireland's most valuable aquaculture sector
- Salmon production is the key finfish species and performed with a stable production of 12,000 tonnes (2012). Sea reared and freshwater reared trout production totalled 780 tonnes (2012).
- Freshwater trout production is concentrated on the Irish Sea adjacent counties Kilkenny and Wicklow (83% of total national production)
- Employment amounted to 237 jobs in 2012 (total full and part time).
- Recently, plans for establishing a new salmon farm close to the Aran Islands in the vicinity of Galway have been launched by the Irish Sea Fisheries Board (BIM).<sup>69</sup> The favourable climate conditions of the Aran Islands, shielding Galway Bay from the Atlantic Ocean has been a major reason its waters have been chosen. The site, once active, would help doubling the farmed-salmon output of 15,000 tonnes a year in Ireland, making it a vital remedy against the recession and fuelling demand from China and India. Recently, the project has become subject to public discussion since it pits those who say it is an under-developed resource in Ireland and badly needed in recession. Others argue it threatens the environment and wild salmon and sea trout stocks.<sup>70</sup>

### **Novel species**

- Employment on novel species (including novel finfish, char, clams, perch, scallop etc.) amounted to 91 (total full and part time employees) in 2012.

Explicitly mentioned in the National Development Plan as a priority, the maritime economic activity will have to include organic farming, and achieve a successful diversification into new species. The sector has

<sup>67</sup> Department of Agriculture, Food and the Marine, Annual Review and Outlook for Agriculture, Fisheries and Food 2010/2011:

<http://www.agriculture.gov.ie/publications/2011/annualreviewandoutlookforagriculturefisheriesandfood20102011/fisheries/primaryproductionfromfisheries/>

<sup>68</sup> BIM, 2012: BIM Annual Aquaculture Survey. Irish Sea Fisheries Board. Available here: <http://www.bim.ie/media/bim/content/downloads/BIM%20Aquaculture%20Survey%202012.pdf>

<sup>69</sup> <http://www.bim.ie/our-work/projects/deep-sea-organic-salmon-farming/proposed-galway-bay-organic-salmon-farm/>

<sup>70</sup> <http://www.bbc.co.uk/news/world-europe-23550159> (last accessed on 13th August 2013).

seen some consolidation, with a smaller number of larger operators in the sector that have higher economies of scale.<sup>71</sup>

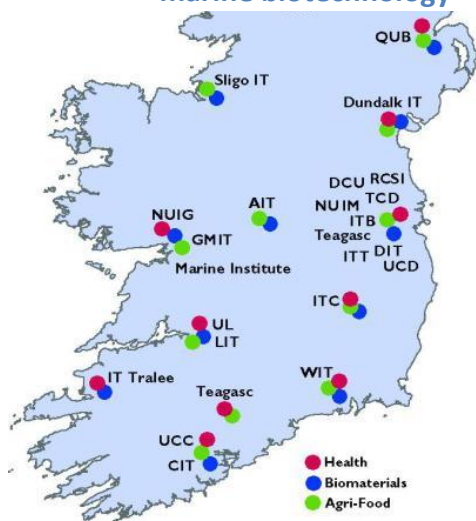
The Irish Sea Fisheries Board has set Quality Seafood Programme which comprises quality standards for salmon, mussels and oysters. The programme controls environmental management practice, food safety and product quality.<sup>72</sup>

Ireland has a strong research tradition, also extending to this maritime economic activity. The University College Cork features an Aquaculture & Fisheries Development Centre, focussing on Aquaculture, Shellfish Health and Marine Mammals and Fisheries.<sup>73</sup> An example of the research undertaken is the hallmark project *EIRCOD – Cod Broodstock & Breeding programme*, is designed to provide the technical R&D component of a national initiative to develop cod farming in Ireland. In tandem with initiatives by Udaras na Gaeltachta, who have set up a pilot commercial cod farm (Trosco Teo) in partnership with the local salmon farming industry, and BIM, through their FIFG grant-aid mechanisms. . The Ryan Institute aquaculture facility at Carna hosts the cod rearing work for EIRCOD.

The Marine Research Sub-Programme of the National Development Plan, the Marine Industry Research Measure aims at strengthen the competitiveness of existing marine industry and support activities that add value to their outputs in an environmentally sustainable manner. The measure targets existing and largely indigenous marine sub-sectors. Within aquaculture, it will primarily support applied industry research initiatives, which improve competitiveness and sustainability and directly influence or create new industrial and commercial opportunities. It will support research in Finfish Aquaculture, Shellfish Aquaculture and Seaweed.<sup>74</sup>

## Blue biotechnology

### 1.1 Research centres related to marine biotechnology



Within the National Strategy for Marine Research and Innovation 2007-2013 ('Sea Change'), the Marine Institute has since then invested in excess of €20 million towards marine biotechnology based research and business opportunities. These funds have also created commercially-oriented competence centres and industry-led partnerships, to deliver new and improved biotechnology-based products and processes. Since 2007 Irish researchers have drawn nearly €30 million of EU funding for marine science research, 10% of which is directly related to marine biotechnology research.<sup>75</sup>

Another research project is *Nutramara* which is focussing on three main marine sources, i.e. (i) fish processing waste streams or rest raw materials, (ii) underutilised species of fish and seaweed including macro and microalgae, and (iii) the development of value-added products from aquaculture—both finfish and shellfish.<sup>76</sup>

<sup>71</sup> Ireland, National Development Plan, 2007-2013: Transforming Ireland, a Better Quality of Life for all. Sea-food Development Sub-Programme: P. 184.

<sup>72</sup> <http://www.bordbia.ie/industryinfo/fishseafoodindustry/pages/default.aspx>

<sup>73</sup> <http://www.ucc.ie/en/afdc/currentprojects/>

<sup>74</sup> Ireland, National Development Plan, 2007-2013: Transforming Ireland, a Better Quality of Life for all. Sea-food Development Sub-Programme: P. 162.

<sup>75</sup> <http://www.marine.ie/home/research/SeaChange/NationalMarineBiotechnology/Marine+Biotechnology+Ireland+-+Development+Strategy.htm>



Source of the graphic: Irish Marine Institute

At Letterkenny Institute of Technology (LYIT),<sup>77</sup> since its foundation, over € 50 million was invested in campus infrastructure between 1998-2004 to provide first class facilities to meet the educational needs of approximately 2500 students. In recognition of the developments in applied marine research over the last 10 years, involving the support and co-operation of many funding agencies and commercial companies, the Centre of Applied Marine Biotechnology (CAMBio) was established in 2005.

Besides, the Ryan Institute's Prof. Tasdemir (National University of Galway) is Ireland's only Professor of Natural Product Chemistry and Marine Biodiscovery and is the leader of the Beaufort Marine Biodiscovery project. The overall aim of this project is to assess Irish marine biological diversity to identify and develop novel natural products and other biomaterials for application in areas such as drug discovery, marine biotechnology and biomedical research.

### **Agriculture in saline soils**

Based on JRC data<sup>78</sup>, (see map), Ireland does not record any activity within that sector. Hence, due to limitations in data availability, it is not possible to provide an overview of the sector's performance in Ireland.

## **Energy and aquaculture**

### **Offshore oil and gas in your country**

In terms of **discoveries**, four commercial discoveries of gas in Ireland have been made, all of which were gas<sup>79</sup> (Kinsale (1971), Ballycotton (1989), Seven Heads (1973) and Corrib (1996)).<sup>80</sup> In the Corrib field, gas was expected to flow from the field in 2003. Due to planning reasons, the field will not be extracted until 2014 or 2015. Oil discoveries have been found in 7 areas in the Irish waters.<sup>81</sup>

In terms of **exploration**,<sup>82</sup> a high share of Irish waters is currently not under active exploration.<sup>83</sup> At the end of 2012, 43 licenses or licensing options were in place, out of which 3 petroleum leases, 20 exploration licenses and 20 licensing options.

- the Spanish Point discovery (gas) will soon be started by Chrysoar, Providence Resources and Sosina Exploration.
- the commercial oil exploration in *Barryroe*, discovered in 2012 and started with exploration in 2013, is located in the Celtic Sea in the waters south of Cork. The discovery is at a water depth of

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<sup>76</sup> NutraMara: The Marine Functional Foods Research Initiative, 2009: <http://www.marine.ie/NR/rdonlyres/98BABB7F-9878-42C1-A19F-73FE37762115/0/NutraMaraBrochureFinalAug09.pdf>

<sup>77</sup> <http://www.cambio.ie/html/background/historical.htm>

<sup>78</sup> <http://eusoils.jrc.ec.europa.eu/library/themes/Salinization/Resources/salinisation.pdf>

<sup>79</sup> PWC, 2013: Oil and gas exploration in Ireland. Making the most of our natural resources, May 2013. P. 7: <http://www.iooa.ie/reports--publications-page.html>

<sup>80</sup> Please note that another report indicates that 11 gas discoveries have been made in total in Ireland, out of which three are currently commercially run: Ballycotton, Seven Heads and Kinsale Head. The remaining 8 were under assessment (in 2011). See: SIPTU, 2011: Optimising Ireland's Oil and Gas Resources. Report of the SIPTU Oil & Gas Review Group. P. 33.

<sup>81</sup> Figures as of 2011. In: SIPTU, 2011: Optimising Ireland's Oil and Gas Resources. Report of the SIPTU Oil & Gas Review Group. P. 33.

<sup>82</sup> Please see also map with oil and gas explorations in Ireland below.

<sup>83</sup> only about 6% of the Irish Offshore areas on offer have been put under licence, following the 1995, 1997 and 2011 Licensing Rounds. See also PWC, 2013: Oil and gas exploration in Ireland. Making the most of our natural resources, May 2013. <http://www.iooa.ie/reports--publications-page.html>



100 metres (330 ft). Several attempts were made to find a commercial field at the site in the 1970s but although they struck oil, none were commercially viable. It has been rated as the equivalent of a large North Sea oil field.<sup>84</sup> The well, currently 80% owned by Providence Resources and 20% by Lansdowne Oil & Gas has potential for up to 1.6bn barrels in the oilfield, with oil rigs being operational within three years.

- The *Dunquin project* was started in 2013 by Exxon Mobil and a consortium comprised of Eni, Providence Resources, Sosina Exploration and Repsol.<sup>85</sup> After first drillings, however, the project was put on halt by Exxon, having found some residual oil, but not enough quantities to justify continuing exploration.<sup>86</sup>

In terms of employment, Shell and Kinsale Energy, who are direct operators, employ a large number of employees in Ireland. Besides, companies, such as PM Group, Roadbridge, Sinbad Marine Services and Mainport Holdings are involved in the offshore industry in the supply industry (gas pipeline construction companies, servicing seismic / survey vessels also for the Oil & Gas industry).<sup>87</sup>

According to industry stakeholders, the regulatory and planning process in Ireland is still complex and requires more technical expertise.<sup>88</sup> Also, the challenging offshore environment on West Coast, with deep water and challenging climate conditions results in higher exploration costs for companies compared to Norway and the UK.

Since 1970 expenditure on offshore exploration has exceeded € 2 bn, out of this over 30% has been direct expenditure in Ireland. The Irish offshore industry is making a significant positive contribution to regional economies, notably through the ports of call for offshore maintenance and delivery ships. This is one remedy to counter the decline of the fishing industry in these port cities.<sup>89</sup> The Port of Cork, in 2007, had 252 vessel movements directly related to the offshore industry, while Cork Airport, in the same year, had 1560 additional helicopter flights and some 100 fixed wing flights. In Killybegs there were 214 offshore vessel movements while additional flights at Donegal's Carrickfinn Airport amounted to 620. It is estimated that the industry generated €3.0 million in Killybegs during 2007, with the figure forecast to rise to € 5 m in 2008. This is especially welcome in a port severely impacted by the decline of the fishing industry.

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<sup>84</sup> <http://en.wikipedia.org/wiki/Barryroe>

<sup>85</sup> PWC, 2013: Oil and gas exploration in Ireland. Making the most of our natural resources, May 2013. P. 32: <http://www.iooa.ie/reports--publications-page.html>

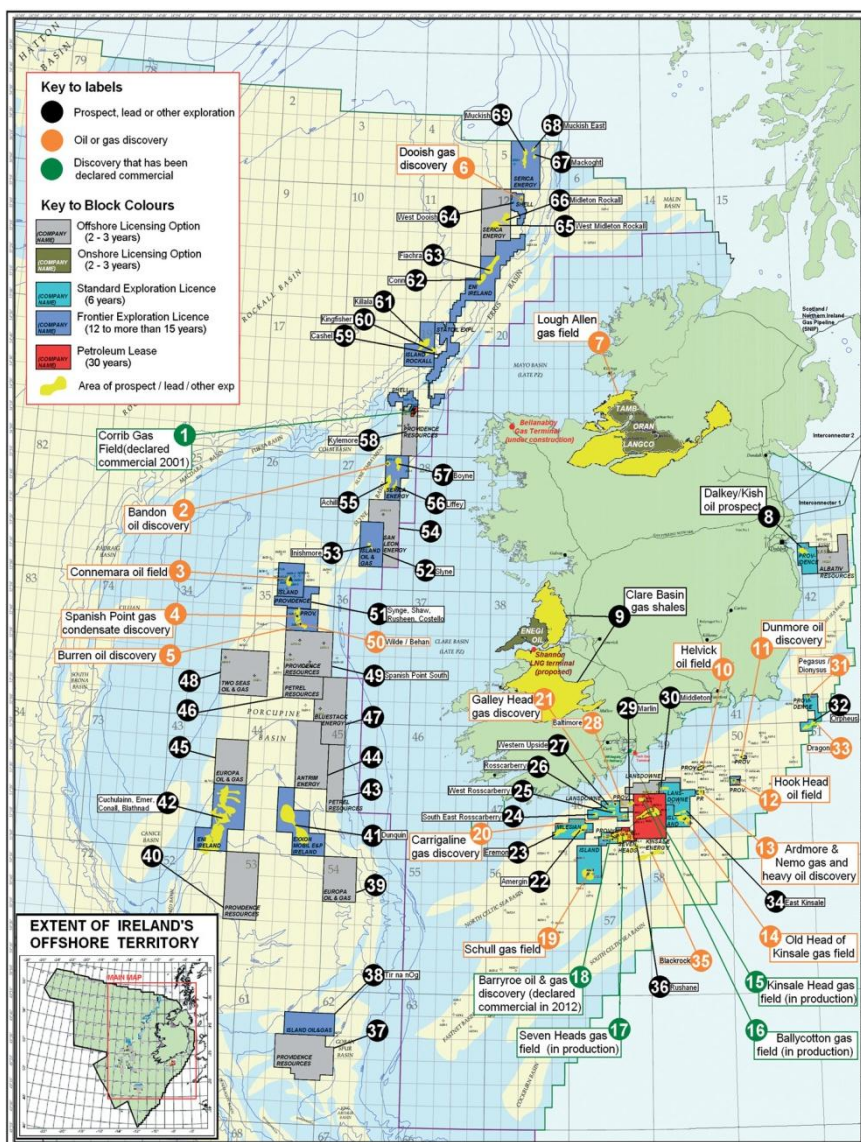
<sup>86</sup> <http://www.independent.ie/business/irish/exploration-blow-as-exxon-to-leave-irish-waters-after-offshore-drill-fails-29439981.html> (last accessed on 14<sup>th</sup> August 2013).

<sup>87</sup> Irish Offshore Operators Association, 2013: Myths and facts, April 2013: <http://www.iooa.ie/reports--publications-page.html>

<sup>88</sup> PWC, 2013: Oil and gas exploration in Ireland. Making the most of our natural resources, May 2013. P. 7: <http://www.iooa.ie/reports--publications-page.html>

<sup>89</sup> Irish Offshore Operators Association, 2013: Irish Gas for a Better tomorrow. P. 9.

Figure 1.1 Oil & Gas Exploration & discoveries (2012)



Source: [http://irishoilandgas.files.wordpress.com/2012/09/map\\_explorationdiscoveries2012.jpg](http://irishoilandgas.files.wordpress.com/2012/09/map_explorationdiscoveries2012.jpg)

### Offshore wind

In 2011, Ireland had installed wind power capacity (both on- and offshore) of 1,631 MW, or equal to 1.7% of the total EU27 installed capacity.<sup>90</sup> The majority of the capacity is generated in Donegal in the North West and in Kerry and Cork in the South-West.<sup>91</sup> Ireland currently has one single offshore wind farm, with seven wind farms, each with a capacity of 3.6MW. They are located on Arklow Bank, at a 10km distance of the East Coast. The wind farm was commissioned in 2004 and developed by a consortium of Aitricity and GE. In addition to that, five additional offshore wind farms are currently proposed for Irish waters. Once

<sup>90</sup> EWEA, 2012: Wind in Power. 2011 European Statistics. P. 4.

<sup>91</sup> Deloitte, IWEA, 2009: Jobs and Investment in Irish Wind Energy. Powering Ireland's Economy. P. 8.

active, these additional wind farms could provide a total capacity of 3,550 MW.<sup>92</sup> Notwithstanding the theoretical capacity, estimates point to a maximum installed capacity of only 600 MW by 2020.<sup>93</sup> Up to 2011, no specific government target for offshore wind has been announced, albeit 800MW of capacity have been included in the recent public tendering for connected offers.<sup>94</sup>

Assuming the scenario of 600 MW installed capacity by 2020, subsequent demand for vessels, e.g. wind turbine repair and installation vessels, support structure installation vessels and geotechnical survey vessels would increase significantly and would equally increase above-proportionally between 2013 and 2016.<sup>95</sup>

The effects of offshore wind installations to the marine ecosystem and the environment in Ireland are higher than for onshore wind. Hence, they present an impediment to further growth of the sector. This is not least to the fact that offshore wind exploitation requires projects that are larger than onshore wind generation, due to technical requirements, and the need for high(er) economies of scale. Due to the current difficulties in linking the windfarms to the onshore super grids, it is discussed to develop offshore wind farms primarily to serve foreign countries, e.g. the UK and North-Western France. This would require bilateral agreements between the Governments, a timing for Irish wind farms to meet the demand requested in view of meeting 2020 targets in UK and FR. Besides, it would need to be supplied at competitive costs.<sup>96</sup>

Drivers of the offshore wind energy are its potentially large resource and its site off the shore. As main barriers appear the lack of clear policy direction and a historical lack of heavy engineering, shipbuilding or offshore large oil & gas industries. To further unleash the future potential further onshore grid improvements and grid connectors are required prior to offering companies connection based on a firm-access basis to the national energy grid. The majority of the planned wind farms will be located in the Irish Sea, where the grid is more developed than in the remote western locations, reduces the chances of a wind farm being constrained to feed energy in the grid.<sup>97</sup> Accessing foreign markets could be more feasible for Irish offshore wind providers by setting up a direct connection from the wind farm to countries abroad. With regards to that, Ireland is also signatory country to the North Seas Countries Offshore Grid Initiative (NSCOGI), to better cooperate in linking wind farms and other renewable energy sources across the Northern Seas of Europe.<sup>98</sup>

To better target offshore wind investment, the Draft Offshore Renewable Energy Development Plan has been developed,<sup>99</sup> with expected exploitation results according to the sea shore of Ireland. It indicates the development that could potentially occur within each Assessment Area without likely significant adverse effects on the environment. The scenarios assessed were low, medium and high scenarios for offshore

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<sup>92</sup> The wind farms currently proposed are: Arklow Bank 2, Codling Wind Park, Oriel Windfarm, Dublin Array, Skerd Rocks. Please note that in 2011, none of them was nearing the construction phase, due to foreshore lease, lacking grid connection and project economics. At the earliest, these would be made operational as of 2015. See also: GL Garrad Hassan, 2011: Offshore – Industrial Development Potential of Offshore Wind in Ireland. Written on behalf of the Sustainable Energy Authority in Ireland. Feb. 2011: 37-38.

<sup>93</sup> GL Garrad Hassan, 2011: Offshore – Industrial Development Potential of Offshore Wind in Ireland. Written on behalf of the Sustainable Energy Authority in Ireland. Feb. 2011: 39.

<sup>94</sup> GL Garrad Hassan, 2011: Offshore – Industrial Development Potential of Offshore Wind in Ireland. Written on behalf of the Sustainable Energy Authority in Ireland. Feb. 2011: 10.

<sup>95</sup> GL Garrad Hassan, 2011: Offshore – Industrial Development Potential of Offshore Wind in Ireland. Written on behalf of the Sustainable Energy Authority in Ireland. Feb. 2011: 40.

<sup>96</sup> GL Garrad Hassan, 2011: Offshore – Industrial Development Potential of Offshore Wind in Ireland. Written on behalf of the Sustainable Energy Authority in Ireland. Feb. 2011: 32.

<sup>97</sup> GL Garrad Hassan, 2011: Offshore – Industrial Development Potential of Offshore Wind in Ireland. Written on behalf of the Sustainable Energy Authority in Ireland. Feb. 2011: 10.

<sup>98</sup> <http://www.benelux.int/NSCOGI/>

<sup>99</sup> The Offshore Renewable Energy Development Plan will be finalised and launched shortly. For more information, please see also here: <http://www.ouroceanwealth.ie/Briefing%20Documents/Our%20Ocean%20Wealth%20Briefing%20Documents%20for%20Consultation%20Part%20I%20Sectoral%20Briefs.pdf>

wind, wave and tidal energy, with up to 4500MW of offshore wind in the high scenario to 2030 and up to 1500MW in the high wave and tidal scenario.

### ***Ocean renewable energy***

To date, only a number of smaller scale test devices have also been deployed in Irish Waters, e.g. a quarter scale Wavebob device in Galway.<sup>100</sup> Back in 2011, a detailed site evaluation and conceptual design study of a proposed 5 MW CETO commercial demonstration project in Irish waters has been conducted by the wave energy developer Carnegie Wave Energy Limited (ASX: CWE).<sup>101</sup> This was aimed to be followed by an Irish demonstration project in County Clare. The conceptual design and site project study, completed in 2011, was 50% funded by the Irish Government's Sustainable Energy Authority of Ireland (SEAI) under the Ocean Energy Prototype Research and Development Programme and Carnegie's Irish subsidiary CETO Wave Energy Ireland (CWE Ireland). The company has now formally applied to the Department of Environment, Heritage and Local Government for an Investigative Foreshore Licence covering an area between Freagh Point and Spanish Point off County Clare.

In terms of potential effects on employment, it was estimated that around 5 FTE are created per each MW of installed capacity of wave and tidal energy.<sup>102</sup> According to current estimates, and providing an optimistic scenario, the overall potential by 2030 will amount to 30,000 MW.<sup>103</sup> The targeted installed capacity is 500 MW by 2020.<sup>104</sup>

### ***Carbon Capture and storage***

According to estimates (2011), Ireland has about 93,000 Mt of potential carbon dioxide storage capacity. The main storage sites proposed include the Kinsale Head in the North Celtic Sea, the Portpatrick Basin in the North Channel and the Clare Basin on the west coast. Besides, the depleting gas field at Kinsale could theoretically provide a carbon sink for Cork for 50 years. The key risk identified for this site is containment; however, it is possible that this could be remedied through the appropriate use of cement barriers. Other potential storage sites include the extensive Peel Basin and the East Irish Sea Basin.<sup>105</sup>

A number of initiatives are under way to further progress the development of carbon capture and storage, notably in the Kinsale area and in the Irish Sea/Central Irish Sea basins. An Inter Departmental Group on CCS is active and has the mandate to develop recommendations for Ireland in this area.<sup>106</sup> Under the European Commission call for NER 30017 proposals for innovative renewable energy and carbon capture and storage projects, Ireland has nominated two projects (one on ocean energy, i.e. the

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<sup>100</sup> RPS, 2011: Assessment of the Irish Ports & Shipping Requirements for the Marine Renewable Energy Industry June 2011. Report prepared on behalf of SEAI and IMDO Ireland. P. 71-72.

<sup>101</sup> CWE Ireland Limited, 2012: ASX announcement, 13<sup>th</sup> February 2012. Press release. See also: <http://www.carnegiwave.com/index.php?url=/projects/Ireland%20project>

<sup>102</sup> SQW Energy, 2010: Economic Study for Ocean Energy Development in Ireland. A report to the Sustainable Energy Authority of Ireland and Northern Ireland. Report prepared on behalf of SEAI and Invest Northern Ireland. P. 56. Available here: [http://www.seai.ie/Renewables/Ocean\\_Energy/Ocean\\_Energy\\_Information\\_Research/Ocean\\_Energy\\_Publications/SQW\\_Economics\\_Study.pdf](http://www.seai.ie/Renewables/Ocean_Energy/Ocean_Energy_Information_Research/Ocean_Energy_Publications/SQW_Economics_Study.pdf)

<sup>103</sup> <http://www.oceanenergy.ie/news/?p=437>

<sup>104</sup> European Ocean Energy, 2013: Industry Vision Paper. P. 8. Available here: <http://www.oceanenergy-europe.eu/images/QLast-corrections-brochure-Ocean.pdf>

<sup>105</sup> Enterprise Ireland (2009) Carbon Capture and Storage, Environment and Green Technologies Department, January 2009: <http://www.envirocentre.ie/includes/documents/Carbon%20Capture%20and%20Storage%20Large%20doc.pdf>

<sup>106</sup> Our Ocean Wealth. Towards an Integrated Marine Plan for Ireland. Seeking Your Views on New Ways; New Approaches; New Thinking. P. 20. Available here: <http://www.ouroceanwealth.ie/Briefing%20Documents/Our%20Ocean%20Wealth%20Briefing%20Documents%20for%20Consultation%20Part%20I%20Sectoral%20Briefs.pdf>



WestWave Project).<sup>107</sup>

The major point source emissions are caused by the power, alumina and cement industries. The former sector would be the primary target for evaluation namely at three sites; Moneypoint, Kilroot and Cork. Some other industrial sectors are considered too small for CCS. In relation to transporting the CO<sub>2</sub> from the point source, the study suggests that the most efficient method would be via pipeline to the storage site.<sup>108</sup>

Although not able to provide financial support, the Government of Ireland has also recognised the need for the introduction of CCS and has commissioned a recent study to assess the potential of offshore storage reservoirs. Furthermore, Enterprise Ireland has identified the need to support industry on the development of new CCS infrastructure.<sup>109</sup> For emitters on the West and Southern Coast of Ireland, the hydrocarbon fields in North Atlantic Ocean and the Celtic Sea will be the most likely storage destinations.<sup>110</sup>

### **Aggregates mining**

In Ireland, offshore extracted aggregate (sand & gravel) have been primarily used for once off projects, such as beach protection, rather than as a commercial alternative to onshore resources.<sup>111</sup> Several evaluations have been undertaken, including an EU INTERREG funded study the Irish Sea Marine aggregates Initiative (IMAGIN)<sup>112</sup>, which indicated significant resources with commercial potential. With regards to the size and employment potential of aggregates in Ireland, no secondary literature could be retrieved. However, production estimates record a total number of producers (companies) to 110 with a total number of extraction sites in Ireland amounting to 450 in 2011.<sup>113</sup> According to the source, the total production in 2011 amounted to 32m tonnes.

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<sup>107</sup> Our Ocean Wealth. Towards an Integrated Marine Plan for Ireland. Seeking Your Views on New Ways; New Approaches; New Thinking. P. 20. Available here:

<http://www.ouroceanwealth.ie/Briefing%20Documents/Our%20Ocean%20Wealth%20Briefing%20Documents%20for%20Consultation%20Part%20II%20Sectoral%20Briefs.pdf>

<sup>108</sup> Enterprise Ireland (2009) Carbon Capture and Storage, Environment and Green Technologies Department, January 2009:

<http://www.envirocentre.ie/includes/documents/Carbon%20Capture%20and%20Storage%20Large%20doc.pdf>

<sup>109</sup> Eunomia Research & Consulting, 2011 : The East Irish Sea CCS Cluster: A Conceptual Design – Technical Report. Hydrocarbon Resources Ltd and Peel Energy Ltd. Available here: <http://www.eunomia.co.uk/shopimages/The%20East%20Irish%20Sea%20CCS%20Cluster%20-%20A%20Conceptual%20Design%20-%20Technical%20Report.pdf>

<sup>110</sup> Eunomia Research & Consulting, 2011 : The East Irish Sea CCS Cluster: A Conceptual Design – Technical Report. Hydrocarbon Resources Ltd and Peel Energy Ltd. Available here: <http://www.eunomia.co.uk/shopimages/The%20East%20Irish%20Sea%20CCS%20Cluster%20-%20A%20Conceptual%20Design%20-%20Technical%20Report.pdf>

<sup>111</sup> Our Ocean Wealth. Towards an Integrated Marine Plan for Ireland. Seeking Your Views on New Ways; New Approaches; New Thinking. P. 27. Available here:

<http://www.ouroceanwealth.ie/Briefing%20Documents/Our%20Ocean%20Wealth%20Briefing%20Documents%20for%20Consultation%20Part%20II%20Sectoral%20Briefs.pdf>

<sup>112</sup> Irish Sea Marine Aggregate Initiative (IMAGIN) Policy Report, CMRC and Marine Institute, Marine Environment & Health Series, No. 32, 2008.

<sup>113</sup> See also: UEPG, 2012: Estimates of Aggregates Production data 2011. <http://www.uepg.eu/statistics/estimates-of-production-data/data-2011>

## **Marine minerals mining**

The distribution of commercial minerals such as mineral placer deposits is largely unknown offshore Ireland. However, in the case of maërl (coralline algae used mainly as organic fertilizer), has offered some commercial opportunities.<sup>114</sup> Besides, deposits of orthogenic phosphate, and various metallic compounds including manganese nodules and crusts can be expected, but no recent information on this is available.<sup>115</sup>

## **Securing fresh water supply**

Although Dublin City Council has launched ideas to partially solve the water shortage through a desalination plant in north county Dublin back in 2007, currently Ireland does not have desalination activities.<sup>116</sup>

## **Leisure and tourism**

### **Coastal tourism**

The marine leisure and tourism industry has developed well in terms of infrastructural planning, investment and development.<sup>117</sup> This is linked to the overall national attempt to create clusters of linked maritime economic activities.

Overall, the prospects for coastline tourism in Ireland are rather good, with nearly one third (27%) of domestic tourists engaged in water sports activities which accounts for the highest interest among all possible tourism activities.<sup>118</sup>

Demand comes both from foreign tourists but equally so from indigenous ones: according to the national tourism board, nearly 75% of domestic activity holidays take place on the Irish Western seaboard and more than one third of such holidays are family holidays.<sup>119</sup>

Nearly 1.2m holidaymakers (both domestic and foreign) engaged in water-based activities (2008) and the Irish market for leisure related to coastline was contributing € 453.3m in gross value to the Irish economy. In the same year, it employed 5800 people.<sup>120</sup>

Dedicated angling tourism accounted for 173,000 visitors in 2010 and spending of €58 million.<sup>121</sup> According to a different source, in 2012, over 150,000 tourists involved in recreational angling. The report estimates the total spend from tourism angling to amount to €280m.<sup>122</sup> Overall, angling is worth €0.75 billion to Irish Economy and supports 10,000 jobs directly in rural Ireland. Among the most favoured reasons for angling in Ireland rank the quality of angling in terms of the size and the amount of fish, as

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<sup>114</sup> Our Ocean Wealth. Towards an Integrated Marine Plan for Ireland. Seeking Your Views on New Ways; New Approaches; New Thinking. P. 27 :

<http://www.ouroceanwealth.ie/Briefing%20Documents/Our%20Ocean%20Wealth%20Briefing%20Documents%20for%20Consultation%20Part%20II%20Sectoral%20Briefs.pdf>

<sup>115</sup> Coastal Resources Centre, 2011: An assessment of the current status and RTDI requirements in respect of the development of Irish seabed resources. Final Report.

<sup>116</sup> <http://www.businessandfinance.com/index.jsp?p=163&n=355&a=1390>

<sup>117</sup> The Socio-Economic Marine Research Unit (SEMURU), 2011: A socio-economic study of marine-based water activities in the west of Ireland, Working Paper 11-WP-SEMURU-01

<sup>118</sup> Failte Ireland, 2009: Tourism Facts 2009

<sup>119</sup> The Socio-Economic Marine Research Unit (SEMURU), 2011: A socio-economic study of marine-based water activities in the west of Ireland, Working Paper 11-WP-SEMURU-01

<sup>120</sup> Morrissey K., Hynes S., Cuddy M., O'Donoghue C. 2010: Ireland's Ocean Economy 2007, Socio Economic Marine Research Unit, National University of Ireland, Galway.

<sup>121</sup> Our Ocean Wealth, Towards an Integrated Marine Plan for Ireland. Part II Sectoral Briefs

<sup>122</sup> <http://www.fisheriesireland.ie/Press-releases/new-study-angling-worth-075-billion-to-irish-economy-and-supporting-10000-jobs-in-rural-ireland.html>



cited as most appealing tourism aspects.

Ireland has become one of Europe's top destinations for whale watching, bird watching and outdoor activity enthusiasts. Ireland has a growing reputation as one of the world's best cold water surfing locations.

### ***Yachting and marinas in Ireland***

Due to joint place marketing efforts, the Galway area has seen recent economic growth thanks to positioning itself as location for international marine sports events. The 2009 Volvo Ocean Race stopover in Galway<sup>123</sup>, which lasted two weeks, provides an interesting example of economic return and location branding generated through integrated sports events: An accompanying programme of entertainment aimed at attracting a broad range of visitors and not just the sailing community. 70 concession units were included in the race village to make visitors increase their dwell time and spending. Eventually, the average spending per each international visitor resulted in €940 and final attendance amounted to 650,000 visitors with return of €55.8m to the Galway economy.<sup>124</sup>

Faillte Ireland have carried out research into best practice regarding the development and funding of marina and berthing facilities in Ireland and abroad, with a view to shaping national policy in this area. Failte Ireland have recently reported that report has been finalised and it was undertaking consultation over the last few months<sup>125</sup>.

### ***Cruise tourism in Ireland***

Ireland, with its strong tourist product close to its main ports of call has capitalised on the worldwide increase in cruise holidays. Typically Ireland is viewed as a port of call for the Northern European and Baltic Seas cruises. Historically, the majority of its cruise traffic was North American passengers on US based vessels.

Between 2002 and 2012, the number of cruise vessels visiting Ireland has increased from 127 to 229 (+80%).<sup>126</sup> In terms of passenger and crew carriage, this amounted to 313,367 persons transported to Ireland in 2012.<sup>127</sup>

- With 87 in 2012, Dublin Port scored highest in accommodating cruises and passengers (127,459). According to estimates, this has contributed over €350m to Dublin City in the last decade.
- The port of Cork received 57 cruise vessel calls in 2012 and welcomed 87,193 passengers and crew.
- The other cruise ports, i.e. Galway, Waterford, Bantry and Shannon-Foyes, Drogheda and Dun Laoghaire combined figures amount to 45 cruise vessels in 2012.

Faillte Ireland's Cruise Tourism Research Report (2010)<sup>128</sup> found in 2010 there were 202 calls by cruise ships to Irish ports carrying 204,489 passengers. Direct spend from passengers and crew who disembarked at Irish ports, including port charges, was estimated at €20.3 million.

In recent years there has been an increase on the number of European, and in particular, British operators

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<sup>123</sup> And which will be repeatedly organised in Galway between 30<sup>th</sup> June and 8<sup>th</sup> July 2012. More information: <http://www.galwayvolvooceanrace.com/>

<sup>124</sup> Failte Ireland, 2009: Economic Impact & Media Report. Volvo Ocean Race 2008 – 2009. 23<sup>rd</sup> May to 6<sup>th</sup> June 2012

<sup>125</sup> [http://www.ouroceanwealth.ie/SiteCollectionDocuments/MCG%202013%20Q%20%20Status%20Report%20of%20Implementing%20HOOW%20Early%20%20and%20Ongoing%20Actions%20\\_June\\_13.pdf](http://www.ouroceanwealth.ie/SiteCollectionDocuments/MCG%202013%20Q%20%20Status%20Report%20of%20Implementing%20HOOW%20Early%20%20and%20Ongoing%20Actions%20_June_13.pdf)

<sup>126</sup> IMDO, 2013: The Irish Maritime Transport Economist. Volume 10. April, 2013. P. 9.

<sup>127</sup> IMDO, 2013: The Irish Maritime Transport Economist. Volume 10. April, 2013. P. 37.

<sup>128</sup> Fáilte Ireland, 2010: Cruise Tourism to Ireland Research Report – 2010. National Tourism Development Agency.

including Ireland in their itineraries. Over three out of every five cruise ships calling to Irish ports are part of Carnival Corporation which highlights its importance to Ireland<sup>129</sup>. Dublin Port already plays an important role in cruise liner tourism and is a popular destination. There is significant potential for this activity, particularly for shorter cruises and cruises in the middle of itinerary. However, investment will be required to improve the look of the port for disembarking and also to accommodate bigger cruise liners.<sup>130</sup> Cork and Dublin are the main ports of call for cruise liners. The overall contribution of the port of Cork is €125m and 698 FTE jobs (out of which €81.5 million and 486 FTE jobs from ferry passengers).<sup>131</sup> Cruise liner passengers contribute €40.9 million and 197 FTE jobs. While crew accounted for €3.0 million and 15 FTE jobs.

Dublin is currently still increasing its capacity to host large cruise ships. Part of the river at Dublin Port is to be dredged to create a 12m deep channel for big liners, up to 340m long, including the creation of two new cruise berths next to the existing one at the East Link toll bridge.<sup>132</sup> The development will be promoted with at least a quarter of the 100 cruise ships coming into Dublin in 2013 using the berths. It will avoid that tides will not stop the bigger ships getting closer to the city centre. The new deep water berths will have room for two 340m cruise ships and one 145m cruise ship. A large ship turning area has also been included in the plans.

### Coastal protection

According to estimates, approximately 20% of Ireland's entire coast is at risk of erosion. Sea Level Rise (SLR) and an increase in severity and frequency of coastal storms are likely to exacerbate the problems, notably along the Atlantic coast.<sup>133</sup>

The Office of Public Works have recently completed the Irish Coastal Protection Strategy Study (ICPSS), which provides strategic level coastal flood and erosion hazard maps for the national coastline. ICPSS coastal flood hazard maps are currently being incorporated into long-term flood risk management plans<sup>134</sup>.

Measures have been primarily financed through the Coastal Protection Programme, a sub-programme of the National Development Plan 2007 – 2013. The sub-programme is dedicated to coastal protection to fund risk evaluations, the development of procedures and guidelines for the selection of protection schemes.<sup>135</sup>

In Ireland, regional authorities do not have their own coastal protection plans. Counties focus on the identification of areas in need for protection, with Cork and Waterford considered forerunners. Funding is provided to local authorities via a grant, up to a maximum of 75%. The Office of Public Works is the prime authority to evaluate coastal protection schemes submitted to local authorities.

### Maritime monitoring and surveillance

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<sup>129</sup> Cruise Tourism to Ireland, Research Report 2010. Conducted on behalf of Fáilte Ireland. 31<sup>st</sup> Jan. 2012.

<sup>130</sup> Jim Power Economics, 2011: Trends in Irish Tourism – A Report for Dublin Port Company Limited. February 2011.

Available here: [http://www.dublinport.ie/fileadmin/user\\_upload/documents/Tourism\\_prospects\\_report.pdf](http://www.dublinport.ie/fileadmin/user_upload/documents/Tourism_prospects_report.pdf)

<sup>131</sup> <http://www.portofcork.ie/index.cfm/page/cruise>

<sup>132</sup> <http://www.irishtimes.com/news/cruise-ships-will-be-brought-further-up-liffey-1.1394340>

<sup>133</sup> PRC, 2009: Ireland - Country overview and assessment:

[http://ec.europa.eu/maritimeaffairs/documentation/studies/documents/ireland\\_climate\\_change\\_en.pdf](http://ec.europa.eu/maritimeaffairs/documentation/studies/documents/ireland_climate_change_en.pdf)

<sup>134</sup>

[http://www.ouroceanwealth.ie/SiteCollectionDocuments/MCG%202013%20Q%202%20Status%20Report%20of%20Implementing%20HOOW%20Early%20and%20Ongoing%20Actions%20\\_June\\_13.pdf](http://www.ouroceanwealth.ie/SiteCollectionDocuments/MCG%202013%20Q%202%20Status%20Report%20of%20Implementing%20HOOW%20Early%20and%20Ongoing%20Actions%20_June_13.pdf)

<sup>135</sup> PRC, 2009: Ireland - Country overview and assessment:

[http://ec.europa.eu/maritimeaffairs/documentation/studies/documents/ireland\\_climate\\_change\\_en.pdf](http://ec.europa.eu/maritimeaffairs/documentation/studies/documents/ireland_climate_change_en.pdf)

The Coastal and Marine Research Centre (CMRC) is a key research centre within University College Cork (UCC). It is part of the Environmental Research Institute (ERI) and the Irish Maritime and Energy Resource Cluster (IMERC) and is based in Cork.<sup>136</sup> It will soon start a project on “Improving Maritime Surveillance from Space” funded under the European Space Agency’s Integrated Applications Programme (IAP). The project is led by Skytek, a company based in Dublin with partners including the CMRC, the National Space Centre, LuxSpace, exactEarth Europe and the Irish Naval Service (INS).<sup>137</sup>

Related to this maritime economic activity is the SmartOcean Cluster. Ireland’s SmartOcean (ICT for the Sea) Strategy and associated Cluster, launched in 2010, seeks to harness Ireland’s natural marine resources and specialist expertise in Marine Science and ICT. This includes the delivery of next generation technology products and services for marine sectors such as aquaculture, environmental monitoring, shipping and security and marine renewable energy<sup>138</sup>.

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<sup>136</sup> <http://www.cmrc.ie/>

<sup>137</sup> <http://cmrc.ie/news/2012/06/14/improving-maritime-surveillance-from-space.html>

<sup>138</sup> <http://www.marine.ie/home/SmartOcean.htm> See also chapter 5 of this country paper with a detailed description of the Smart Ocean cluster initiative.

## 1.2. Breakdown of maritime economic activities at regional level (NUTS 1 or NUTS 2) and allocation to different sea-basins

This section allocates the data from table 1 to **maritime regions** in Ireland. The results of this analysis are twofold:

- to provide a breakdown of maritime economic activities at regional level and to assess maritime regions and
- To feed into the overall allocation of the maritime economic activities to different sea-basins via the regional breakdown.

The breakdown of economic activities is done at NUTS 1 or NUTS 2 level, depending on the availability of data. Besides, the level of regional analysis is determined by where maritime policy strategies and funding programmes are decided (please see suggested level highlighted in bold).

**Table 2 - Breakdown of maritime economic activities at regional level**

EU Member State	NUTS 1	NUTS 2	Geographical allocation to Sea-basin (NUTS 2 regions)
Ireland	Republic of Ireland	<b>Border, Midland and Western</b>	Atlantic Arc
		<b>Southern and Eastern</b>	Atlantic Arc

Table 3 presents the percentage share of each region in the specific maritime economic activity. This share can be applied both to the GVA figures and the employment figures in table 1. As hardly any data can be found in regionalised statistics allocation has been done on the basis of other parameters. The methodology used is explained in footnotes to the table.

**Table 3 - Overview of regional share per maritime economic activity per region in Ireland (% of GVA and employment)**

Sea-basin		Atlantic Arc		
Regional percentages that apply on Employment and GVA data		Border, Midland, Western (BMW)	Southern and Eastern	Other (non-maritime regions in your country)
<b>0.</b>	<b>Shipbuilding</b>			
0.1	Shipbuilding (excl. leisure boats) and ship repair <sup>139</sup>	0.3	0.7	
0.2	Construction of water projects <sup>140</sup>	0.6	0.4	
<b>1.</b>	<b>Maritime transport and shipbuilding</b>			
1.1	Deep-sea shipping	0.5	0.5	
1.2	Short-sea shipping (incl. Ro-Ro) <sup>141</sup>	0.2	0.8	
1.3	Passenger ferry services <sup>142</sup>	0.3	0.7	
1.4	Inland waterway transport			No data available
<b>2.</b>	<b>Food, nutrition, health and eco-system services</b>			
2.1	Fish and fish processing for human consumption <sup>143</sup>	0.6	0.4	
2.2	Catching fish for animal feeding			No data available
2.3	Marine aquatic products <sup>144</sup>	0.8	0.2	
2.4	Blue biotechnology <sup>145</sup>	0.5	0.5	
2.5	Agriculture on saline soils			No data available
<b>3.</b>	<b>Energy and aquaculture</b>			
3.1	Offshore oil and gas <sup>146</sup>	0.1	0.9	
3.2	Offshore wind <sup>147</sup>	0.3	0.7	
3.3	Ocean renewable energy	1	0	
3.4	Carbon capture and storage			No data available
3.5	Aggregates mining (sand, gravel, etc.)			No data available
3.6	Marine minerals mining			No data available
3.7	Securing fresh water supply (desalination)			No data available
<b>4.</b>	<b>Leisure and tourism</b>			
4.1	Coastal tourism <sup>148</sup>		1	
4.2	Yachting and marinas	0.5	0.5	
4.3	Cruise tourism <sup>149</sup>	0.1	0.9	
<b>5.</b>	<b>Coastal protection</b>			
5.1	Protection against flooding and erosion, preventing salt water			No data available

<sup>139</sup> primarily limited to ship repair activities, located around the port of Cork

<sup>140</sup> We assume that the split for each of the two regions will be similar. Due to the recently planned activities for the extension of the port of Galway (Border, Midland, Western region), and given the size of the overall construction activities, we expect a 0.6 allocation to BWM region.

<sup>141</sup> With the main ports for short-sea shipping cargo (incl. Ro-Ro) to the UK and continental Europe being Dublin and Cork, we estimate that roughly 80% of short –sea shipping are represented by the Southern and Western region. See also: IMDO, 2013: The Irish Maritime Transport Economist, Vol. 10, April 2013.

<sup>142</sup> Similarly to short-sea shipping, also passenger ferries are largely concentrated in the Southern and Western region. Due to cruise vessels also increasingly calling on the Atlantic shores (BMW region), the region is representing 70%.

<sup>143</sup> The following rationale for the split applies:

<sup>144</sup> Around 80% of aquaculture activities are located around the Western shores. See: European Parliament, 2013: Fisheries in Ireland. DG for Internal Policies. Structural and Cohesion Policy.B. P. 27.

<sup>145</sup> See: The Socio-Economic Marine Research Unit (SEMURU), National University of Ireland, Galway. Report: An Overview of the Irish Biotechnology Sector and its Position within the Atlantic Area. SEMRU Working Paper Series Series No. 3 figure 3. P. which indicates that the number of companies by marine science-based biotech is rather equally spread when aggregating the NUTS 3 level figures for NUTS 2.

<sup>146</sup> Taking into account that the oil exploration Barryroe, we well as the commercial gas discoveries Seven Heads, Ballycotton and Kinsale are all located in the Southern and Eastern Region.

<sup>147</sup> Taking into account the wind farm in Arklow Bank, off the East Coast (Southern and Eastern region).

<sup>148</sup> A clear delineation could not be attributed to either region, due to the

<sup>149</sup> Dublin and Cork can currently be considered main ports of call for cruise tourism.

Sea-basin		Atlantic Arc		
Regional percentages that apply on Employment and GVA data		Border, Midland, Western (BMW)	Southern and Eastern	Other (non-maritime regions in your country)
	intrusion, protection of habitats			
<b>6. Maritime monitoring and surveillance</b>				
6.1/6.2	Traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods,			No data available
6.3	environmental monitoring			No data available

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## 2. Listing of the 7 largest, fastest growing and most promising marine and maritime economic activities

The following sections are aligned with the methodology of the Blue Growth study, as requested by DG MARE. A list in ranking order of the 7 largest, 7 fastest growing and 7 most promising prospective maritime economic activities at NUTS 0 level is provided. This part of the study relies on statistical information gathered and supplemented with the insights of the sector editor and the country editor.

### 2.1. Listing and ranking the largest marine and maritime economic activities

This subchapter identifies the largest maritime economic activities with a ranking order. On the basis of the scores obtained<sup>150</sup> in relation to GVA and persons employed, the 7 largest maritime economic activities have been identified as follows:

**Table 6 – Listing the 7 largest maritime economic activities in Ireland (NUTS-0)**

Rank	Maritime economic activities	GVA (million EUR)	Employment	Score
1.	Fish and fish processing for human consumption	258.5	6,391	<b>3.3</b>
2.	Coastal tourism	453.31	5,836	<b>3.1</b>
3.	Short-sea shipping (incl. Ro-Ro)	282.9	1,886	<b>1.0</b>
4.	Marine aquatic products	36.8	1,578	<b>0.8</b>
5.	Offshore oil and gas	137	790	<b>0.4</b>
6.	Yachting and marinas	45	800	<b>0.4</b>
7.	Cruise tourism	17	212	<b>0.1</b>

### 2.2. Ranking order for the 7 fastest growing marine and maritime economic activities over the 3 past years

This subchapter identifies and selects the 7 fastest growing maritime economic activities as emerged **over the past 3 years**. This part of the analysis is essential for forecasting future trends. The analysis entails the aggregation and assessment of quantitative data for the maritime economic activities, applying the same approach as in the previous task. On statistical information gathered supplemented with the insights of the sector experts and the country editors where applicable.

<sup>150</sup> Please refer to the country fiche manual

**Table 7 - Ranking order of the 7 fastest growing maritime economic activities in Ireland (NUTS 0)**

Rank	Maritime economic activities	GVA (CAGR)	Employment (CAGR)	Score
1.	Fish and fish processing for human consumption <sup>151</sup>	27%	27%	<b>0.27</b>
2.	Cruise Tourism <sup>152</sup>	24%	24%	<b>0.24</b>
3.	Marine Aquatic products <sup>153</sup>	11%	11%	<b>0.11</b>
4.	Blue biotech <sup>154</sup>	5.4%	-8.7%	<b>-0.01</b>
5.	Passenger ferry services <sup>155</sup>	-4%	-4%	<b>-0.04</b>
6.	Environmental monitoring <sup>156</sup>	-9.7%	-9.7%	<b>-0.09</b>
7.	Deep sea shipping <sup>157</sup>	-15.3%	-18.8%	<b>-0.17</b>

### 2.3. Ranking order of the 7 most promising marine and maritime economic activities

This subchapter identifies the most promising economic activities which have a perspective and promising growth potential, where future investments and projects could focus. A two-step approach is taken:

- Table 8 presents the scoring of all maritime economic activities (at NUTS 1 or 0 level) alongside the indicators identified in the initial Blue Growth study.<sup>158</sup>
- Table 9 suggests the ranking order for the 7 most promising maritime economic activities

The identification of the 7 most promising maritime economic activities is a result of expert evaluation, which is based on data and information derived from the previous sections, and combined with a number of key external drivers which will determine their importance in the future<sup>159</sup>.

<sup>151</sup> The total volume of landings by the IE fleet of fish for human consumption amounted to 314,200 tonnes of seafood (2010). The total volume of landings increased by 27% (during 2008 and 2011), due to the catches in boarfish (increase of 68,000 tonnes during that period), EP, 2013: Fisheries in Ireland. P. 20.

<sup>152</sup> In lack of data on direct employment and GVA contribution of the maritime sector, an alternative approach had to be sought. We know that the country recorded an increase of 80% of cruise vessels visiting Ireland between 2002 and 2012. See IMDO, 2013: The Maritime Transport Economist, Vol. 10; Hence, in a simplistic manner and in the current lack of secondary data on the exact amount of cruise passengers, we assume that the CAGR was 24% over the past 3 years.

<sup>153</sup> The sector recorded an 11% increase from 42,702 (2008) to 47,400 tonnes (2009) as total output of the sector. See also: Department of Agriculture, Food and the Marine, Annual Review of and Outlook for Agriculture, Fisheries and Food 2010/2011.

<sup>154</sup> JRC, Eurostat, PRODCOM, data 2008-2010

<sup>155</sup> CAGR data from for 2011 – 2012. See also: IMDO, 2013: The Irish Maritime Transport Economist, Vol. 10. April 2013. P. 30.

<sup>156</sup> Eurostat data available

<sup>157</sup> Includes Ship repair only, data derived from Eurostat

<sup>158</sup> Ecorys, Deltares, Océanique Développement, 2012: Drivers and Scenarios for Sustainable Growth from the Oceans, Seas and Coasts. Blue Growth Final Report. Annex I. Maritime economic activities data. Available here: <https://webgate.ec.europa.eu/maritimeforum/content/2946>

**Table 8 - Future potential of economic activities**

Function	Economic activity	Innovativeness	Competitiveness	Employment	Policy relevance	Spill-over effects	Sustainability	Overall score
0.Shipbuilding	0.1 Shipbuilding(excl. leisure boats) and ship repair	0	0	0	0	+	+	2
	0.2 Construction of water project	0	0	0	+	+	0	2
1. Maritime transport	1.1 Deep-sea shipping	+	+	+	0	0	-	2
	<b>1.2 Short-sea shipping (incl. RoRo)</b>	+	+	+	<b>0</b>	+	<b>0</b>	<b>4</b>
	<b>1.3 Passenger ferry services</b>	+	+	+	+	-	<b>0</b>	<b>4</b>
	1.4 Inland waterway transport	0	0	0	0	+	+	2
2. Food, nutrition, health and eco-system services	2.1 Fish and fish processing for human consumption	-	-	+	+	+	-	0
	2.2 Catching fish for animal feeding	-	-	+	+	+	-	0
	2.3 Marine aquatic products	0	+	+	0	+	0	3
	2.4 Blue Biotechnology	+	0	0	+	+	0	3
	2.5 Agriculture on saline soils	+	0	0	+	0	0	2
3. Energy and aquacultures	3.1 Offshore oil and gas	+	0	+	0	+	0	3
	<b>3.2 Offshore wind</b>	+	+	<b>0</b>	+	+	+	<b>4</b>
	<b>3.3 Ocean renewable energy (wave, tidal, OTEC, thermal, biofuels, etc.)</b>	+	+	<b>0</b>	+	+	+	<b>5</b>
	3.4 Carbon capture and storage	+	0	0	0	0	+	2
	3.5 Aggregates mining (sand, gravel, etc.)	0	0	0	0	0	0	0
	3.6 Marine minerals mining	0	0	0	0	0	0	0
	3.7 Securing fresh water supply (desalination)	0	0	0	0	0	0	0
4. Leisure and tourism	<b>4.1 Coastal tourism</b>	+	+	<b>0</b>	+	+	<b>0</b>	<b>4</b>
	<b>4.2 Yachting and marinas</b>	+	+	+	<b>0</b>	+	<b>0</b>	<b>4</b>
	<b>4.3 Cruise tourism</b>	+	+	+	<b>0</b>	+	+	<b>4</b>
5. Coastal protection	<b>5.1 Protection against flooding and erosion</b>	+	+	<b>0</b>	+	+	+	<b>5</b>
	5.2 Preventing salt water intrusion	0	0	0	0	0	0	0
	5.3 Protection of habitats	0	0	0	0	0	0	0
6. Maritime monitoring and surveillance	6.1/6.2 Traceability and security of goods supply chains, Prevent and protect against illegal movement of people and goods	0	0	0	0	0	0	0
	6.1 Environmental monitoring	0	0	0	0	0	0	0

The last column summarises the final score in terms of number of positive/negative judgements:

“+” in case positive impact of the economic activities on this indicator;

“-” in case of negative impact;

“0” in case the impact is negligible or no impact;

“0” will have no impact, “-” will have the effect of annulling “+” (e.g.: in the same row: ++++ and – and 0 will give the final score of +++).

“?” will not affect the final score.

**Table 9 - Ranking order of the 7 most promising maritime economic activities in Ireland (NUTS 0)**

<b>Rank</b>	<b>Maritime economic activities</b>	<b>Score (applying formula)</b>
<b>1.</b>	3.3 Ocean renewable energy (wave, tidal, OTEC, thermal, biofuels, etc.)	5
<b>2.</b>	5.1 Protection against flooding and erosion	5
<b>3.</b>	3.2 Offshore wind	4
<b>4.</b>	4.1 Coastal tourism	4
<b>5.</b>	4.2 Yachting and marinas	4
<b>6.</b>	4.3 Cruise tourism	4
<b>7.</b>	1.2. Short-sea shipping	4

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### 3. Identification of the most innovative components of Blue Growth

#### 3.1. Assess the innovation score of the maritime economic activities / sectors

This chapter assesses the innovation scores of each of the maritime economic activities in the country. The innovation indicators are inspired on the EU Innovation Scoreboard which aims to capture the innovation level of a country. The following indicators are included<sup>160</sup>:

Indicator	Explanation
1. Technological Innovation	number of innovations and publications per MEA to the MEA's GVA
2. Skills absorption	share of higher level education in workforce
3. Employment dynamism of innovative fast-growing firms	the indicator combines an innovation coefficient (as developed by Eurostat) with the number of employees in a fast growing firm (annual growth in employees of >10%)
4. RTD expenditure & company growth	This indicator first identifies the level of R&D spending in relation to GVA/turnover (static analysis) and then links it to the growth in turnover (dynamic analysis)

If in national sources other innovation indicators are found these are included in table 9.

Wherever available, quantitative scores for each of the maritime economic activity are used. Based on the available information ranking scores which presented that rank/order the level of innovation of the different maritime economic activities (1 = highest rank).

**Comment:**

The innovation indicators will be further elaborated in the sea basin report and are then intended to be fed back in the country fiche when relevant.

#### Table 8 – Scoring of the maritime economic activities on innovation criteria

See comment above

<sup>160</sup> Dependent on data availability



### 3.2. Assessment of innovation reports compiled at national level

In addition to the above indicators a national study has been identified that contains information on innovation potential per sector/maritime economic activity. A qualitative assessment of this report is provided beneath.

**Table 11 – List of pre-identified national maritime sector analysis**

Source	Qualitative assessment regarding innovation potential per maritime economic activity/sector
<p><b>Johnson Cornell University, INSEAD, WIPO, 2013: The Global Innovation Index 2013. The Local Dynamics of Innovation</b><sup>161</sup></p>	<p>The report does not provide an overview of maritime economic activities and their innovation scoring. However, it does provide some insight into knowledge and education related aspects of countries on a global comparison.</p> <ul style="list-style-type: none"> <li>• With regard to Scientific and technical publications, i.e. the number of scientific and technical journal articles (per billion PPP\$ GDP), Ireland ranked 24<sup>th</sup> on a global level (P.339).</li> <li>• Similarly, with respect to the number of international patent applications filed by residents at the Patent Cooperation Treaty (per billion PPP\$ GDP (P. 337). It ranks 28<sup>th</sup> in terms of number of international patent applications filed by residents at the Patent Cooperation Treaty (per billion PPP\$ GDP) (P. 336).</li> <li>• In 2010, 65% of the overall workforce in Ireland was employment in knowledge-intensive services (P. 321).</li> <li>• In 2010, tertiary graduates in engineering, manufacturing, and construction accounted for 71% of total tertiary graduates (P. 294).</li> </ul>

Based on the above quantitative and qualitative information an assessment is made of the 7 most innovative maritime economic activities.

**Table 12 - Ranking order of the 7 most innovative maritime economic activities in a MS at NUTS-0 level**

Rank	Maritime economic activities
1.	...
2.	...
3.	...
4.	
5.	
6.	
7.	

<sup>161</sup> [http://www.wipo.int/export/sites/www/freepublications/en/economics/gii/gii\\_2013.pdf](http://www.wipo.int/export/sites/www/freepublications/en/economics/gii/gii_2013.pdf)

## 4. Identification and analysis of maritime clusters

This section identifies the key Blue Growth clusters in Ireland and describes their economic activities. Clusters are one of the most notable concepts within economic geography. However they are not always easily to difficult to grasp or to measure as they are not clearly delineated industries or sectors. Clusters can be defined at the level of:

- An end product industry or industries;
- Downstream or channel industries;
- Specialised suppliers;
- Service providers;
- Related industries: those with important shared activities, shared skills, shared technologies, common channels, or common customers;
- Supporting institutions: financial, training and standard setting organisations, research institutions, and trade associations.

In this study, clusters are defined as “a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities (external economies)<sup>162</sup>.”

### 4.1. Maritime clusters in Ireland

Building on the clusters already identified in the Blue growth study<sup>163</sup> and complemented with cluster identified in the EU Cluster Observatory<sup>164</sup>, the following clusters have been identified for Ireland.

**Table 12 – Maritime clusters in Ireland<sup>165</sup>**

Maritime clusters EU Cluster Observatory	Suggested clusters for in-depth analysis		
	Cluster	Location of the cluster	Maritime economic activities in the cluster
Ireland	Galway	Atlantic Arc	ocean renewables; windfloat areas; blue biotechnology, aquaculture; deep sea technologies (synergies)
	Cork	Atlantic Arc	Marine Energy, Shipping, Logistics and Transport; Maritime Safety and Security, Marine Recreation

The cluster analysis builds further on the regional allocation of economic activities as described under section 1.2. It also aims at assessing the maturity of the cluster (mature, growing or early development).

<sup>162</sup> Prof. Michael E. Porter, 20120213, MOC2012 (HBS course) Session 5 - final

<sup>163</sup> In the previous Blue Growth study, these were: Bretagne, Brest, Marseilles, ES: Galician Coast, Barcelona;

<sup>164</sup> The EU Cluster Observatory denotes maritime clusters and tourism clusters.

<sup>165</sup> This longlist is based on the EU cluster observatory. Besides, additional selection criteria were applied, primarily based on the mix of maritime economic activities. See also separate methodology note provided for the cluster analysis.

## 4.2. Cluster analysis

The clusters are analysed according to the following aspects (table 13):

1. Maritime economic activities in the cluster and indicate the mixture and composition of the cluster activities in terms of their development stage (mature, growing, early development);
2. Assessment of strengths and weaknesses (feeding in to the overall SWOT analysis on the sea-basin level which will be part of the final report).

In addition to that, the identified clusters should be analysed according to the following indicators (table 14):

4. Number of students in higher education;
5. Number of students in higher education following courses specially designed for employment in the blue economy
6. Unemployment rate in the cluster
7. On-going research in a given cluster, i.e. number of on-going research programmes and projects in the cluster, regionalised patent & publications data (where available at cluster level), R&D test centres located in the cluster etc.

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Table 13 - List and strengths and weaknesses of clusters

Cluster	Maritime economic activities covered	Status	Strengths	Weaknesses
Galway	Blue biotechnology	Growing	<p><u>Ireland:</u> strong research focus and research environment facilitating the development of a marine biotechnology cluster.</p> <p>Focus areas lie in marine biotechnology research (Marine Institute Beaufort Award for Marine Biodiscovery Research, NutraMara - National Marine Functional Foods Research Initiative.</p> <p>Marine biotechnology as a drivers in particular for the seaweed harvesting.</p> <p>Commercially oriented competence centres (e.g. Centre of Applied Marine Biotechnology CAMBio, Letterkenny Institute) and industry-led partnerships;</p> <p><u>Galway:</u> Favourable conditions in terms of climate (sheltered coastline) and socio-economic structure (absence of heavy industry and intensive farming)</p>	<p><u>Ireland:</u></p> <p>The sector will need to develop further and involve more industry stakeholders to reach a critical mass</p> <p>Strong research initiatives and facilitation in the sector – notably through participation in research programmes.</p>
	Fish and fish processing for human consumption and animal feeding	Growing with recovery of the global economy	<p><u>Ireland:</u></p> <p>Sound environment for production of high quality farmed fish and shellfish</p> <p>Potential growth in landings of non-Irish fishing fleet on Irish ports, and favouring domestic processing (as opposed to foreign), due to increasing fuel prices and distance to home ports (for ES and NO vessels)</p> <p><i>research projects</i> in the field of diversification of existing finfish culture into quality white fish (Eircod project), the Marine Institute Beaufort Award for Fish Population Genetics to develop a suite of Genetic Stock Identification (GSI) tools to monitor and predict fish population changes resulting from climate change impacts. ASTOX is</p>	<p><u>Ireland:</u></p> <p>Gradual depletion of stock (on cod fish and whiting) fallen near to below safe biological limits</p> <p>Challenges to manage the economic transition to comply with international obligations to reducing the allowable catches (MSY)</p> <p>Fragmented domestic sales structure and lack of scale<sup>168</sup></p> <p>Transition from niche market exporters to a more integrated domestic supply chain.<sup>169</sup></p> <p><u>Galway:</u></p> <p>Less favourable conditions compared to the major fishing ports (in terms of value of weight and landings): Killybegs,</p>

<sup>168</sup> Food Harvest 2020, P. 53.

<sup>169</sup> Food Harvest 2020, P. 53.

Cluster	Maritime economic activities covered	Status	Strengths	Weaknesses
			<p>providing a scientific basis for rationalising the biotoxin monitoring and risk management systems used. The Seaweed Aquaculture project is developing industry-scale hatchery and on-growing methodologies for a range of commercially relevant seaweed species.</p> <p>Company turnover is performing well in 2013.<sup>166</sup></p> <p>Key milestones defined at national level to achieve growth in terms of aquaculture (17% increase by 2015).<sup>167</sup></p> <p>Matchmaking and export promotion particularly in the shellfish and salmon sectors through Bord Bia: hosted importers, processors and distributors from China, Russia, the Middle East, Switzerland and Austria;</p> <p><u>Galway:</u></p> <p>Recent plans to establish a new salmon farm close to Aran Islands which would help double the farmed-salmon output. The expected employment would amount to 350 FTEs both on the farm itself and in providing spillover to supporting industries (incl. vessels)</p>	Castletownbeere and Kilmore Quay.
	Yachting marinas and Growing		<p><u>Ireland:</u></p> <p>Research into best practice regarding the development and funding of marina and berthing facilities in Ireland, with a view to shaping national policy in this area,<sup>170</sup></p> <p><u>Galway:</u></p> <p>Increasing attractiveness as a yachting location, not least due to hallmark events (e.g. Volvo Ocean</p>	<p><u>Ireland:</u></p> <p>Underutilised potential in terms of marine sports</p> <p>Diversify yachting and marina experience outside the main agglomerations (Dublin, Cork)</p> <p>Expansion of sailing visitors would require further investment into existing port and marina infrastructure<sup>171</sup></p>

<sup>166</sup> Food Harvest 2020. Milestones for Success 2013. P. 25.

<sup>167</sup> Food Harvest 2020. Milestones for Success 2013. P. 28.

<sup>170</sup>

<http://www.ouroceanwealth.ie/SiteCollectionDocuments/MCG%202013%20Q%20%20Status%20Report%20of%20Implementing%20HOOW%20Early%20%20and%20Ongoing%20Actions%20 June 13.pdf>

<sup>171</sup> According to itic – submission from the Irish Tourist Industry Confederation to the Ocean Wealth Consultation. Available here: [http://www.itic.ie/fileadmin/docs/ITIC\\_RESPONSE-IRELAND\\_S\\_OCEAN\\_WEALTH-MARCH\\_12.pdf](http://www.itic.ie/fileadmin/docs/ITIC_RESPONSE-IRELAND_S_OCEAN_WEALTH-MARCH_12.pdf)



Cluster	Maritime economic activities covered	Status	Strengths	Weaknesses
			<p>Race stopover, 2009 and CONG – Galway sailing race, organized annually)</p> <p>Joint cooperation at local level in terms of place branding</p>	<p><u>Galway:</u></p> <p>limitations in growing the visitor marina network, notably on the West coast<sup>172</sup></p> <p>Development of more ‘distinctive’ place marketing drawing on the Western Irish heritage, to attract a greater number of visitors, notably along Ireland’s west coast.<sup>173</sup></p>
	Ocean energy	Growing	<p><u>Ireland:</u></p> <p>High potential in ocean energy for both shallow and deeper waters in Ireland</p> <p>Government programmes, e.g. the Ocean Energy Programme benefits the development of grid-connected wave energy test site and grants, help commercialisation of wave energy devices</p> <p>Presence of SMEs and multinational companies.</p> <p><u>Galway:</u></p> <p>Smart Bay Galway harbours a quarter scale wave energy test site, supported by large corporations, e.g. IBM and SMEs</p> <p>Good horizontal links between ocean energy and ICT devices (monitoring and data solutions)</p>	<p>The further development of the local cluster may be hampered by the extension of the offshore grid system</p> <p>Dependency on large-throughput electricity transmission cables for scaling up ocean energy in Ireland</p>
	Aquaculture	Growing	<p><u>Ireland:</u></p> <p>established system of environmental and food safety monitoring which meets EU and market demands.<sup>174</sup></p> <p>Funding support for aquaculture projects supported by BIM under the National Development Plan (NDP) U co-funded Measures</p> <p>AquaTT which facilitates joint projects in aquaculture</p>	<p>Decline in certain species</p> <p>Better integration with local processing industry</p> <p>Limited domestic demand and need for increasing exports</p>

<sup>172</sup> According to itic – submission from the Irish Tourist Industry Confederation to the Ocean Wealth Consultation. Available here: [http://www.itic.ie/fileadmin/docs/ITIC\\_RESPONSE-IRELAND\\_S\\_OCEAN\\_WEALTH-MARCH\\_12.pdf](http://www.itic.ie/fileadmin/docs/ITIC_RESPONSE-IRELAND_S_OCEAN_WEALTH-MARCH_12.pdf)

<sup>173</sup> Irish Tourist Industry Confederation, New Directions for Tourism in the West. . Compiled by Tourism & Transport Consult International (TTC)

<sup>174</sup> Status of Irish Aquaculture, 2007 : A compilation report of information on Irish Aquaculture. Marine Institute, Bord Iascaigh Mhara and Údarás na Gaeltachta. Report compiled and prepared by: MERC Consultants Ltd. December 2008.P. 8-9.

Cluster	Maritime economic activities covered	Status	Strengths	Weaknesses
			<p><u>Galway:</u></p> <p>Long-standing experience with farmed cod (since Feb. 2007) from the Trosc Teoranta</p> <p>Large number of research institutes on Aquaculture (NUI Galway, Martin Rayo Institute, Galway Mayo Institute of Technology)</p> <p>Large amount of aquaculture licenses (oysters, mussels, scallops) and new aquaculture species sites in Galway Bay.<sup>175</sup></p> <p>Two new sites have been selected in Galway Bay close to Inis Oirr.<sup>176</sup></p>	
Cork	Tourism <sup>177</sup>	Growing	<p>A research showed that there is a healthy prospective visitor market that is warm to Ireland.</p> <p>The perception of Cork by those that have visited is very positive.</p> <p>Cork is perceived to be rich with 'typical' Irish culture (in the civic sense, rather than artistic discipline) and strong local heritage.</p> <p>It is also perceived to be 'unspoiled by tourists' giving it a special feel and character (compared to Dublin or Galway), which is attractive to a certain type of people.</p> <p>There is a growing market of 'The Engaged Culture Seeker' type of tourism, which Cork satisfies very well.</p>	<p>Cork is not a young person's destination.</p> <p>International awareness of Cork and its possibilities is in general very low.</p> <p>Domestic willingness to visit Cork is also rather low.</p>
	Yachting and marinas <sup>178</sup>	Tentative growing with large potential	<p>Currently already caters for a large yachting and leisure boating activity. It is one of the primary rowing centres in the whole country.</p> <p>The local authorities are active in creating and enacting a comprehensive strategy to increase the pleasure boating possibility of the Cork harbour and marinas.</p>	<p>Cork is also a busy commercial and Naval port with frequent traffic by large vessels.</p> <p>Lack of coordination between different authorities and partners.</p> <p>Current capacity in marinas and yards is complete, thus limiting space for further expansion.</p>

<sup>175</sup> Status of Irish Aquaculture, 2007 : A compilation report of information on Irish Aquaculture. Marine Institute, Bord Iascaigh Mhara and Údarás na Gaeltachta. Report compiled and prepared by: MERC Consultants Ltd. December 2008. P. 12.

<sup>176</sup> Food Harvest 2020. Milestones for Success 2013. P. 25.

<sup>177</sup> [http://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/2\\_Develop\\_Your\\_Business/3\\_Marketing\\_Toolkit/5\\_Cultural\\_Tourism/Cork\\_Cultural\\_Tourism\\_Research\\_2012\\_-\\_FINAL.pdf?ext=.pdf](http://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/2_Develop_Your_Business/3_Marketing_Toolkit/5_Cultural_Tourism/Cork_Cultural_Tourism_Research_2012_-_FINAL.pdf?ext=.pdf)

<sup>178</sup> [http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&ved=0CCwQFjAA&url=http%3A%2F%2Fwww.portofcork.ie%2Findex.cfm%2Fpage%2Fmarineleisure%3Ftwfid%3D58%26download%3Dtrue&ei=JvJgUsnKMseo0AWEYCADg&usg=AFQjCNG\\_AvVEC70NxXQgKfmJbkhHyDK5A&bvm=bv.54176721,d.d2k](http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&ved=0CCwQFjAA&url=http%3A%2F%2Fwww.portofcork.ie%2Findex.cfm%2Fpage%2Fmarineleisure%3Ftwfid%3D58%26download%3Dtrue&ei=JvJgUsnKMseo0AWEYCADg&usg=AFQjCNG_AvVEC70NxXQgKfmJbkhHyDK5A&bvm=bv.54176721,d.d2k)

Cluster	Maritime economic activities covered	Status	Strengths	Weaknesses
			Old industrial sites and harbours now disused and available for regeneration.	
	Offshore Oil & Gas	Growing	<p>Ireland's only oil refinery and oil storage facility are located at (respectively) Whitegate and Whiddy Island in County Cork.</p> <p>The North Celtic Sea Basin has the first and only commercial oil and gas field in the country (Kinsale)<sup>179</sup> with more exploration in the area taking place.</p>	The area is not a traditional oil and gas centre and infrastructure still needs to improve to cope with the much larger inflow of oil and gas.
	Ocean renewable energy	Research based	Ireland has is looking into ways of harnessing its wave energy potential, including with the use of a test tank at the HMRC in Cork <sup>180</sup>	In terms of offshore wind Cork is inaccessible due to an exclusion zone that has been imposed as a result of the commercial shipping lanes heading into Cork harbour. <sup>181</sup>
	Fish and fish processing for human consumption and animal feeding	Growth in turnover, but decline in size of catch. <sup>182</sup>	<p>There has been a steady increase in the turnover from landings, largely as a result of increased market price for products.</p> <p>Cork has a long history of commercial fishing and therefore very good infrastructure and facilities allowing for efficient commercial operations.</p>	The quota has been decreasing steadily over the years leading to a steady decline in the size of the catch and resulting in the decline of the whole sector. This is unlikely to reverse and it is likely that the adaptation is likely to continue.
	Aquaculture	Growing	<p>The majority of licences are held in Galway, Donegal and Cork (cumulative total 59% of all licences in Ireland). In Cork alone there were 90 licences (third largest) representing 17% of all Irish licences.</p> <p>The majority of these were in the shellfish production (oyster and mussels).</p> <p>There has been several research activities in the area, where the University Collage Cork participated.<sup>183</sup></p> <p>As wild fish stock decline there is an increasing tendency towards the</p>	There is still a need for better integration of local processing industry as well as encouraging local demand for the products.

<sup>179</sup> [http://www.siptu.ie/media/media\\_14689\\_en.pdf](http://www.siptu.ie/media/media_14689_en.pdf)

<sup>180</sup> SEAI, Industrial Development potential of offshore wind in Ireland, 2011

<sup>181</sup> SEAI, Industrial Development potential of offshore wind in Ireland, 2011

<sup>182</sup> SEMRU , Ireland's Economy 2010

<sup>183</sup> MERC 2006, Status of Irish Aquaculture

Cluster	Maritime economic activities covered	Status	Strengths	Weaknesses
			aquaculture in particular when it comes to Salmon and Cod. There is therefore ample space for growth.	
	Blue Biotech	Growing	<p>Overall, the share of a marine focus in Biotechnology in Ireland is around 3% of the sector. Yet the blue biotechnology sector is very young and experiencing fast growth proportionally distributed around the country.</p> <p>Cork has the second highest concentration of Blue Biotech companies in Ireland (13%), second only to Ireland.<sup>184</sup></p> <p>The University Collage Cork in particular is running several courses as well as research activities.</p>	The sector is still rather new and therefore infrastructure and stronger research communities need to be developed.

**Table 14 – In-depth analysis of clusters**

	Maritime economic activities concerned	Education policy		Unemployment rate at cluster level <sup>185</sup> (NUTS III or II level)	Ongoing research: main research institutes / companies associated to the clusters
		Number of students in higher education	Number of students in higher education following courses for employment in blue economy		
Galway					The Ryan Institute is the National University of Ireland, Galway's hub for Marine research activities. It is home to over 250 researchers and houses three centres of excellence: the Centre for Health from Environment, The Centre for

<sup>184</sup> SEMRU, An Overview of the Irish Biotechnology Sector and its Position within the Atlantic Area, 2010

<sup>185</sup> Where available data exists, this should be provided at NUTS 3 level. However, if not available, a NUTS 2 data are gathered. The breakdown on cluster level will be provided and the rationale provided.

					Climate and Air Pollution Studies and the Energy Research Centre as well as Ireland's only unit dedicated to research in the area of marine socio-economics; the Socio-Economic Marine Research Unit (SEMRU).
Cork	Marine Energy, Blue Biotech, Marine Engineering, Marine Biology, Coastal Mapping,	33 000 <sup>186</sup>		14.6% <sup>187</sup>	University College Cork, Coastal and Marine Research Centre, Cork Institute of technology, Hydraulics and Maritime Research Centre

<sup>186</sup> Rounded number of students attending the University Collage Cork and Cork Institute of Technology

<sup>187</sup> Central Statistics Office Ireland. Cork unemployment of the cluster (pre-defined).

List of **specific regional or national cluster strategy** in place

**Table 15 – Regional or national cluster strategy**

<b>Regional or national cluster strategy</b>	<b>Brief description of main objectives and features</b>
Smart Ocean strategy <sup>188</sup>	“The SmartOcean Research and Innovation Strategy seeks to establish an Irish position for marine ICT development and enable future opportunities such as those that will emerge from Horizon 2020 to be strategically targeted in a global and EU context.”
Cork Cluster Strategy	With the natural resource and potential of the Port of Cork, the National Maritime College of Ireland (NMCI), the Hydraulics and Maritime Research Centre (HMRC) at University College Cork and work being carried out by the likes of Plato in the marine and tourism sectors, as well as the formation of a Maritime Forum by the SWRA in 2008; there was a strong argument to be made for the establishment of a formal Maritime Cluster in Cork. <sup>189</sup> This has been later on transformed into the iMerc cluster Cork. <sup>190</sup>

<sup>188</sup> <http://www.smartocean.org/SmartOceanConsultation.aspx>

<sup>189</sup> [http://www.swra.ie/contentfiles/pdfs/SWRA\\_Cluster\\_Benchmarking\\_Report\\_Composite\\_FINAL\\_FINAL\\_July\\_09.pdf](http://www.swra.ie/contentfiles/pdfs/SWRA_Cluster_Benchmarking_Report_Composite_FINAL_FINAL_July_09.pdf)

<sup>190</sup> <http://www.imerc.ie/>



## 5 Analysis of measures, policies and strategies to stimulate growth and good practices in Ireland

The policy evaluation beneath is carried out at national level - NUTS 0, 1 or regional level NUTS 2 (depending on the individual level on which the maritime policy decision-making competency is residing)<sup>191</sup>

The evaluation assesses policies at national, regional and EU level including those that are perceived to favour sustainable maritime growth. Besides, the rationale on what renders such measures effective will be provided (see table 16), focusing on legal/regulatory or financial measures.

The analysis is comprised of two interlinked analysis:

Table 16 provides an overview of maritime policies (national, regional and EU level) and assesses their impact.

Table 17 concludes with good practices derived from these maritime and generic policies. It identifies examples of good practice in one or more Member States that other countries and regions can follow. IT is completed based on the assessment of the country expert with overall supervision of the core team of the study.

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<sup>191</sup> We understand this might differ for specific policies. See also table 3 of this country fiche.

**Table 16 – Assessment of maritime and generic policies**

Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding	Other generic policies with high impact on maritime economic activities
Our Ocean Wealth <sup>192</sup>	<p>Harnessing Our Ocean Wealth is an Integrated Marine Plan (IMP), setting out a roadmap for the Government’s vision, high-level goals and integrated actions on achieving economic growth in maritime economic activities. On an operational level, it defines three goals:</p> <p>Goal 1 focuses on a thriving maritime economy, whereby Ireland harnesses the market opportunities to achieve economic recovery and socially inclusive, sustainable growth.</p> <p>Goal 2 sets out to achieve healthy</p>	<p>The following measurable Ocean Wealth 2020 Targets have been defined:</p> <ul style="list-style-type: none"> <li>• Double the value of our ocean wealth to 2.4% of GDP by 2030.</li> <li>• Increase the turnover from the ocean economy to exceed €6.4bn by 2020.</li> </ul>	<p>Among the direct consequences for maritime activities are:</p> <ul style="list-style-type: none"> <li>• Good governance and maritime safety, security and surveillance are vital cornerstones and will receive further attention</li> <li>• Crosssectoral integrated marine policy, planning and decision-making at</li> <li>• The delivery of more efficient and effective public services; the removal</li> <li>• Healthy marine ecosystems, including a clean, green environment,</li> <li>• Green marine products and services</li> </ul>	<p>Healthy marine ecosystems, including a clean, green environment is defined as one of the key enabling goals to harness the benefits of Blue Growth. 12 out of the 39 policy actions related to Our Ocean Wealth are dedicated to achieving the goal</p>		

<sup>192</sup> Harnessing Our Ocean Wealth, 2012: An Integrated Marine Plan for Ireland. July 2012.

Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding	Other generic policies with high impact on maritime economic activities
	<p>ecosystems that provide monetary and non-monetary goods and services (e.g. food, climate, health and well-being).</p> <p>Goal 3 aims to increase the people's engagement with the sea with the aim of strengthening the maritime identity and increase our awareness of the value (market and nonmarket), opportunities and social benefits of engaging with the sea.</p>		<p>(e.g. in our food and tourism sectors).</p> <ul style="list-style-type: none"> <li>• implementation and compliance with environmental legislation. Equally, we need</li> <li>• drawing on strengths in Research, Technology, Development and Innovation (RTDI) in marine science and technology</li> <li>• An enabling infrastructure (e.g. ports, piers, electricity grid, research infrastructure)</li> <li>• Close North/South cooperation and collaboration with our Atlantic neighbours and international partners</li> </ul>			
The SmartOcean Research and	The strategy, launched in 2010, is a part of the Marine Institute's	The strategy seeks to establish an Irish position for	This includes the delivery of next generation technology products and	There are currently over 50 indigenous and multinational companies based in Ireland engaged	•	

Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding	Other generic policies with high impact on maritime economic activities
Innovation Strategy <sup>193</sup>	<p>National Marine Technology Programme, dedicated to facilitate a range of research and development activities in the area of sensor development, data management and information systems for application driven technology development in marine ICT.</p> <p>The strategy seeks to harness Ireland's natural marine resources and specialist expertise in Marine Science and ICT to establish Ireland as a leader in the development of high value products and services for the global marine sector.</p>	<p>marine ICT development and enable future opportunities such as those that will emerge from Horizon 2020 to be strategically targeted in a global and EU context.</p>	<p>services for marine sectors such as aquaculture, environmental monitoring, shipping and security and marine renewable energy.</p> <p>Currently, a public consultation is launched to which Blue Growth stakeholders in Ireland are invited to contribute</p>	<p>in the development and provision of High Tech Marine products and services to the Global Marine Sector. These include the provision of remote sensing systems, data management and visualisation tools, modelling, simulation, forecasting and engineering design supporting operational management.</p>		
Sea Change – A	The primary objective	<ul style="list-style-type: none"> <li><b>Strengthening</b></li> </ul>	Building upon the 2007	The SeaChange strategy has been	<ul style="list-style-type: none"> <li>Since the</li> </ul>	

<sup>193</sup> See also: <http://www.smartocean.org/Home.aspx> and Harnessing Ireland's Potential as a European and Global Centre for Ocean Technologies. Inspire – Initiate – Innovate. Marine Institute.

Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding	Other generic policies with high impact on maritime economic activities
Marine Knowledge, Research & Innovation Strategy for Ireland 2007-2013 <sup>194</sup>	was aimed at driving the development of the marine sector as a dynamic element of Ireland's knowledge economy.	<p><b>the competitiveness and environmental sustainability of the marine sector</b> by alignment between public sector &amp; third-level research capacity and industry needs;</p> <ul style="list-style-type: none"> <li>• <b>Building new multidisciplinary research capacity and capability in fundamental technologies</b> that can be applied to marine-related activities</li> </ul>	<p>and 2008 investment commitments, new investment of ~€2.15m was committed by Marine Institute managed research funds in 2009, supporting <b>research and training onboard the national research vessels</b>.</p> <p>This brings the total committed under the NDP Marine Research Sub-Programme to €49.7m.</p> <p>During 2009, the Sea Change Team were actively engaged in <b>supporting 3 major emerging national R&amp;D programmes</b> in Marine Biotechnology, Advanced Marine Technology and Renewable Ocean Energy.</p>	implemented via three research measures (industry, discovery and policy support), and two supporting programmes (innovation and infrastructure)	<p>launch of Sea Change, an estimated €119m has been committed (nationally and internationally ) in marine-related research:</p> <ul style="list-style-type: none"> <li>• 41% of which comes from Marine Institute managed NDP funds;</li> <li>• 39% from other national funding bodies; and</li> <li>• 20% from international funding.</li> <li>• research investment focuses on</li> </ul>	

<sup>194</sup> <http://www.marine.ie/home/research/SeaChange/> and <http://www.marine.ie/home/research/SeaChange/Update+on+Progress/>

Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding	Other generic policies with high impact on maritime economic activities
		<ul style="list-style-type: none"> <li>Delivering a comprehensive planned policy research programme</li> </ul>			<p>funding projects that address policy issues or potential development opportunities and build research capacity in specific areas – e.g. marine functional foods, marine biotechnology, fisheries management, ocean energy and marine technology.</p>	
Food Harvest 2020 <sup>195</sup>	National Strategy to align the entire food sector in Ireland (including also seafood) with the objectives of the Europe 2020 agenda and contribution to	The reports set out three measurable targets to be achieved by 2020: A 33% increase in	Seafood, aquaculture and fishing are included in the Food Harvest 2020 blueprint.  In terms of concrete output of the Food Harvest			

<sup>195</sup> <http://www.agriculture.gov.ie/agri-foodindustry/foodharvest2020/> and also: Department of Agriculture, Food and the Marine: Food Harvest 2020. Milestones for Success 2013.



Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding	Other generic policies with high impact on maritime economic activities
	smart, green and sustainable growth.	<p>the value of the primary agriculture</p> <p>An export target of €12 bn</p> <p>A 40% increase in value-added from 2008 baseline year</p>	2020 in terms of maritime economic activities, two offshore aquaculture sites have been selected in Galway Bay, as well as two sites of offshore aquaculture determined; an assessment of the EU market for organic salmon was carried out with positive results for the market segment			
National Marine Biotechnology Programme <sup>196</sup>	<p>The Marine Institute established Marine Biotechnology Ireland as a national programme in 2007 to deliver on the objectives of Sea Change: A Marine Knowledge, Research &amp; Innovation Strategy for Ireland 2007-2013.</p> <p>The objectives are to create and sustain Irish opportunities for research, development and innovation in</p>		The actions of MBI are focused on stimulating the utilisation of marine organisms and materials for the sustainable production of food, drugs, biomaterials, nutraceuticals and industrial processes.	<p>MBI will establish a strong collaboration with the growing biopharma sector in Ireland;</p> <p>Building links between marine biotechnology research and the medical device and diagnostic sectors;</p> <p>Stimulating the use of marine origin materials by Ireland's agri-food sector;</p> <p>Encouraging the use of biological processes to help maintain healthy environments and</p> <p>Promoting the sustainable</p>	<p>Since 2007, an excess of €20 million to develop national research capacity in marine biotechnology and marine biosciences have been invested.</p> <p>Additional national and international funding sources further support scientific investigation in molecular and</p>	

<sup>196</sup> <http://www.marine.ie/home/research/SeaChange/NationalMarineBiotechnology/>

Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding	Other generic policies with high impact on maritime economic activities
	<p>marine biotechnology and to focus on strategically important research areas.</p> <p>Another objective lies in the fact of acquiring through the commercialisation of marine biotechnology research outputs.</p>			exploitation of Ireland's marine resources.	nanosciences.	
2013 National Ports Policy <sup>197</sup>	<p>Facilitate a competitive and effective market for maritime transport in Ireland</p> <p>Ultimately, to call for a more differentiated support structure of ports according to their significance</p> <p>To pool public support at national level to the ports of national significance</p>	<p>The Policy Statement states that most of the harbours would best achieve their potential through transfer to local authority ownership. In harbours where significant commercial traffic exists, consideration will be given to bringing such</p>	<p>Commercial port activities will be geared more towards generating economies of scale and increase capacity</p> <p>Individual port companies will have to be open to private-sector driven investments</p> <p>More regional / local policy support (for ports of regional significance)</p>	Policy framework to allow the commercial port sector to develop in a sustainable manner	<p>In the policy blueprint of the 2005 Ports Policy Statement, it stated that ports should receive no further Exchequer funding for infrastructure. Projects that can demonstrate strong cash flow and attract private-sector investors are welcomed</p>	

<sup>197</sup> Department of Transport, Tourism and Sport, 2013: National Ports Policy. Available here: [http://www.transport.ie/upload/general/13776-NATIONAL\\_PORTS\\_POLICY\\_2013-1.PDF](http://www.transport.ie/upload/general/13776-NATIONAL_PORTS_POLICY_2013-1.PDF)

Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding	Other generic policies with high impact on maritime economic activities
		harbours under the control of a port company.			(commercial basis with commercial return)	
Steering a New Course – Strategy for a restructured, Sustainable and Profitable Seafood Industry for the period 2007–2013 <sup>198</sup>	Specific recommendations (12) to implement the industry vision of a profitable seafood industry		Key Recommendations included the Processing Sector, fleet restructuring and development, fisheries management, aquaculture development, marine environment and conservation		<p>It recommended a budget of €55 million for marketing over the seven-year period, which on an average annual basis amounts to €7.8 million.</p> <p>In all a total of €334 million is being requested over the seven year duration of the programme.</p> <p>This State supported investment will in turn be used to leverage a further €263 million by way of private sector funding.<sup>199</sup></p>	

<sup>198</sup> <http://www.agriculture.gov.ie/media/migration/fisheries/marineagenciesandprogrammes/seafooddevelopmentinireland/SteeringaNewCourse141111.pdf>

<sup>199</sup> Steering a New Course – Strategy for a restructured, Sustainable and Profitable Seafood Industry for the period 2007–2013. P. 142.

Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding	Other generic policies with high impact on maritime economic activities
Galway Statement on Atlantic Ocean Cooperation particularly in relation to climate change.	Signed by representatives of the European Union, the United States and Canada, the signees agreed to join forces on Atlantic Ocean Research. The goal is to better understand the Atlantic Ocean and promote the sustainable management of its resources. The Agreement aims to connect the ocean observation efforts of the three partners.	<ul style="list-style-type: none"> <li>Increasing the knowledge on Atlantic Ocean</li> <li>Aligning ocean observation efforts to improve sustainable ecosystems</li> <li>Coordinate data sharing, interoperability and coordination of observing infrastructures</li> </ul>	<ul style="list-style-type: none"> <li>Promote citizen's understanding of the value of the Atlantic by promoting oceans literacy.</li> <li>Indicate how results of ocean science and observation address pressing issues facing our citizens</li> <li>Coordinate the planning of relevant activities, including researcher's mobility</li> </ul>			

The following evidence indicators to identify successful good practices will be analysed depending on the specific context of the individual good practice identified.<sup>200</sup> The assessment presents an expert opinion as to how far the targets and the objectives of the particular good practice have been met and in how far those have been met.

**Table 17 Assessment of good practices derived**

Good practice	Evidence for impact 1	Evidence for impact 2	Evidence for impact 3	Assessment
Good practice 1				
Good practice 2				
...				

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<sup>200</sup> Provided that data is available to identify indicators of success of the good practice (evidence for impact).

No activity in Ireland, sector data negligible

## **Annex I – Detailed description of the sources and the methodology on maritime economic activities**

The following table refers to section 1.1 Overview of relevant maritime economic activities in a Member State (table 1). It will provide the table with the relevant figures sourced from Eurostat, Official national statistical sources or alternative sources (as indicated by the columns of table 1). Detailed reference regarding the sources of the data will complement the data.

In order to complete table 1, the figures considered to be the most reliable and up-to-date reflection of the GVA and employment status of the specific maritime economic activity will be highlighted in bold. The judgement is based on the country expert with feedback from the core team.

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Table 18 – Selection table of the most relevant figures and detailed references

		Eurostat			Official National Statistical Sources			Alternative sources (outside official statistics)			Other indicators				
Maritime economic activity		GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	Enterprises	SMEs	Further indicators	Source & reference year + notes	Split private vs. public allocation
<b>0. Shipbuilding</b>															
0.1	Shipbuilding (excl. leisure boats) and ship repair	7.1	155	Eurostat, data for 2010, ship repair (NACE 33.15) only. No data in Eurostat for NACE 30.11 (new building) and 3012 (Building of pleasure and sporting boats) for IE							40	38		AMADEUS & Ecorys calculations	
0.2	Construction of water projects	4.3	17	Eurostat, data for 2010				110.429	1,600 // 39	2007 data: NACE 1.1.: 45.24 (construction of water projects) also includes (boat manufacturing, sail making, net manufacturing, boat & ship repair), plus additional sources: CSO, Prodcom; Census of Industrial Production; SEMRU Company Survey; Census of Construction and Building 2007, In: Ireland's Ocean Economy, 2010// CSO (BCI 2010)	23	n/a			
<b>1. Maritime transport</b>								328.579	2,194						



		Eurostat			Official National Statistical Sources			Alternative sources (outside official statistics)			Other indicators				
Maritime economic activity		GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	Enterprises	SMEs	Further indicators	Source & reference year + notes	Split private vs. public allocation
1.1	Deep-sea shipping	n/a	n/a	No data in Eurostat on almost all NACE sectors relevant to this MEA				23 <sup>201</sup>	154 <sup>202</sup>	SEMRU; Ireland's Ocean Economy 2010 // 2007 data: includes GVA: shipping: 194, Port and maritime logistics 134; NACE 1.1.: 61.10 (61.10 : Sea and coastal water transport) 63.11 (Cargo handling), 63.22 (Other supporting water transport activities), 71.22 (Renting of water transport equipment) CSO – Annual Services Enquiry 2007, in: Ireland's Ocean Economy, 2010; Empl = FTEs	18 <sup>203</sup> /15	18 / 15		NUI Galway, The Potential for an Irish Maritime Transportation Cluster: 2009, AMADEUS & Ecorys calculations	
1.2	Short-sea shipping (incl. Ro-Ro)	n/a	n/a	No data in Eurostat on almost all NACE sectors relevant to this MEA				282.9	1,886 <sup>204</sup>	SEMRU; Ireland's Ocean Economy 2010 // 2007 data: includes GVA: shipping: 194, Port and maritime logistics 134; NACE 1.1.: 61.10 (61.10 : Sea and coastal water transport) 63.11 (Cargo handling), 63.22 (Other supporting water transport)	226/ 93	226 / 93 // 340		NUI Galway, The Potential for an Irish Maritime Transportation Cluster:	

<sup>201</sup> See calculation for Employment with total Maritime transport GVA = €328.9m

<sup>202</sup> The remaining 308 employees (according to the calculation below) has been assumed to be equally split between deep-sea shipping & passenger ferry services

<sup>203</sup> See calculation for Employment with total Maritime transport enterprise = 263

<sup>204</sup> Total maritime transport employment = 2,1940, Eurostat states that of this 86% is conducted in Short-sea shipping

		Eurostat			Official National Statistical Sources			Alternative sources (outside official statistics)			Other indicators				
Maritime economic activity		GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	Enterprises	SMEs	Further indicators	Source & reference year + notes	Split private vs. public allocation
										activities), 71.22 (Renting of water transport equipment) CSO – Annual Services Enquiry 2007, in: Ireland’s Ocean Economy, 2010; Empl = FTEs				2009, AMADEUS & Ecorys calculations based on NACE 5020, 5210, 5222	
1.3	Passenger ferry services	n/a	n/a	No data in Eurostat on almost all NACE sectors relevant to this MEA				<b>23.0</b>	<b>154</b> <sup>205</sup>	SEMURU; Ireland’s Ocean Economy 2010	18 // 0 // 132	18 / 0 // 132		NUI Galway, The Potential for an Irish Maritime Transportation Cluster: 2009, //AMADEUS & Ecorys calculations based on NACE	

<sup>205</sup> The remaining 308 employees (according to the calculation above) has been assumed to be equally split between deep-sea shipping & passenger ferry services

		Eurostat			Official National Statistical Sources			Alternative sources (outside official statistics)			Other indicators				Split private vs. public allocation
Maritime economic activity		GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	Enterprises	SMEs	Further indicators	Source & reference year + notes	Split private vs. public allocation
														5224	
1.4	Inland waterway transport	n/a	n/a	Eurostat, data for 2010 (only NACE 50.40; no data in Eurostat on other NACE sectors relevant)				0	0	Since 99% of IE's total imports and exports by volume are transported via the Sea, In: Ireland's Ocean Economy 2007. P. 18.	0 // 17	0		AMADE US & Ecorys calculations NACE 7734	
<b>2. Food, nutrition, health and eco-system services</b>															
2.1	Fish and fish processing for human consumption	258.5	6,391	JRC (fishing), Eurostat (fish processing), PRODCOM (share of human/animal), data for 2010. No data for NACE 46.38 wholesale and 47.23 retail available in Eurostat.				191,121	4,318 // 8,494 // 3,924	Named sea-fisheries, NACE 1.1.: 05.01 (fishing), includes: retail of seafood NACE (which is estimated 5% of total €62.420 GVA and 569 empl. for Other Marine Services); incl.: Seafood processing NACE 1.1.: 15.02 (which is €88.204 GVA and 2090 empl.) – Source: CSO – Census of Industrial Production 2007, reported in: Ireland's Ocean Economy, 2010, P. 21; Named sea-fisheries (Ireland's Ocean Economy), so potentially combines both human consumption and animal feeding // 11,600 includes the overall Irish seafood industry. Out of that, 4,987 are employed in fisheries, 3,507 in	399	399		AMADE US & Ecorys calculations	

		Eurostat			Official National Statistical Sources			Alternative sources (outside official statistics)			Other indicators				
Maritime economic activity		GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	Enterprises	SMEs	Further indicators	Source & reference year + notes	Split private vs. public allocation
										seafood processing and 1,185 in ancillary services. Source: Fish & Seafood Industry, Irish Food Board, 2013: <a href="http://www.bordbia.ie/industryinfo/fishseafoodindustry/pages/default.aspx">http://www.bordbia.ie/industryinfo/fishseafoodindustry/pages/default.aspx</a> // Data on 3,924 refers to 2008. Source: Department of Agriculture, Food and the Marine, Annual Review and Outlook for Agriculture, Fisheries and Food 2010/2011. Ch. 11.5: Employment in the Fisheries Sector.					
2.2	Catching fish for animal feeding	n/a	n/a	JRC (fish processing), PRODCOM (share of human/animal), data for 2010 (share animal feeding is zero according to JRC)				Belonging to 2.1.	Belonging to 2.1.	No data has been found on catching fish for animal consumption; no split between catching fish human consumption vs. animal feeding	56	56		Eurostat NACE 1020	
2.3	Marine aquatic products	36.8	1,578	JRC, data for 2010 on GVA; employment data from BIM, 2012: Annual Aquaculture				42.280	1,061 // 1,936	NACE 1.1: 05.02 (Operation of fish hatcheries and fish farms) In: Ireland's Ocean Economy, 2010; employment data from Bord Iascaigh Mhara					

		Eurostat			Official National Statistical Sources			Alternative sources (outside official statistics)			Other indicators				
Maritime economic activity		GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	Enterprises	SMEs	Further indicators	Source & reference year + notes	Split private vs. public allocation
				Survey 2012.						(2007). The Status of Aquaculture 2007 // 1,936 are employed in aquaculture. Source: Fish & Seafood Industry, Irish Food Board, 2013: <a href="http://www.bordbia.ie/industryinfo/fishseafoodindustry/pages/default.aspx">http://www.bordbia.ie/industryinfo/fishseafoodindustry/pages/default.aspx</a> Original source BIM, 2012: Annual Aquaculture Survey 2012.					

		Eurostat			Official National Statistical Sources			Alternative sources (outside official statistics)			Other indicators				
Maritime economic activity		GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	Enterprises	SMEs	Further indicators	Source & reference year + notes	Split private vs. public allocation
2.4	Blue biotechnology	n/a	n/a	Sector not visible in Eurostat.				8.671	185	SEMRU Company survey 2007, reported in: Ireland's Ocean Economy, 2010					
2.5	Agriculture on saline soils	n/a	n/a	No activity in Ireland, sector data negligible											
<b>3. Energy and aquaculture</b>															
3.1	Offshore oil and gas	n/a	n/a	No data in Eurostat on NACE 06.10, 06.20, 09.10				137.1	790	NACE 11.1. Based on CSO – Census of Industrial Production 2007; SEMRU Company Survey. In: Ireland's Ocean Economy, 2010	47 // 93	47 // 93	25 <sup>1</sup>	AMADEUS & Ecorys calculations NACE 0610 and 0910	
3.2	Offshore wind	n/a	n/a	Sector not visible in Eurostat.				4,415	101	SEMRU Company survey, reported in: Ireland's Ocean Economy, 2010			OPENHYDRO IP LTD 17th in top 20 leading companies (according to assigned patents)		
3.3	Ocean renewable energy	n/a	n/a	Sector not visible in Eurostat.				0.5	50	GVA based on: Morrissey, K. (2011). The Economic Opportunity of Ocean Energy for the Island of					

		Eurostat			Official National Statistical Sources			Alternative sources (outside official statistics)			Other indicators				
Maritime economic activity		GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	Enterprises	SMEs	Further indicators	Source & reference year + notes	Split private vs. public allocation
										Ireland, MRIA, Ocean Energy Industry Forum 2011, covers whole renewable energy of 2 €m; expert judgement 0.25% on ocean ren. // empl: estimate of 5 FTE per MW in Ireland, in: Economic Study for Ocean Energy Development in Ireland. A report to the Sustainable Energy Authority of Ireland and Invest Northern Ireland. July 2010. P. 56.					
3.4	Carbon capture and storage	n/a	n/a	No activity in Ireland, sector data negligible											
3.5	Aggregates mining (sand, gravel, etc.)	n/a	n/a	No activity in Ireland, sector data negligible							122	120		Eurostat NACE 0812	
3.6	Marine minerals mining	n/a	n/a	No significant activity, GVA and employment contribution negligible											
3.7	Securing fresh water supply (desalination)	n/a	n/a	No data in Eurostat on almost none of the NACE				0	0	Currently, no desalination plant in Ireland has been constructed.					



		Eurostat			Official National Statistical Sources			Alternative sources (outside official statistics)			Other indicators				Split private vs. public allocation
Maritime economic activity		GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	Enterprises	SMEs	Further indicators	Source & reference year + notes	Split private vs. public allocation
	n)			sectors relevant to this MEA											
<b>4. Leisure and tourism</b>															
4.1	Coastal tourism	n/a	n/a	No data in Eurostat on NACE 55.20, 55.30, 55.90, no data on nights spent & bed capacity at NUTS 2 or NUTS3 for Ireland in Eurostat				<b>453.310</b>	<b>5,836</b>	Water-based tourism, includes both Domestic and Overseas visitors. Derived from ESRI Report 2004, SEMRU Company Surveys, Fáilte Ireland Statistics, CSO Estimates for 2002-2007. Reported in: Ireland's Ocean Economy, 2010	<b>1112</b>			AMADEUS & Ecorys calculations based on NACE 5510,5530, 5590	
4.2	Yachting and marinas	n/a	n/a	Sector not visible in Eurostat.				<b>45.0</b>	<b>800</b>	ICOMIA Statistics 2011 (2012) Statistics concerning July 2011 to June 2012	<b>100</b>			ICOMIA Statistics 2011 (2012) Statistics concerning July 2011 to June 2012	
4.3	Cruise tourism	n/a	n/a	No Eurostat data available				30.335 <b>// 20.3</b>	<b>// 212</b>	Total of 202 calls in 2010 to three ports, carrying 205,500 passengers; in: Fáilte Ireland in 2010 //Ireland's Ocean Economy, 2010 // including <a href="http://www.portofcorke.ie/index.cfm/page/cruis">http://www.portofcorke.ie/index.cfm/page/cruis</a>					

		Eurostat			Official National Statistical Sources			Alternative sources (outside official statistics)			Other indicators				
Maritime economic activity		GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	Enterprises	SMEs	Further indicators	Source & reference year + notes	Split private vs. public allocation
										e					
<b>5. Coastal protection</b>															
5.1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats	n/a	n/a	Sector not visible in Eurostat.				4.4	44	Eurostat COFOG, data for 2010; PRC the Economics of Climate change, data for 2008					
<b>6. Maritime monitoring and surveillance</b>															
6.1/ 6.2	Traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods,	n/a	n/a	Sector not visible in Eurostat.											
6.3	environmental monitoring	n/a	n/a	Sector not visible in Eurostat.											
<b>Total</b>															

## Annex II - Compound Annual Growth Rates (CAGR) of the maritime economic activities

Table 12 provides a detailed overview of the Compound Annual Growth Rate (CAGR) of the maritime economic activities. This is based on the last three years (2008, 2009 and 2010). The data sources follow the same logic as for table 1, i.e. includes Eurostat, Official National Statistical Sources and Alternative Sources (as far as data is available). The most valid CAGR % for each maritime economic activity will be presented in table 7 (chapter 2.2. ranking order for the 7 fastest growing maritime economic activities over the past 3 years).

**Table 12 – Table of CAGR of Eurostat, Official National Statistical Sources and Alternative Sources**

Maritime economic activity		Eurostat			Alternative sources (outside official statistics)		
		CAGR (%) GVA	CAGR (%) Employment	Source & Reference year	CAGR (%) GVA	CAGR (%) Employment	Source & Reference year
<b>0. Shipbuilding</b>							
0.1	Shipbuilding (incl. leisure boats) and ship repair	-15.30%	-58.70%				
0.2	Construction of water projects	-29.70%	-68.10%				
<b>1. Maritime transport</b>							
1.1	Deep-sea shipping	-15.30%	-18.80%				
1.2	Short-sea shipping (incl. Ro-Ro)						
1.3	Passenger ferry services						
1.4	Inland waterway transport						
<b>2. Food, nutrition, health and eco-system services</b>							
2.1	Fish and fish processing for human consumption						
2.2	Catching fish for animal feeding	5.40%	-77.20%				
2.3	Marine aquatic products						
2.4	Blue biotechnology	5.40%	-8.70%				
2.5	Agriculture on saline soils						
<b>3. Energy and aquaculture</b>							
3.1	Offshore oil and gas						
3.2	Offshore wind						
3.3	Ocean renewable energy						
3.4	Carbon capture and storage						

Maritime economic activity		Eurostat			Alternative sources (outside official statistics)		
		CAGR (%) GVA	CAGR (%) Employment	Source & Reference year	CAGR (%) GVA	CAGR (%) Employment	Source & Reference year
3.5	Aggregates mining (sand, gravel, etc.)						
3.6	Marine minerals mining						
3.7	Securing fresh water supply (desalination)						
<b>4. Leisure and tourism</b>							
4.1	Coastal tourism						
4.2	Yachting and marinas						
4.3	Cruise tourism						
<b>5. Coastal protection</b>							
5.1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats						
<b>6. Maritime monitoring and surveillance</b>							
6.1/ 6.2	Traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods,						
6.3	environmental monitoring	-9.70%	-9.70%				