

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

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0. Preface

This country paper 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.

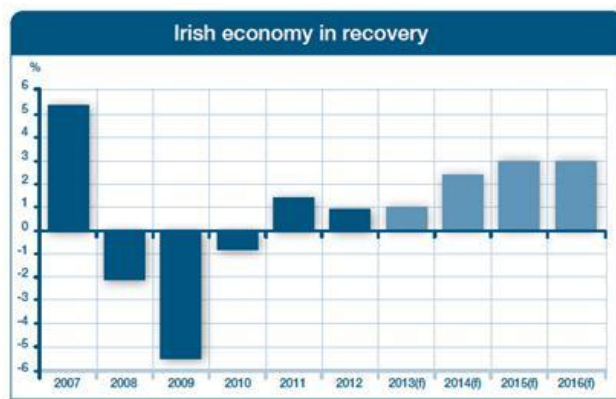
Brussels, March 2014

1. General overview

1.1. 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%).

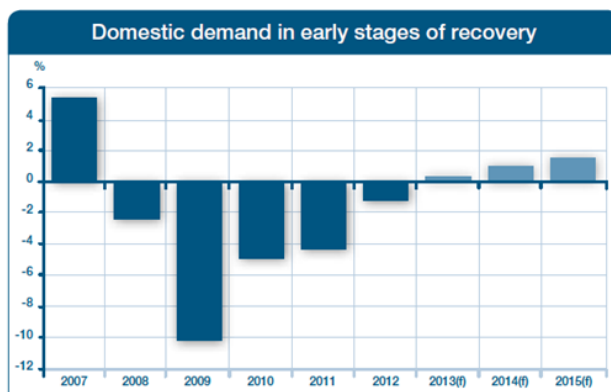
Figure 1.1 Annual growth rate of GDP (2007 – 2013)



Source: Bank of Ireland, Ireland overview July 2013

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.

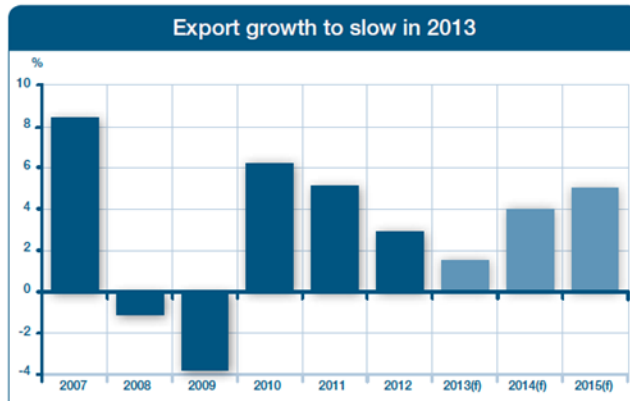
Figure 1.2 Domestic demand (2007 – 2013)



Source: Bank of Ireland, Ireland overview July 2013

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 half¹ 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.

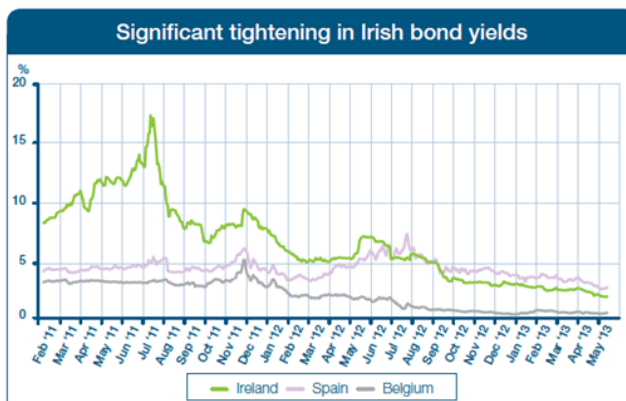
Figure 1.3 Export performance and outlook (2007 – 2015)



Source: Bank of Ireland, Ireland overview July 2013

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.

Figure 1.4 Development of bond yields (2011 – 2013)



Source: Bank of Ireland, Ireland overview July 2013

¹ Employment figures recover more slowly than unemployment figures.

1.2. 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 (figure 1.5) illustrate the shoreline electoral districts. Beneath this (cream layer) are coastal counties, while beneath that still (in green) are the Eurostat defined NUTS3².

Ireland is the third largest EU state in the North Atlantic when its sea area is taken into account, with jurisdiction over a seabed territory of 898,442km² and a coastline of 7,500km.³ When taking the latter number, Ireland is one of the largest EU states with sovereign or exclusive rights over one of the largest sea to land ratios (10:1) in the EU. The State of Ireland consists of 90,000 km² of land resource, and 898,442 km² of a marine resource.⁴ 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 m tonnes), followed by the Netherlands (about 1.5 m tonnes), France (1.1 m tonnes) and Germany 0.9 m tonnes)⁵.

Landscan reports that 52.8% of Ireland's population, i.e. 2.4 m people, are living within 10 km from the sea.⁶

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

³ OUR OCEAN WEALTH, 2011: Towards an Integrated Marine Plan for Ireland Seeking Your Views on New Ways; New Approaches; New Thinking. Government Report prepared by the Inter-Departmental Marine Co-ordination Group. Introduction. P. 7. Available here:

<http://www.ouroceanwealth.ie/SiteCollectionDocuments/FINAL%20CONSULTATION%20DOCUMENT%20Our%20Ocean%20Wealth.pdf>

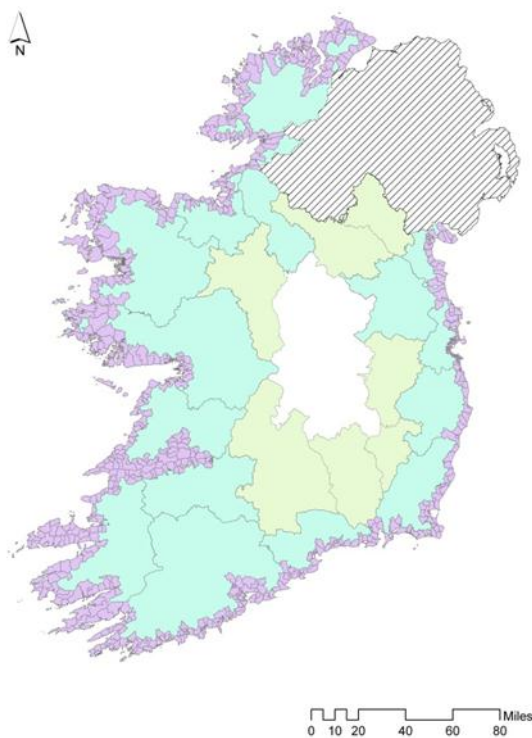
⁴ OUR OCEAN WEALTH, 2011: Towards an Integrated Marine Plan for Ireland Seeking Your Views on New Ways; New Approaches; New Thinking. Government Report prepared by the Inter-Departmental Marine Co-ordination Group. P. 7. Available here:

<http://www.ouroceanwealth.ie/SiteCollectionDocuments/FINAL%20CONSULTATION%20DOCUMENT%20Our%20Ocean%20Wealth.pdf>

⁵ IMDO, 2011: *The Irish Maritime Transport Economist*, Vol. 8.

⁶ LandScan™ Global Population Database, 2006. % share of coastal population based on 2006 data. To calculate the total number of coastal population, we assume that the share of inhabitants living within 10 km from the coast remained equal from 2006 to 2012 and apply the 2006 % share to the 2012 population data of 4,586,897 (Ireland, 2012 figures, based on Eurostat).

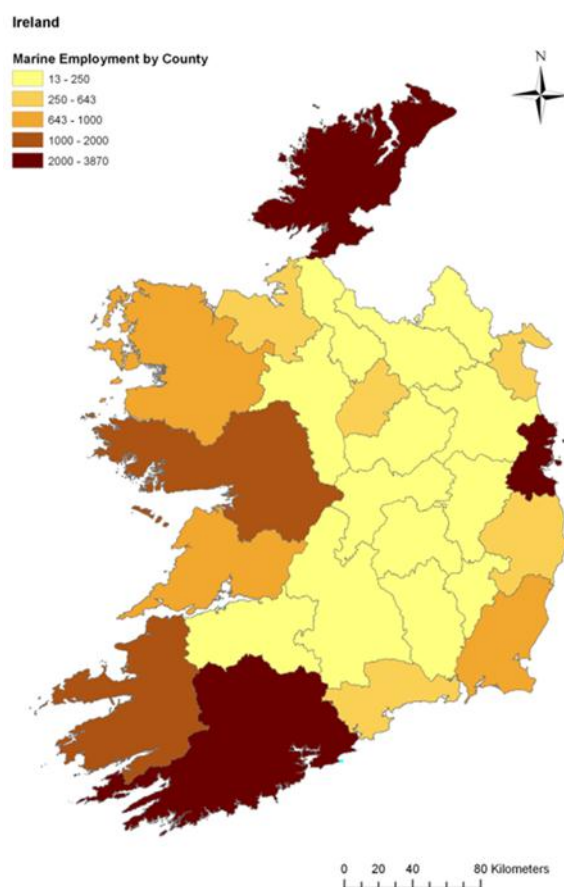
Figure 1.5 Shoreline of coastal counties in Ireland



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

Overall, marine employment is highest in the Sea-adjacent counties. Highest employment can be recorded for the counties Cork, Dublin and Donegal, followed by the counties Kerry and Galway (see figure 1.6 below).

Figure 1.6 Employment in coastal regions in Ireland



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

In a study in 2013 the direct economic value of Irish ocean economy was updated, based on earlier study results from 2010⁷. In 2010, the direct economic value of the Irish ocean economy is estimated to have been worth €1.2 billion or approximately 0.8% of GDP. The sector had a turnover of €3.5 billion, and provided employment for approximately 16,300 full time equivalent (FTE)⁸. This presents a slight decrease in total number of FTEs in 2010 (16,300) as compared to 2007 (17,000)⁹. Compared to 2007, 2010 saw a 25.4% decrease in turnover, a 20.9% fall in employment and a 29.7% decrease in gross value added (GVA)¹⁰. This was however, during Ireland's boom years, which would have had a significant impact on especially shipping, tourism and leisure sectors.

⁷ Figures in Ireland's Ocean Economy, SEMRU , December 2010 are based on 2007 data.

⁸ Ireland's Ocean Economy, SEMRU , December 2013. P. 5.

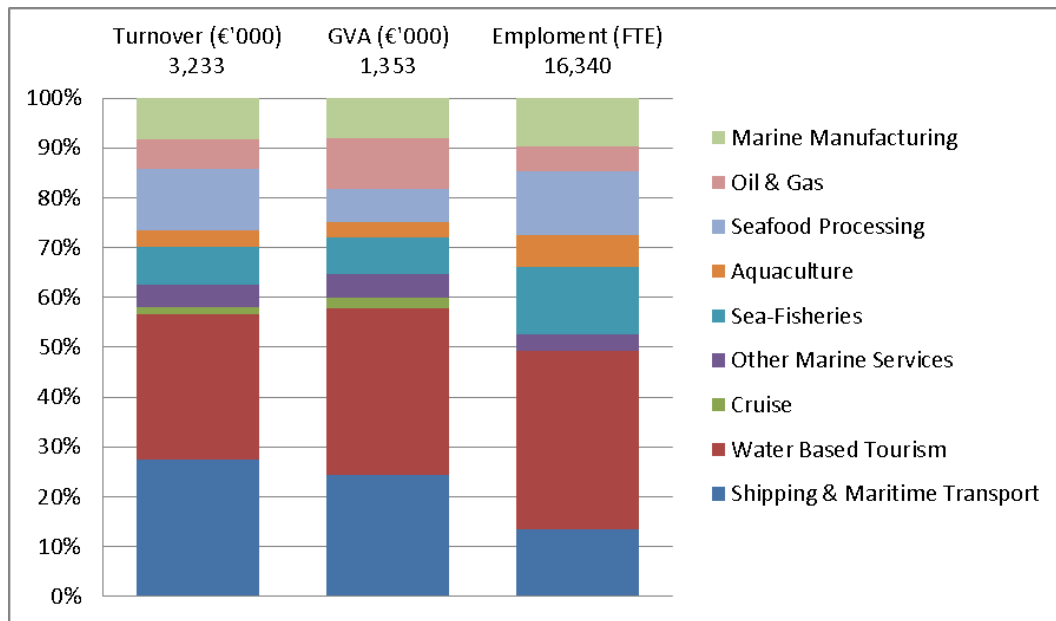
⁹ The previous Ocean Economy Report, published in 2010, was based on the reference year 2007, at the height of the economic boom (2003- 2007). The updated report, published in December 2013 represents the period at the lowest point of the economic contraction (2007-2010), with a significant decrease in activity, particularly in the shipping and maritime transport sector and in water-based construction.

¹⁰ Ireland's Ocean Economy, SEMRU , December 2013. P. 5.

The main ports in Ireland are located in: Dublin, Howth (near Dublin), Drogheda, Rosslare, Waterford, Cork, Baltimore, Shannon Foynes and Galway¹¹. This also reflects the main employment locations in the Irish ocean economy (see figure¹² below).

In 2007, the sector was dominated by marine tourism and maritime transport (GVA of €453 m and €329 m respectively)¹³. Together they accounted for 54% of the sector's direct GVA. They are followed by: oil & gas, marine manufacturing and fishing as the five major sub sectors¹⁴. The graph below illustrates the proportion of the different sub-sectors (established marine industries) within Ireland's ocean economy, taking 2007 as a reference.

Figure 1.5 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, ISBN-13: 978-0-9546835-6-2

In the meantime, more recent data, has been made available on the established marine industries. Both turnover with €3,289k and GVA with €1,141k have increased, whilst employment has slightly decreased.¹⁵

¹¹ Please note: this listing of main ports in Ireland includes both shipping ports and fishery harbours. In: OUR OCEAN WEALTH, 2011: Towards an Integrated Marine Plan for Ireland Seeking Your Views on New Ways; New Approaches; New Thinking. Government Report prepared by the Inter-Departmental Marine Co-ordination Group. P. 12. Available here: <http://www.ouroceanwealth.ie/Briefing%20Documents/Our%20Ocean%20Wealth%20Briefing%20Documents%20for%20Consultation%20Part%20II%20Sectoral%20Briefs.pdf>.

¹² 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, ISBN-13: 978-0-9546835-6-2

¹³ SEMRU (2011). Ireland's Ocean Economy, SEMRU Report, NUI Galway.

¹⁴ Ireland's Ocean Economy, SEMRU, December 2010

¹⁵ Ireland's Ocean Economy, SEMRU, December 2013. P. 12.

2. Maritime economic activities

2.1. 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 fact that the country editors did not manage to access specific information at NACE code level from Ireland's National Statistics Office (CSO) has resulted in data gaps.¹⁶
- 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.

2.1.1. Quantitative overview of maritime economic activities

Table 2.1 provides an overview of the most reliable data for each of the maritime economic activities¹⁷. 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).

Table 2.1 Overview of relevant maritime economic activities in Ireland (NUTS-0)¹⁸

Maritime economic activity		GVA (€, m)	Employment	Number of enterprises	Further indicators	Sources & References
0. Shipbuilding						
0.a	Shipbuilding and 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.b	Construction of water	4.3	17	23		Eurostat, data for 2010

¹⁶ The CSO's policy on access to Research Microdata Files can be found on:

<http://www.cso.ie/en/aboutus/dissemination/accesstomicrodatarulespoliciesandprocedures/policyonaccesstoresearchmicrodatafiles/> An update of a report on Ireland's ocean economy, taking 2010 as a base year, is currently compiled by SEMRU at NUI Galway. Due to the approaching deadline for finalisation, this data could not be integrated in the country paper.

¹⁷ 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.

¹⁸ Please note: according to our desk research, the availability of national statistics (publicly available) on the maritime economic activities seems to be less accessible in Ireland than compared to other EU Member States. Hence, in the table above, most reference is made to Eurostat data or 'alternative sources'. In general, the alternative sources are based on the data available whilst finalising the report (e.g. based on 2007 statistics assessed by SEMRU). With regard to national statistics, the country editors were unable to access specific data for a number of NACE codes from the Irish Central Statistical Office (CSO).

Maritime economic activity		GVA (€, m)	Employment	Number of enterprises	Further indicators	Sources & References
	projects					
1. Maritime transport						
1.a	Deep-sea /long haul shipping ¹⁹	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.b	Short-sea shipping	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.c	Passenger ferry services	23.0	154	18		SEMRU; Ireland's Ocean Economy 2010
1.d	Inland waterway transport	n/a	560	n/a		Eurostat, data for 2010 (only NACE 50.40; no data in Eurostat on other NACE sectors relevant; employment based on Eurofund, European Industrial Relations observatory online
2. Food, nutrition and health						
2.a	Fisheries for human consumption ²⁰	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.b	Fisheries for animal feeding ²¹	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.c	Marine aquaculture	36.8	1 705 ²²	n/a		JRC, data for 2010 on GVA; employment data from BIM, 2012: Annual Aquaculture Survey 2012.
2.d	Blue biotechnology	8.7	185	n/a		SEMRU Company survey 2007, reported in: Ireland's Ocean Economy, 2010
2.e	Agriculture on saline soils	n/a	n/a	n/a		statistics were not available

¹⁹ 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.

²⁰ Including processing and sale of fish.

²¹ 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).

²² 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 (€, m)	Employment	Number of enterprises	Further indicators	Sources & References
3. Energy and seabed resources						
3.a	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.b	Offshore wind	4.4	101	n/a		SEMRU Company survey, reported in: Ireland's Ocean Economy, 2010
3.c	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.d	Carbon capture and storage	n/a	n/a	n/a		country editors unable to access sector specific data from Ireland's Central Statistics Office; no relevant alternative sources found for quantification of the maritime economic activity
3.e	Mining (sand, gravel, etc.)	n/a	n/a	n/a		country editors unable to access sector specific data from Ireland's Central Statistics Office; no relevant alternative sources found for quantification of the maritime economic activity
3.f	Marine minerals mining	n/a	n/a	n/a		country editors unable to access sector specific data from Ireland's Central Statistics Office; no relevant alternative sources found for quantification of the maritime economic activity
3.g	Desalination	n/a	n/a	n/a		country editors unable to access sector specific data from Ireland's Central Statistics Office; no relevant alternative sources found for quantification of the maritime economic activity
4. Leisure and tourism						
4.a	Coastal tourism (accommodation) ²³	453.3	5 836	973		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
4.b	Yachting and marinas	45.0	800	100		ICOMIA Statistics 2011 (2012) Statistics concerning July 2011 to June 2012
4.c	Cruise tourism	n/a	n/a	n/a		No Eurostat data available
5. Coastal protection						
5.a	Coastal protection	4.4	44	n/a		Eurostat COFOG, data for 2010;

²³ Please note that the Irish statistics exclude accommodation related to coastal tourism as part of the maritime economic activity.

Maritime economic activity		GVA (€, m)	Employment	Number of enterprises	Further indicators	Sources & References
						PRC the Economics of Climate change, data for 2008
6. Maritime monitoring and surveillance						
6.a/6.b	Maritime surveillance	n/a	n/a	n/a		Sector not visible in Eurostat.
6.c	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 diagrams²⁴. 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)²⁵. 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 (7th of all sectors). In the context of the analysis, this indicates the small and open nature of the Irish economy. 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.

²⁴ 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>

²⁵ 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. This €0.26 can then be split into direct (€0.02) and indirect suppliers (€ 0.24) (e.g. the suppliers of its direct suppliers).

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 study²⁶, **the total production inducing effect for the marine sector in Ireland is €6.31 bn**. 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**²⁷.

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

2.1.2. *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 repair

In the 1970s the Irish shipbuilding sector still employed 1 633 persons of whom 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 vessels²⁸. 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 boats²⁹.

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 people³⁰. 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,

²⁶ 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

²⁷ Financial intermediation services, wholesale trade and construction work were among the top-5 sectors in terms of turnover (in 2007).

²⁸ Ecotec, 2006: An exhaustive analysis of employment trends in all sectors related to sea or using sea resources, Country report – Ireland. C3135 / August 2006.

²⁹ <http://www.rbbi.com/links/intpbl.htm#ireland>

³⁰ Eurostat statistics & CSO (BCI 2010) and currently under review by Eurostat

Foynes and Wicklow. Dublin is by far the biggest port for freight³¹ 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%³². Shipping employed 1 149 individuals in 2007 while related Port and Maritime Logistics services employed 1 045 individuals.³³

There was a 40% increase in the numbers of firms operating in the international shipping services sector between 2006 -2010³⁴:

1. Marine commerce and the provision of marine financial services is a growing sector - marine commerce had a turnover of €99.5 m in 2007³⁵;
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 Irelands existing policy framework for existing international shipping services, IMDO projects that 170 new jobs could emerge by 2015 in international shipping services in Ireland³⁶.

In 2006, 163 ships were owned, operated or managed from Ireland with an estimate that Irish based owners have invested in excess of \$1 bn dollars in new vessels and machinery over the past decade³⁷.

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 Office³⁸ 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 activities³⁹. In 2011 the gross weight of goods transported by short sea shipping accounted for 36.1 m tonnes in Ireland alone. Of which 22.8 m tonnes were imports and 14.4 m tonnes exports. Nevertheless, this was an overall decline of -2.6% on the previous year⁴⁰.

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.⁴¹ 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 (7.1 m tonnes in 2011).

³¹ In terms of Ro/Ro Freight Traffic by port 2010. See also IMDO, 2011: The Irish Maritime Transport Economist, Vol. 8.

³² IMDO, 2011: The Irish Maritime Transport Economist, Vol. 8.

³³ Ireland's Ocean Economy, SEMRU , December 2010

³⁴ Ireland's Ocean Economy, SEMRU , December 2010

³⁵ Ireland's Ocean Economy, SEMRU , December 2010

³⁶ Our Ocean Wealth, 2011: Towards an Integrated Marine Plan for Ireland. Part II Sectoral Briefs. Government Report prepared by the Inter-Departmental Marine Co-ordination Group.

³⁷ IMDO-Ireland, STRATEGIC REVIEW OF IRISHMARITIME TRANSPORT SECTOR

³⁸ www.imdo.ie

³⁹ IMDO-Ireland, <http://www.imdo.ie/imdo/shortsea>

⁴⁰ Eurostat

⁴¹ IMDO-Ireland, STRATEGIC REVIEW OF IRISHMARITIME TRANSPORT SECTOR

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 stable⁴². Despite this decline, ferry services transport still over a million passengers per year in Ireland⁴³. The number of tourist passengers to and from Ireland amounted to 4 672 361 in 2009 and 4 875 334 in 2010 respectively⁴⁴. 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 1.3 m to 1.75 m passengers (+34%),⁴⁵ Rosslare decreased slightly from 1.2 m to 0.9 m (-33%). Tourist car volumes, declined in 2012, with volumes falling by 7% to 1.231 m for the Island of Ireland.⁴⁶

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 tonnes⁴⁷. Nevertheless the sector employs around 560 people maintaining and servicing the waterways⁴⁸.

Food, nutrition and health

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 repair⁴⁹. 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 importance of the seafood industry can well be illustrated by the below graphical illustration.

Figure 2.1 Employment in the maritime food nutrition and health economy

Industry Employment

The seafood industry supports the economic viability of many coastal communities, directly generating or supporting approximately 11,000 jobs. This includes full and part time/casual employment in the fisheries, aquaculture, seafood processing and ancillary services sectors as shown below.

	Full Time	Part Time	Total
Total Fisheries	3,924	1,060	4,984
Aquaculture	693	1,023	1,716
Processing	2,200	660	2,860
Ancillary		1,440	1,440
Total		11,000	11,000

Source: BIM, Strategy 2007 – 2013. Capturing Ireland's Share of the Global Seafood opportunity. P.10.

⁴² IMDO-Ireland, STRATEGIC REVIEW OF IRISHMARITIME TRANSPORT SECTOR

⁴³ TourismIreland, The Cruise Sector and Ferry Tourism: maximising its Potential in Ireland, presentation on the 17th November 2011

⁴⁴ IMDO, 2011: The Irish Maritime Transport Economist, Vol. 8.

⁴⁵ The recent announcement by Irish Ferries is to increase its capacity and frequency on the Dublin to Holyhead route is positive news.

⁴⁶ IMDO, 2013: The Irish Maritime Transport Economist. Volume 10. April, 2013. P. 30.

⁴⁷ Directive 2009/42/EC & Eurostat

⁴⁸ <http://www.eurofound.europa.eu/eiro/studies/tn0809017s/ie0809019q.htm>

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

The recently launched Food Harvest 2020⁵⁰ blueprint, launched in 2010 provides the Government's vision for Irish agri-food and fisheries sector, providing a cohesive roadmap for the industry to build capacity, adapt to challenge and grow in the context of emerging opportunities in the decade ahead. Amongst the target areas with a bearing on maritime economic activities is the seafood targets⁵¹.

Previous actions comprised the Irish National Development Plan (2007 – 2013) with a total support of € 216 m for seafood development and €203 m 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 framework⁵². Within the Common Fisheries Policy, Ireland benefits from a certain protection of allocated quote (for certain species and fishing grounds) based on the Hague Preferences⁵³.

Fisheries 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 open North Atlantic, Malin Shelf, 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. Besides, the 40 secondary⁵⁴ ports and an additional 80 small locations for which landings are recorded⁵⁵.

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. 2004⁵⁶. 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)⁵⁷.

The Celtic Sea and west of Ireland hosts fishing fleets from the UK, Belgium, the Netherlands, France, Spain and Germany. In addition widely migratory shelf edge species such as mackerel. Comment and ling are exploited by Norway. The Celtic Sea hosts a wide variety of stocks, and uniquely in EU waters has a cod stock that is not subject to a rebuilding plan. Only some very depleted rare shark and ray species are in a state of collapse in the Celtic Sea region.

⁵⁰ <http://www.agriculture.gov.ie/agri-foodindustry/foodharvest2020/> and also: Department of Agriculture, Food and the Marine: Food Harvest 2020. Milestones for Success 2013. Every year the Food Harvest 2020 Strategy is reviewed and a roadmap is produced.

⁵¹ See also chapter 5 of this country paper – Analysis of measures, policies and strategies to stimulate growth and good practices in Ireland

⁵² Ireland, National Development Plan, 2007-2013: Transforming Ireland, a Better Quality of Life for all. Sea-food Development Sub-Programme: P. 184 - 185.

⁵³ 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.

⁵⁴ By secondary, the report means ports with fish and shellfish landings exceeding Eur 1m).

⁵⁵ European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 7.

⁵⁶ 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.

⁵⁷ 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

To the NW of Ireland (Malin Shelf), cod and herring are in a state of collapse, but some other stocks such as megrim and haddock are being harvested sustainably. Primarily, fish and shellfish are landed at the following five main harbours in Ireland: Killybegs, Castletownbere, Howth, Rossaveal and Dunmore East. Besides, the 40 secondary⁵⁸ ports and an additional 80 small locations for which landings are recorded.⁵⁹

In terms of spawning area, the Irish EEZ is an important area for migratory fish species, notably mackerel, blue whiting, hake and horse mackerel. On the continental shelf, the main pelagic species are herring and sprat, along with the widely migratory stocks of mackerel, horse mackerel and blue whiting.

The total volume of landings achieved 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).⁶⁰ In 2011, mackerel accounted for the highest value of landings (€ 44.7 m) by the national fleet⁶¹. 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 tonnes⁶². The majority of large vessels (over 36 m) targeted pelagic species in 2012⁶³.

In terms of seafood processing, the processing sector generated direct revenue of €559 m. Close to 70% of output from this sector goes for export to France, UK, Spain, Italy, Germany and commodity markets in Russia, Nigeria and Egypt⁶⁴. 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 accounts for 60% of the total turnover in the sector. The remaining 118 companies are small with turnover of less than €1 m and are focussed on the domestic and niche exports markets. Altogether the sector employs 2 867 people⁶⁵. 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

⁵⁸ By secondary, the report means ports with fish and shellfish landings exceeding € 1m).

⁵⁹ European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 7.

⁶⁰ Statistics from the Sea Fisheries Protection Authority show that the volume of landings to Irish ports has increased between from 242,000 tonnes in 2007 to 246,000 tonnes in 2010 (1%). See also: Sea Fisheries Protection Authority, Statistics, Fish Landings, 2007, 2010, available under: <http://sfpa-ie.access.secure-ssl-servers.biz/index.php?q=fish-landings> The decrease in value of landings from 2007 to 2010 would appear to be linked to the economic downturn in the period which would have had a direct effect on the price of fish.

⁶¹ European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 20.

⁶² European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 22.

⁶³ European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 11. Please note that according to the Sea Fisheries Protection Authority, figures were different for 2011, in terms of Killybegs (72,855 value in landings, 149,321 tonnes in landings), Castletownbere (45,078 and 25,427 respectively) and Kilmore Quay (18,392 and 3,722 respectively).

⁶⁴ 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%20II%20Sectoral%20Briefs.pdf>

⁶⁵ 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%20II%20Sectoral%20Briefs.pdf>

awareness. 3) The environmental management systems are not integrated into the core business functions.

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 year⁶⁶. 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 length⁶⁷. The combined gross tonnage was 63 000 GT and the average year of the vessels amounted to 26 years⁶⁸. Overall, the Irish fleet contributed with 3 119 FTE to the economy in 2010⁶⁹. The size of the Irish fishing fleet increased between 2008 and 2012, with an increase of vessels by 12% (44 vessels)⁷⁰. Although there has been an increase in the number of vessels in the Irish fleet, the capacity of the Irish fleet, measured in Gross Tonnes and kW, has in fact decreased.⁷¹ Following the governmental scheme and “Strategy for a Restructured, sustainable and profitable seafood industry 2007 - 2013,⁷² 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 € 179.1m⁷³.

Fisheries for animal consumption

Marine aquaculture

Marine aquaculture in Ireland is primarily comprised of farming of finfish species, e.g. salmon and trout. Besides, the sector is comprised of the Arctic char and perch and other shellfish species, e.g. mussels and oysters⁷⁴. Aquaculture activities are located particular concentrations around the Western Seaboards with approximately 80% of total national production⁷⁵. The main areas are Donegal, Connemara, West Cork, Waterford, Wexford and Carlingford Lough⁷⁶. The Atlantic

⁶⁶ 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>

⁶⁷ European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 11.

⁶⁸ European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 11.

⁶⁹ European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 12.

⁷⁰ 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.

⁷¹ Annual Report on Irish Fishing Fleet, 2012. This can be attributed largely to (a) the amount of RSW Pelagic capacity currently off-register, (b) the decommissioning of larger vessels, and (c) in a minor way to new safety regulations. The reference level (i.e. fleet ceiling) set at 1 January 2003 for the Irish fleet under EU Commission Regulation 1013/2010 is 88,700 GT and 244,834 kW. The Irish fleet makes up just 2.5% of the EU fleet in terms of numbers of vessels but holds capacity just above this percentage.

⁷² The scheme was inspired

⁷³ European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 25.

⁷⁴ European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 7.

⁷⁵ European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 27.

⁷⁶ European Parliament, 2013: Fisheries in Ireland. Directorate-General for Internal Policies. Structural and Cohesion Policy. B. P. 7.

shorelines, e.g. the South west and West of Ireland harbour around 80 mussel farms and bottom-mussel fisheries.

According to latest publications⁷⁷, 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)⁷⁸. 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 stocks⁷⁹;
- 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;
 - Ireland is a leader in organic salmon, accounting for 83% of total annual salmon production – demonstrating the potential of organic farming in the marketplace.⁸⁰ The development of novel species is also being pursued through recent policy initiatives⁸¹.

⁷⁷ 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>

⁷⁸ <http://www.bim.ie/our-work/projects/deep-sea-organic-salmon-farming/proposed-galway-bay-organic-salmon-farm/>

⁷⁹ <http://www.bbc.co.uk/news/world-europe-23550159> (last accessed on 13th August 2013).

⁸⁰ <http://www.bim.ie/our-services/grow-your-business/farmedfishqualitylabelling/organicassurancelabellingschemes/>

⁸¹ Notably through the Food Harvest 2020, the Sea Change Research & Innovation Strategy and BIM Annual Aquaculture Survey and BIMs recently published Strategy.

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 seen some consolidation, with a smaller number of larger operators in the sector that have higher economies of scale⁸².

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 quality⁸³.

Ireland has a strong research tradition, also extending to this maritime economic activity. Examples of that tradition are the University College Cork features an Aquaculture & Fisheries Development Centre, focussing on Aquaculture, Shellfish Health and Marine Mammals and Fisheries⁸⁴. Another example is the hallmark project *EIRCOD – Cod Broodstock & Breeding programme*, undertaken by the Ryan Institute Carna facility at NUI Galway. EIRCOD 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 (Trosca Teo) in partnership with the local salmon farming industry, and BIM, through their FIG grant-aid mechanisms.

The current Food Harvest National Strategy and BIM's recent strategy which aims to deliver targets of 1200 jobs and €1 bn seafood sales by building scale and enhancing competitiveness in the Irish seafood sector⁸⁵ provide the blueprint for further growth in the sector in Ireland, aligned to long-term EU and national goals of sustainability.

Blue biotechnology

Ireland enjoys an advantage with respect to marine biotechnology and bio-products in the context of an extensive natural marine resource encompassing a variety of habitats and organisms. With University College Cork and NUI Galway, the country has a sound capability in biological sciences research and development, strong food, pharmaceutical and medical devices industries competing globally⁸⁶. Besides, a number of support and funding structures have been set-up recently.

The contribution of marine biotechnology to the Irish enterprise sector is high, notably in

- marine functional foods research, building on a vibrant sector worth € 8.5 bn in exports;
- pharmaceuticals, with nine of the world top ten firms having a base in Ireland;
- medical devices;
- marine aquaculture; and
- seaweed with Ireland's seaweed sector being considered a first mover in exploiting marine biotechnology to support its growth into high-value added products.

⁸² Ireland, National Development Plan, 2007-2013: Transforming Ireland, a Better Quality of Life for all. Sea-food Development Sub-Programme: P. 184.

⁸³ <http://www.bordbia.ie/industryinfo/fishseafoodindustry/pages/default.aspx>

⁸⁴ <http://www.ucc.ie/en/afdc/currentprojects/>

⁸⁵ <http://www.bim.ie/media/bim/content/publications/BIM%20Strategy%202013-2017.pdf>

⁸⁶ OUR OCEAN WEALTH, 2011: Towards an Integrated Marine Plan for Ireland Seeking Your Views on New Ways; New Approaches; New Thinking. Introduction. Government Report prepared by the Inter-Departmental Marine Co-ordination Group. P. 42. Available here:

<http://www.ouroceanwealth.ie/SiteCollectionDocuments/FINAL%20CONSULTATION%20DOCUMENT%20Our%20Ocean%20Wealth.pdf>

Based on figures from 2011, eight firms⁸⁷ are engaged in the production of functional foods, nutraceuticals, cosmetics and agriculture products. Annual sales from this new marine bio-based marine sector have grown rapidly over the past 3 years to reaching an estimated €18million in 2010⁸⁸.

Overall, and in terms of geographical spread, the biotechnology sector in Ireland (including marine sciences), Dublin has the highest percentage of biotechnology companies (50%). Galway and Cork also have a high percentage share with between 7% and 13% of companies, respectively⁸⁹.

Ireland's National Research Prioritisation Exercise (NRPE) has stressed the opportunity for enterprise driven research in areas such as Sustainable Food Production (Priority Area I) and processing, Foods for Health (Priority Area H) including therapeutics, medical devices and processing technologies and novel materials. The marine environment is a source of materials with application in all of these areas. Within the National Strategy for Marine Research and Innovation 2007-2013 ('Sea Change'), the Marine Institute has invested in excess of €20 m 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 m of EU funding for marine science research, 10% of which is directly related to marine biotechnology research⁹⁰. Besides, the sector benefits of the active involvement of a number of SMEs.

Irish investments in life sciences R&D have resulted in the development of key research centres with relevant biotechnological capacity, i.e. in molecular and cell biology, genetics, plant sciences, zoology, environmental and marine science, medicine, diagnostics, therapeutics, food and nutrition, instrumentation, technology, health and pharmacy. These areas of life science research may be grouped into three major fields of research:

- 1) Agri-Food and Environmental (food technology and processing, nutrition and health, environmental and health economics, planning, bioremediation, bioprocessing, industrial microbiology, plant and animal health, pathogenesis, biodiversity and conservation, molecular ecology and systematic)
- 2) Health Care (clinically focussed research, i.e.: cancer studies, diabetes, immunology and infection, respiratory medicine and cardiology; approaches incorporate molecular and cellular biology, genomics, diagnostics, pharmacology, therapeutics, drug discovery and epidemiology)
- 3) Biomaterial and Processes (biocompatible, biomimetic and bioactive materials; bioengineering; visualisation; nanotechnologies; biosensors: bioinformatics; medical imaging; health informatics and the associated enabling technologies)

⁸⁷ According to OUR OCEAN WEALTH, 2011: Towards an Integrated Marine Plan for Ireland Seeking Your Views on New Ways; New Approaches; New Thinking. Background Briefing Documents. Part II: Sectoral Briefs. Government Report prepared by the Inter-Departmental Marine Co-ordination Group. Available here:

<http://www.ouroceanwealth.ie/Briefing%20Documents/Our%20Ocean%20Wealth%20Briefing%20Documents%20for%20Consultation%20Part%20II%20Sectoral%20Briefs.pdf> these are Cybercolloids, ArraMara, Oilean Glas, Marrigot, BioAtlantis, Brandon Products, Voya and Irish Seaweed Processors,

⁸⁸ Morrissey, K., Hynes, S, Cuddy, M., and O'Donoghue, C., Ireland's Ocean Economy SEMRU, NUI Galway, December 2010

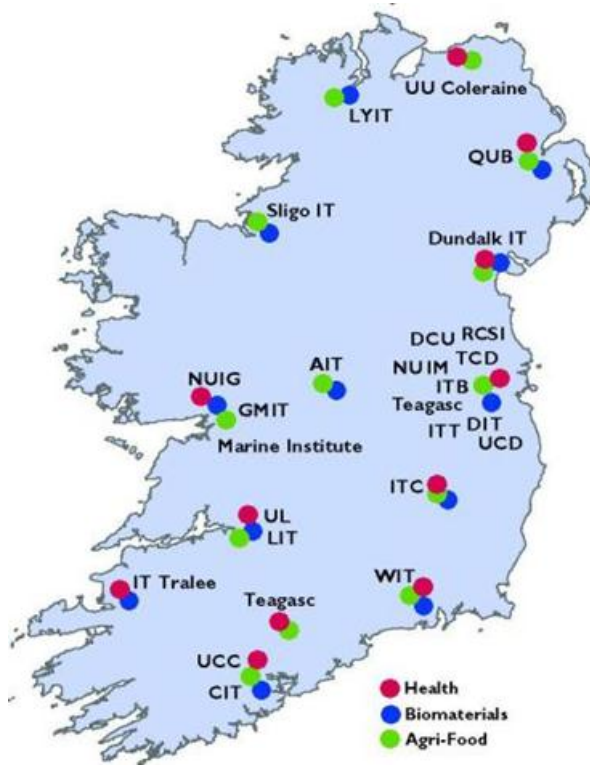
⁸⁹ Karyn Morrissey, Ilaria Nardello, Natasha Evers, Rebecca Corless, Stephen Hynes and Paul Ryan: An Overview of the Irish Biotechnology Sector and its Position within the Atlantic Area. Report Series No. 3. Available here:

http://www.nuigalway.ie/semru/documents/semru_needs_report_series_3.pdf

⁹⁰ <http://www.marine.ie/home/research/SeaChange/NationalMarineBiotechnology/Marine+Biotechnology+Ireland++Development+Strategy.htm>

The map taken from the MI's website provides an overview of the national research centres that are involved in marine biotechnology-related research or whose expertise could be applied to marine biotechnology.

Figure 2.2 Research centres related to marine biotechnology



Source: Irish Marine Institute

An example of a 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 shellfish⁹¹.

At Letterkenny Institute of Technology (LYIT)⁹², since its foundation, over € 50 m was invested in campus infrastructure between 1998-2004 to provide first class facilities to meet the educational needs of approximately 2 500 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 set up and currently hosts a project involving Errigal Seafood (co-funded by FP7).

Besides, the flagship Beaufort Biodiscovery project is a prime research project that is funded nationally. This is a seven-year research programme, funded by a Marine Institute award of €7.3 million aimed at the discovery of new drugs and advanced bio-materials from marine animals, plants and microorganisms. It presents an all-island cluster of researchers from the National

⁹¹ NutraMara: The Marine Functional Foods Research Initiative, 2009: <http://www.marine.ie/NR/rdoonlyres/98BABB7-9878-42C1-A19F-73FE37762115/0/NutraMaraBrochureFinalAug09.pdf>

⁹² <http://www.cambio.ie/html/background/historical.htm>

University of Ireland, Galway, University College Cork, and the Queen's University Belfast, which are engaged in this multidisciplinary project.⁹³

Agriculture in saline soils

Based on JRC data⁹⁴, (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 seabed resources

Offshore oil and gas in Ireland

In terms of **discoveries**, four commercial discoveries of gas in Ireland have been made, all of which were gas⁹⁵ (Kinsale (1971), Ballycotton (1989), Seven Heads (1973) and Corrib (1996)).⁹⁶ In the Corrib field, gas was expected to flow from the field in 2003. Due to, amongst other matters, planning reasons, the field will not produce until 2014 or 2015. Oil discoveries have been found in 7 areas in the Irish waters.⁹⁷

In terms of **exploration**,⁹⁸ a high share of Irish waters is currently not under active exploration.⁹⁹ At the end of 31 October 2013, 59 petroleum authorisations were in place: 3 petroleum leases, 23 exploration licences, 20 licensing options and 13 petroleum prospecting licences. Ireland now has the highest number of petroleum authorisations in place since exploration began in the Irish Offshore.¹⁰⁰ Historically, and for both oil and gas, the total number of wells that are on exploration or appraisal have slightly decreased from a peak in 1978 (15 exploration / appraisal wells) to 2 in 2013.¹⁰¹

The Spanish Point discovery (gas condensate) originally discovered in 1981, is expected to be the subject of an appraisal well in 2013 undertaken by Capricorn Ireland, Chrysoar, Providence Resources and Sosina Exploration.

The oil discovery in Barryroe, originally discovered in 1973 and re-explored in 2012, is located in the Celtic Sea in the waters south of Cork. The discovery is at a water depth of 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. The field is 80% held by Providence Resources and 20% by Lansdowne Oil & Gas. Further appraisal work is required to establish commerciality.

⁹³ <http://www.marine.ie/home/research/SeaChange/NationalMarineBiotechnology/Marine+Biotechnology+Ireland+-+Flagship+Research.htm>

⁹⁴ <http://eussoils.jrc.ec.europa.eu/library/themes/Salinization/Resources/salinisation.pdf>

⁹⁵ 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>

⁹⁶ 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.

⁹⁷ Figures as of 2011. In: SIPTU, 2011: Optimising Ireland's Oil and Gas Resources. Report of the SIPTU Oil & Gas Review Group. P. 33.

⁹⁸ Please see also map with oil and gas explorations in Ireland below.

⁹⁹ 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 Acreage position report as at 31 October 2013

<http://www.dcenr.gov.ie/Natural/Petroleum+Affairs+Division/Acreage+and+Activity+Reports/>

¹⁰¹ Department of Communications, Energy and Natural Resources, 2013: Ireland Historical Exploration and Production Data, 2013: October 2013.

The Dunquin prospect was drilled in 2013 by Exxon Mobil and a consortium comprised of Eni, Providence Resources, Sosina Exploration, Repsol and Atlantic Petroleum. No commercially recoverable hydrocarbons were discovered¹⁰².

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)¹⁰³.

There has been significant reform of the legislative codes relevant to the sector with the introduction by the Irish authorities of a Strategic Infrastructure land use planning legislation and introduction of a new offshore safety legislative instrument, but according to industry stakeholders, the regulatory and planning process in Ireland is still complex and requires more technical expertise¹⁰⁴. 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 cities¹⁰⁵. 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 m 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.

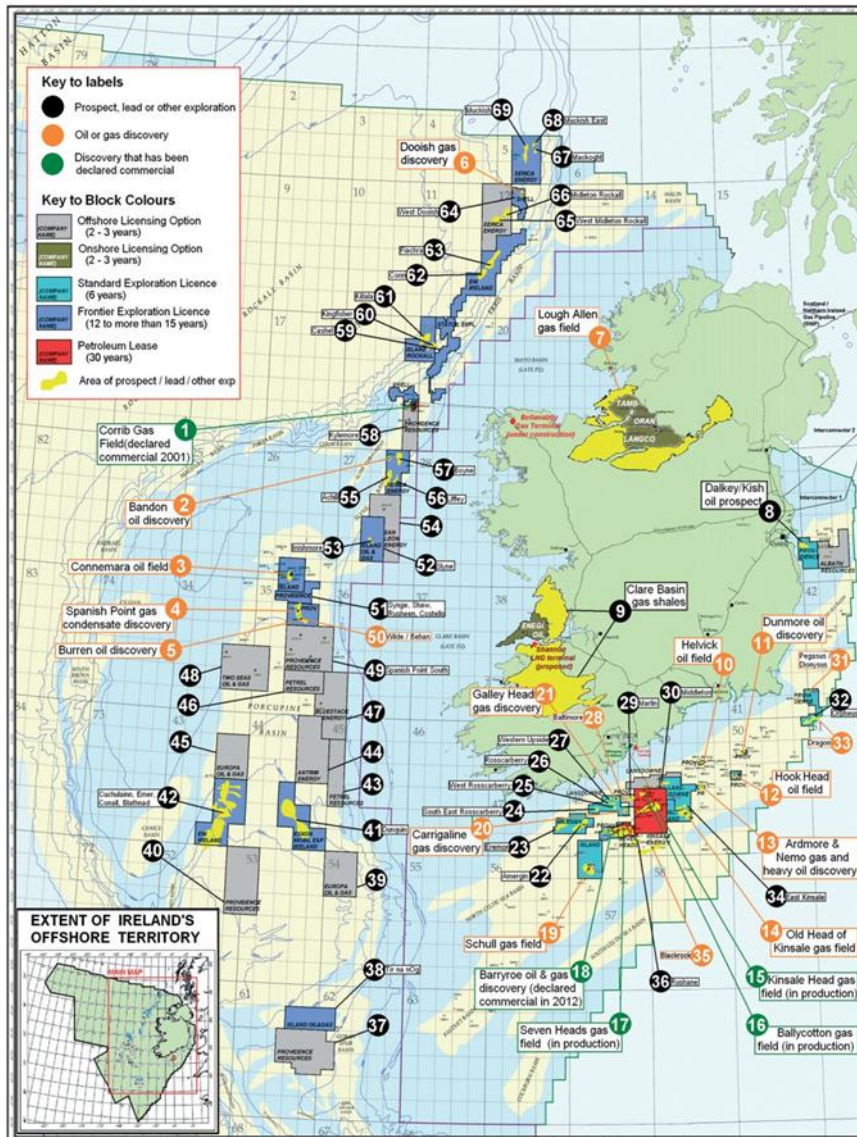
¹⁰² PWC, 2013: Oil and gas exploration in Ireland. Making the most of our natural resources, May 2013. P. 32: <http://www.iooa.ie/reports--publications-page.html> and please see also http://www.esso.ie/Ireland-English/PA/news_releases_Dunquin_no_hydrocarbons.aspx

¹⁰³ Irish Offshore Operators Association, 2013: Myths and facts, April 2013: <http://www.iooa.ie/reports--publications-page.html>

¹⁰⁴ 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>

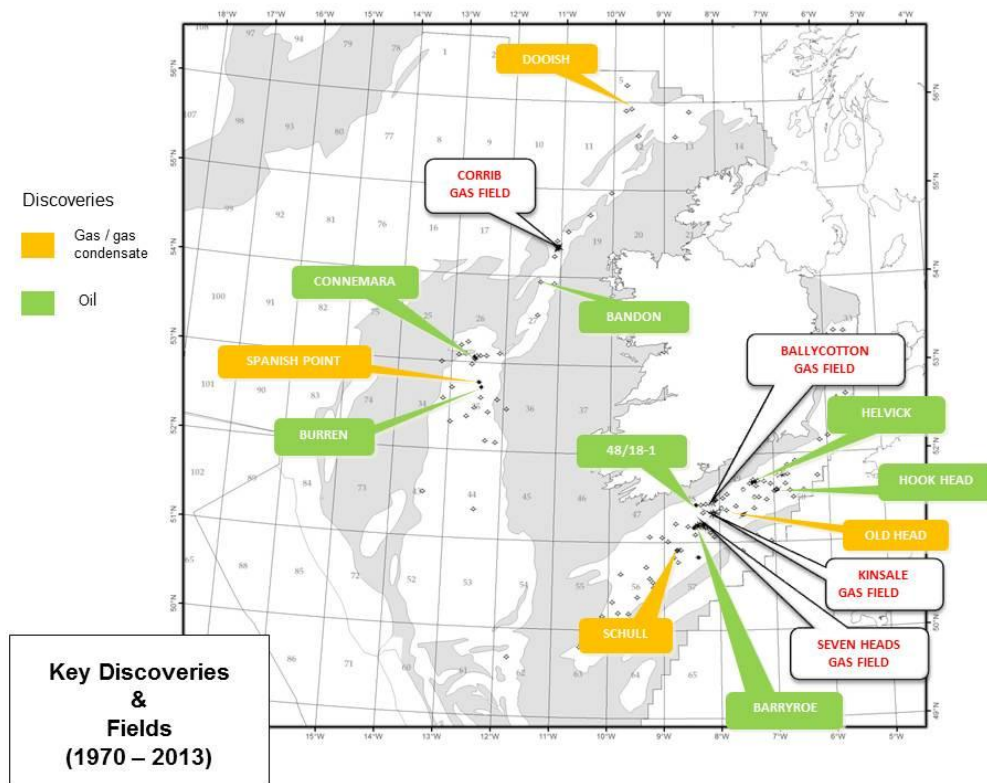
¹⁰⁵ Irish Offshore Operators Association, 2013: Irish Gas for a Better tomorrow. P. 9.

Figure 2.3 Oil & Gas Exploration & discoveries in Ireland (in 2012)



Source: http://irishoilandgas.files.wordpress.com/2012/09/map_explorationdiscoveries2012.jpg

Figure 2.4 Key discoveries of oil & gas in Ireland (until 2013)



Source, Marine Coordination Group Bureau, Ireland, 2014

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 capacity¹⁰⁶. The majority of the capacity is generated in Donegal in the North West and in Kerry and Cork in the South-West¹⁰⁷. Ireland currently has one single offshore wind farm, with seven wind turbines, each with a capacity of 3.6 MW. 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 waters¹⁰⁸. Once active, these additional wind farms could provide a total capacity of 3 550 MW¹⁰⁹. Notwithstanding the theoretical capacity, estimates point to a maximum installed capacity of only 600 MW by 2020¹¹⁰. Up to 2011, no specific government target for offshore wind has been announced, albeit 800 MW of capacity have been included in the recent public tendering for connected offers¹¹¹.

¹⁰⁶ EWEA, 2012: Wind in Power. 2011 European Statistics. P. 4.

¹⁰⁷ Deloitte, IWEA, 2009: Jobs and Investment in Irish Wind Energy. Powering Ireland's Economy. P. 8.

¹⁰⁸ Please note: to date, there is no guarantee that all of the wind farms which have applications in the system will be granted consent, as a number of them have not yet been assessed under the regulatory framework, including the EIA, Birds and Habitats Directives.

¹⁰⁹ The wind farms currently proposed are: Arklow Bank 2, Codling Wind Park, Oriel Windfarm, Dublin Array, Skerid 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.

¹¹⁰ 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.

¹¹¹ 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.

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 would equally increase above-proportionally between 2013 and 2016¹¹².

Due to the current difficulties in linking the windfarms to the onshore grid, 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 2 020 targets in UK and FR. Besides, it would need to be supplied at competitive costs¹¹³.

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 grid¹¹⁴. 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 Europe¹¹⁵.

The recent publishing of the *General Scheme of the Maritime Area and Foreshore (Amendment) Bill*¹¹⁶ by the Department of Environment, Community and Local Government on a New Bill is seen as a positive development for the sector. It aims to provide a coherent mechanism to facilitate and manage development activity in Ireland's EEZ beyond the territorial waters/foreshore and on the continental shelf, including in relation to strategic infrastructure projects, such as oil and gas, ports and offshore renewable energy. Currently, the Department of Communications, Energy and Natural Resources is developing a *Renewable Energy Export Policy and Development Framework* (with a spatial dimension) for renewable export opportunities from Ireland, in the first instance to the United Kingdom as stated, with particular focus on large scale projects for renewable energy generation. The development of the Renewable Energy Export Policy and Development Framework is to be informed by the carrying out of a Strategic Environmental Assessment (SEA). This will be accompanied by a Habitats Directive Assessment [or Appropriate Assessment (AA)] under the Habitats Directive 92/43/EEC, and widespread consultation with the public and stakeholders. The process will take approximately 12 months and consist of three main stages¹¹⁷.

The public and interested parties are invited to make a written submission on the proposed Renewable Energy Export Policy and Development Framework. As the framework will be underpinned by a Strategic Environmental Assessment and Appropriate Assessment, submissions may include relevant key environmental issues that should be addressed in the Environmental

¹¹² 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.

¹¹³ 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.

¹¹⁴ 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.

¹¹⁵ <http://www.benelux.int/NSCOGI/>

¹¹⁶ See also: <http://www.environ.ie/en/Foreshore/News/MainBody,34325,en.htm>

¹¹⁷ <http://www.dcenr.gov.ie/Energy/Sustainable+and+Renewable+Energy+Division/Renewable+Energy+Export/Renewable+Energy+Export+Policy+and+Development+Framework.htm>

Report and Natura Impact Statement which will accompany the draft Renewable Energy Export Policy and Development Framework

To support this consultation an information document and a summary document have been prepared and which can be found below:

Ocean renewable energy

Ireland is developing research and test facilities in the offshore marine sphere, e.g. the Quarter Scale Wave Energy Test Site¹¹⁸ and SmartBay Ireland (the national facility for marine ICT) in Galway Bay. Besides, the proposed full scale pre commercial prototype that is connected to the grid is the Atlantic Marine Energy Test Site off Belmullet in County Mayo and the upgraded wave tank facilities of the HMRC (Hydraulics & Maritime Research Centre), hosted in the IMERC initiative¹¹⁹. Currently, the SmartBay facilities are further developed by preparing for the installation of a fibre optic cable from An Spideal to an underwater hub that then links to the ¼ scale ocean energy test facility to develop research and commercial opportunities in the technology and energy sectors¹²⁰. Under the European Commission call for NER 300, Ireland has nominated two projects (one on ocean energy, i.e. the WestWave Project)¹²¹.

Through the Prototype Development Fund, the Ocean Energy Development Unit in SEAI offers grant-aid to stimulate RD&D in the sector and has provided funding to several Irish projects. Notable Irish developers also comprise the wave and tidal sector include Open Hydro, which is currently developing commercial projects in the Channel Islands and Canada. WaveBob and Ocean Energy Limited have tested their wave devices at the quarter scale Galway Bay test site.

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)¹²². 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.

¹¹⁸ 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.

¹¹⁹ Our Ocean Wealth, 2010. Towards an Integrated Marine Plan for Ireland. Seeking Your Views on New Ways; New Approaches; New Thinking. Government Report prepared by the Inter-Departmental Marine Co-ordination Group. Background Briefing Documents. P. 19, 20. Available here: <http://www.ouroceanwealth.ie/Briefing%20Documents/Our%20Ocean%20Wealth%20Briefing%20Documents%20for%20Consultation%20Part%20II%20Sectoral%20Briefs.pdf>

¹²⁰ See action 25 of Harnessing our Ocean Wealth, action updated in June 2013: http://www.ouroceanwealth.ie/SiteCollectionDocuments/MCG%202013%20Q%202%20Status%20Report%20of%20Implementing%20HOOW%20Early%20and%20Ongoing%20Actions%20_June_13.pdf

¹²¹ Our Ocean Wealth, 2011: Towards an Integrated Marine Plan for Ireland. Seeking Your Views on New Ways; New Approaches; New Thinking. Government Report prepared by the Inter-Departmental Marine Co-ordination Group. P. 20. Available here: <http://www.ouroceanwealth.ie/Briefing%20Documents/Our%20Ocean%20Wealth%20Briefing%20Documents%20for%20Consultation%20Part%20II%20Sectoral%20Briefs.pdf>

¹²² CWE Ireland Limited, 2012: ASX announcement, 13th February 2012. Press release. See also: <http://www.carnegiwave.com/index.php?url=/projects/Ireland%20project>

Ireland has also seen significant investment in research & innovation through the recent update of the short-medium and ongoing actions foreseen in the Harnessing our Ocean Wealth plan.¹²³ The action relates to the further support of existing and new testbeds for demonstration and commercialisation purposes that promote Ireland as a test-bed for renewable energy technologies and ICT (SmartOcean). The action focusses on the development of innovative technologies that support real-time information gathering (e.g. for security, surveillance, environmental monitoring). The Centre for Marine Renewable Energy Ireland (MaREI) will develop the science and technology required by industry to generate energy from wave, tidal and floating wind devices and will carry out research. In particular, MaREI will work on the optimization of the deployment of marine renewable energy devices, the connection of such devices to the national grid, methods for storing the energy generated, as well as marine governance, planning, economics and environmental issues¹²⁴.

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 energy¹²⁵. According to current estimates, and providing an optimistic scenario, the overall potential by 2030 will amount to 30 000 MW¹²⁶. The targeted installed capacity is 500 MW by 2020¹²⁷.

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 Basin¹²⁸.

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 area¹²⁹.

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 CO₂ from the point source, the study suggests that the most efficient method would be via pipeline to the storage site¹³⁰.

¹²³ See action 25 of Harnessing our Ocean Wealth, action updated in June 2013: http://www.ouroceanwealth.ie/SiteCollectionDocuments/MCG%202013%20Q%202%20Status%20Report%20of%20Implementing%20HOOV%20Early%20and%20Ongoing%20Actions%20_June_13.pdf

¹²⁴ See action 25 of Harnessing our Ocean Wealth, action updated in June 2013: http://www.ouroceanwealth.ie/SiteCollectionDocuments/MCG%202013%20Q%202%20Status%20Report%20of%20Implementing%20HOOV%20Early%20and%20Ongoing%20Actions%20_June_13.pdf

¹²⁵ 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

¹²⁶ <http://www.oceanenergy.ie/news/?p=437>

¹²⁷ European Ocean Energy, 2013: Industry Vision Paper. P. 8. Available here: <http://www.oceanenergy-europe.eu/images/QLast-corrections-brochure-Ocean.pdf>

¹²⁸ 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>

¹²⁹ Our Ocean Wealth, 2011. Towards an Integrated Marine Plan for Ireland. Seeking Your Views on New Ways; New Approaches; New Thinking. Government Report prepared by the Inter-Departmental Marine Co-ordination Group. P. 20. Available here:

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

¹³⁰ Enterprise Ireland (2009) Carbon Capture and Storage, Environment and Green Technologies Department, January 2009:

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 infrastructure¹³¹. 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 destinations¹³².

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 resources¹³³. Several evaluations have been undertaken, including an EU INTERREG funded study the Irish Sea Marine aggregates Initiative (IMAGIN)¹³⁴, 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 2011¹³⁵. According to the source, the total production in 2011 amounted to 32m tonnes.

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 opportunities¹³⁶. Besides, deposits of orthogenic phosphate, and various metallic compounds including manganese nodules and crusts can be expected, but no recent information on this is available¹³⁷.

Desalination

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 activities¹³⁸.

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

¹³¹ 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>

¹³² 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>

¹³³ Our Ocean Wealth, 2011. Towards an Integrated Marine Plan for Ireland. Seeking Your Views on New Ways; New Approaches; New Thinking. Government Report prepared by the Inter-Departmental Marine Co-ordination Group. P. 27. Available here:

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

¹³⁴ Irish Sea Marine Aggregate Initiative (IMAGIN) Policy Report, CMRC and Marine Institute, Marine Environment & Health Series, No. 32, 2008.

¹³⁵ See also: UEPG, 2012: Estimates of Aggregates Production data 2011. <http://www.uepg.eu/statistics/estimates-of-production-data/data-2011>

¹³⁶ Our Ocean Wealth, 2011. Towards an Integrated Marine Plan for Ireland. Seeking Your Views on New Ways; New Approaches; New Thinking. Government Report prepared by the Inter-Departmental Marine Co-ordination Group. P. 27: <http://www.ouroceanwealth.ie/Briefing%20Documents/Our%20Ocean%20Wealth%20Briefing%20Documents%20for%20Consultation%20Part%20I%20Sectoral%20Briefs.pdf>

¹³⁷ Coastal Resources Centre, 2011: An assessment of the current status and RTDI requirements in respect of the development of Irish seabed resources. Final Report.

¹³⁸ <http://www.businessandfinance.com/index.jsp?p=163&n=355&a=1390>

Leisure and tourism

Coastal tourism (accommodation)

The marine leisure and tourism industry has developed well in terms of infrastructural planning, investment and development¹³⁹. 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 activities¹⁴⁰.

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 holidays¹⁴¹.

Nearly 1.2 m holidaymakers (both domestic and foreign) engaged in water-based activities (2008) and the Irish market for leisure related to coastline was contributing € 453.3 m in gross value to the Irish economy. In the same year, it employed 5 800 people¹⁴².

According to a different source, in 2012, over 150 000 tourists were involved in recreational angling. The report estimates the total spend from tourism angling to amount to €280 m¹⁴³. Overall, angling is worth €0.75 bn 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 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. The Wild Atlantic Way¹⁴⁴ is a major new tourism initiative for the western seaboard. This long distance driving route stretches from the very north of Donegal to West Cork – a total length of 2,500km – and showcases Ireland's magnificent Atlantic coastline. The new driving route aims to create a corridor along the Atlantic linking destinations and attractions, creating a shopping isle of experiences and opening up access and possibilities in the visitor's mind. The Wild Atlantic Way has the potential to attract significant numbers of additional visitors in the coming years.

Yachting and marinas

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 Galway¹⁴⁵, 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

¹³⁹ 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

¹⁴⁰ Fáilte Ireland, 2009: Tourism Facts 2009

¹⁴¹ 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

¹⁴² 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.

¹⁴³ <http://www.fisheriesireland.ie/Press-releases/new-study-angling-worth-075-billion-to-irish-economy-and-supporting-10000-jobs-in-rural-ireland.html>

¹⁴⁴ <http://www.failteireland.ie/wildatlanticway>

¹⁴⁵ And which will be repeatedly organised in Galway between 30th June and 8th July 2012. More information: <http://www.galwayvolvooceanrace.com/>

spending. Eventually, the average spending per each international visitor resulted in €940 and final attendance amounted to 650 000 visitors with return of €55.8 m to the Galway economy¹⁴⁶.

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 has recently reported that report has been finalised and it was undertaking consultation over the last few months¹⁴⁷.

Cruise tourism

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%)¹⁴⁸. In terms of passenger and crew carriage, this amounted to 313,367 persons transported to Ireland in 2012¹⁴⁹.

- With 87 in 2012, Dublin Port scored highest in accommodating cruises and passengers (127 459). According to estimates, this has contributed over €350 m 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)¹⁵⁰ 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 m.

In recent years there has been an increase on the number of European, and in particular, British operators 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 Ireland¹⁵¹. 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 liners¹⁵². Cork and Dublin are the main ports of call for cruise liners. The overall contribution of the port of Cork is €125 m and 698 FTE jobs (out of which €81.5 m and 486 FTE jobs from ferry passengers)¹⁵³. Cruise liner passengers contribute €40.9 m and 197 FTE jobs. While crew accounted for €3.0 m and 15 FTE jobs.

¹⁴⁶ Failte Ireland, 2009: Economic Impact & Media Report. Volvo Ocean Race 2008 – 2009. 23rd May to 6th June 2012

¹⁴⁷

http://www.ouroceanwealth.ie/SiteCollectionDocuments/MCG%202013%20Q%202%20Status%20Report%20of%20Implementing%20HOOW%20Early%20and%20Ongoing%20Actions%20_June_13.pdf

¹⁴⁸ IMDO, 2013: The Irish Maritime Transport Economist. Volume 10. April, 2013. P. 9.

¹⁴⁹ IMDO, 2013: The Irish Maritime Transport Economist. Volume 10. April, 2013. P. 37.

¹⁵⁰ Failte Ireland, 2010: Cruise Tourism to Ireland Research Report – 2010. National Tourism Development Agency.

¹⁵¹ Cruise Tourism to Ireland, Research Report 2010. Conducted on behalf of Failte Ireland. 31st Jan. 2012.

¹⁵² 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

¹⁵³ <http://www.portofcork.ie/index.cfm/page/cruise>

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 12 m 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 bridge¹⁵⁴. 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 340 m cruise ships and one 145 m 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.¹⁵⁵

The Office of Public Works has 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 under the OPW Catchment Flood Risk Assessment and Management (CFRAM) Programme¹⁵⁶.

Measures were primarily financed through the Coastal Protection Programme, a sub-programme of the National Development Plan 2007 – 2013 prior to 2009. The sub-programme was dedicated to coastal protection to fund risk evaluations, the development of procedures and guidelines for the selection of protection schemes. In Ireland, regional authorities do not have their own coastal protection plans. Funding was typically provided to local authorities, on a county by county basis, via a grant of up to a maximum of 75%.

Since 2009, coastal protection measures have been primarily funded under the OPW Minor Works Programme. Local authorities who are at significant risk from coastal flooding or coastal erosion may apply to the OPW for funding of measures to address this risk. All such applications are carefully assessed by the OPW for compliance with a range of eligibility criteria and if successful may be funded up to a maximum of 90%.

Maritime surveillance and monitoring

Currently, Ireland hosts over 50 indigenous and multinational companies that are active in the sector, including in the provision of remote sensing systems, data management and visualisation tools, modelling, simulation, forecasting and engineering design supporting operational management.¹⁵⁷ Maritime surveillance and environmental monitoring in Ireland is treated as a single maritime economic activity as activities are closely intertwined.

In terms of clusters that are active in this maritime economic activity, the SmartOcean Cluster, launched in 2010 and led by the Marine Institute, builds on Ireland's SmartOcean (ICT for the Sea) Strategy. The strategy 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

¹⁵⁴ <http://www.irishtimes.com/news/cruise-ships-will-be-brought-further-up-liffey-1.1394340>

¹⁵⁵ PRC, 2009: Ireland - Country overview and assessment:
http://ec.europa.eu/maritimeaffairs/documentation/studies/documents/ireland_climate_change_en.pdf

¹⁵⁶ http://www.ouroceanwealth.ie/SiteCollectionDocuments/MCG%202013%20Q%202%20Status%20Report%20of%20Implementing%20HOOW%20Early%20and%20Ongoing%20Actions%20_June_13.pdf

¹⁵⁷ <http://www.smartocean.org/About.aspx> The industry has been mapped in the

and marine renewable energy¹⁵⁸. In 2010, the Marine Institute also launched the SmartOcean Forum, as part of an island-wide strategy to create a SmartOcean Innovation Cluster. It promotes engagement between the research community and industry with participants from industry, academia, and government organisations from Northern Ireland and the Republic of Ireland.¹⁵⁹

Further to that, iMerc,¹⁶⁰ the Irish Maritime and Energy Resource Cluster, focusses on maritime safety and security, ICT, recreation through its partners:

- The Coastal and Marine Research Centre (CMRC) as 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 Cork¹⁶¹. 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)¹⁶²;
- The Hydraulics and Maritime Research Centre (HMRC);
- The National Maritime College of Ireland (NMCI), which offers degree courses in Nautical Science and Marine and Plant Engineering and a Certificate in Navigational Studies (Seamanship).

Recently, iMerc established new links with the Space Agency Centre¹⁶³ in Cork wherein ESA projects are being developed between CMRC and NSC.

In the fields of maritime surveillance and security an Inter-Departmental Maritime Surveillance Co-ordination Group, chaired by the Department of Transport, was established in 2009. This group aims to create a common information-sharing environment to enhance maritime safety and security in Ireland. Various government departments are represented in the coordination group. This initiative also feeds in the European driven project on maritime surveillance that is driven by the European Defence Agency.

2.2. 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 (Ireland) or NUTS 2 (Border, Midland and Western; Southern and Eastern) 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).

¹⁵⁸ <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.

¹⁵⁹ <http://www.smartocean.org/News.aspx?FID=0&NewsID=20>

¹⁶⁰ <http://www.imerc.ie/>

¹⁶¹ <http://www.cmrc.ie/>

¹⁶² <http://cmrc.ie/news/2012/06/14/improving-maritime-surveillance-from-space.html>

¹⁶³ <http://nationalspacecentre.eu>

Table 2.2 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	Border, Midland and Western	Atlantic Arc
		Southern and Eastern	Atlantic Arc

Table 2.3 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 2.1. 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 2.3 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 Ireland)
0.	Shipbuilding			
0.a	Shipbuilding and repair ¹⁶⁴	0.3	0.7	
0.b	Construction of water projects ¹⁶⁵	0.6	0.4	
1.	Maritime transport and shipbuilding			
1.a	Deep-sea shipping	0.5	0.5	
1.b	Short-sea shipping ¹⁶⁶	0.2	0.8	
1.c	Passenger ferry services ¹⁶⁷	0.3	0.7	
1.d	Inland waterway transport			No data available
2.	Food, nutrition and health			
2.a	Fisheries for human consumption ¹⁶⁸	0.6	0.4	
2.b	Fisheries for animal feeding			No data available
2.c	Marine aquaculture ¹⁶⁹	0.8	0.2	
2.d	Blue biotechnology ¹⁷⁰	0.5	0.5	
2.e	Agriculture on saline soils			No data available
3.	Energy and seabed resources			
3.a	Offshore oil and gas ¹⁷¹	0.1	0.9	
3.b	Offshore wind ¹⁷²	0.3	0.7	
3.c	Ocean renewable energy	1	0	
3.d	Carbon capture and storage			No data available
3.e	Mining (sand, gravel, etc.)			No data available
3.f	Marine minerals mining			No data available
3.g	Desalination			No data available
4.	Leisure and tourism			
4.a	Coastal tourism (accommodation) ¹⁷³		1	
4.b	Yachting and marinas	0.5	0.5	

¹⁶⁴ primarily limited to ship repair activities, located around the port of Cork

¹⁶⁵ 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 BMW region.

¹⁶⁶ 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.

¹⁶⁷ 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%.

¹⁶⁸ The following rationale for the split applies:

¹⁶⁹ 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.

¹⁷⁰ 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.

¹⁷¹ 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.

¹⁷² Taking into account the wind farm in Arklow Bank, off the East Coast (Southern and Eastern region).

¹⁷³ A clear delineation could not be attributed to either region, due to the

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 Ireland)
4.c	Cruise tourism ¹⁷⁴	0.1	0.9	
5.	Coastal protection			
5.a	Coastal protection			No data available
6.	Maritime monitoring and surveillance			
6.a/6.b	Maritime surveillance			No data available
6.c	Environmental monitoring			No data available

¹⁷⁴ Dublin and Cork can currently be considered main ports of call for cruise tourism.

3. Ranking the 7 largest, fastest growing and promising 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 country 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.

3.1. The 7 largest Maritime economic activities

This subchapter identifies the largest maritime economic activities with a ranking order. On the basis of the scores obtained¹⁷⁵ in relation to GVA and persons employed, the 7 largest maritime economic activities have been identified as follows:

Table 3.1 Listing the 7 largest maritime economic activities in Ireland (NUTS-0)

Rank	Maritime economic activities	GVA (million €)	Employment	Score
1.	Fisheries for human consumption	258.5	6 391	3.3
2.	Coastal tourism (accommodation)	453.31	5 836	3.1
3.	Short-sea shipping	282.9	1 886	1.0
4.	Marine aquaculture	36.8	1 705	0.8
5.	Offshore oil and gas	137	790	0.4
6.	Yachting and marinas	45	800	0.4
7.	Cruise tourism	17	212	0.1

3.2. The 7 fastest growing 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 editors and the country editors where applicable.

Table 3.2 Ranking order of the 7 fastest growing maritime economic activities in Ireland

Rank	Maritime economic activities	Growth 2008-2010 (CAGR)	Growth 2000-2012 (CAGR)
1.	Fisheries for human consumption	5.4%	n/a%
2.	Passenger ferry services	2.0%	-2.8%
3.	Short sea shipping	-1.3%	2.7%
4.	Offshore Oil & Gas	-5.5%	-10.5%
5.	Deep sea shipping	-14.1%	-0.6%
6.	Shipbuilding	-15.3%	n/a
7.	Construction of water projects	-29.7%	n/a

¹⁷⁵ Please refer to the methodology Annex for the country papers.

3.3. Identification of promising maritime economic activities

The selection of maritime economic activities which hold a clear promise towards the future, even if they might be small today, is done on a number of criteria. The most important element aspect is the innovation level of the sector. The innovation level of maritime economic activities is analysed on the basis of a number of innovation criteria. The scoring on innovation is complemented with a set of other criteria, which are qualitatively scored, to arrive at a more comprehensive insight of the potential of a maritime economic activity.

3.3.1. Innovation indicators

The innovation indicators are inspired by the recent communication on innovation indicators which aim to capture the innovation level of a country¹⁷⁶. The following two indicator sets are included¹⁷⁷:

Indicator	Explanation	Source
Technological innovation		
1. Scientific publications	Number of scientific publications in a MAE in a Member State in relation to the GVA (€ mln) of that maritime economic activity ¹⁷⁸ .	Thomson Reuters (2011) ¹⁷⁹
2. Patents	Number of patents in a MAE in a Member State in relation to the GVA (€ mln) of that maritime economic activity.	Thomson Reuters (2011)
R&D expenditure		
3. R&D expenditure/GVA	R&D expenditure as a percentage of value added ¹⁸⁰ (2007 and most recent available year). Not available for Ireland.	OECD, ANBERD database
4. RTD expenditure/turnover	R&D expenditure as a percentage of company turnover. Data are available for UK only.	Amadeus company database

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 3.3 List of pre-identified national maritime sector analysis

Source	Qualitative assessment regarding innovation potential per maritime economic activity/sector
<p>Johnson Cornell University, INSEAD, WIPO, 2013: The Global Innovation Index 2013. The Local Dynamics of Innovation¹⁸¹</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"> • With regard to Scientific and technical publications, i.e. the number of scientific and technical journal articles (per billion PPP\$ GDP), Ireland ranked 24th on a global level (P.339). • 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 28th in terms of number of international patent applications filed by residents at the Patent Cooperation Treaty (per billion PPP\$ GDP) (P. 336). • In 2010, 65% of the overall workforce in Ireland was employment in knowledge-intensive services (P. 321). • In 2010, tertiary graduates in engineering, manufacturing, and construction accounted for 71% of total tertiary graduates (P. 294).

176 European Union, 2013: Measuring innovation output in Europe: towards a new indicator. COM(2013)624 final

177 Dependent on data availability

178 For small economic activities a default value of € 1 m has been used. The analysis was performed for 10 MEAs.

179 Analysis carried out in 2011 by Ecorys in the context of the general Blue Growth study. The analysis is based on Thomson Reuters data.

180 This indicator can be calculated for a few sectors only and are in most cases expressed at a higher sector level (e.g. oil & gas as part of the larger sector mining & quarrying). Only for shipbuilding a relatively straightforward match can be reached.

¹⁸¹ http://www.wipo.int/export/sites/www/freepublications/en/economics/gii/gii_2013.pdf

3.3.2. Other indicators

The innovation scores per MAE have been complemented with a number of additional criteria which have been scored in a qualitative manner. These include:

- Potential for competitiveness of EU industry, in comparison to the global industry in the respective segments;
- Future employment creation;
- Relevance for EU-based policy initiatives in that specific economic activity;
- Spill-over effects and synergies with other economic activities;
- Sustainability and environmental aspects.

Table 3.4 Future potential of economic activities

Maritime economic activity	Innovation Indicators					Other indicators				
	Publication/GVA	Patents/GVA	R&D/GVA	R&D/turnover	Composite score ^a	Competitiveness	Employment	Policy relevance	Spill-over effects	Sustainability
0. Shipbuilding										
Shipbuilding	n/a	n/a	n/a	n/a	●●	0	0	0	+	0
Construction of water projects	n/a	n/a	n/a	n/a	●●	0	0	+	+	0
1. Maritime transport										
Deep-sea shipping	n/a	n/a	n/a	n/a	●	0	+	0	0	+
Short-sea shipping	n/a	n/a	n/a	n/a	●	+	+	0	+	+
Passenger ferry services	n/a	n/a	n/a	n/a	●	0	+	+	0	+
Inland waterway transport	n/a	n/a	n/a	n/a	●	0	0	0	0	+
2. Food, nutrition and health										
Fisheries for human consumption	n/a	n/a	n/a	n/a	●	0	+	+	0	-
Fisheries for animal feeding	n/a	n/a	n/a	n/a	●	0	+	+	0	-
Marine aquaculture	1.1	0.1	n/a	n/a	●	+	+	0	+	0
Blue Biotechnology	n/a	n/a	n/a	n/a	●●●●	0	0	+	+	0
Agriculture on saline soils	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3. Energy and seabed materials										
Offshore oil and gas	n/a	0.0	n/a	n/a	●●	0	+	0	+	0
Offshore wind	n/a	1.8	n/a	n/a	●●●	+	0	+	0	+
Ocean renewable energy	76	n/a	n/a	n/a	●●●●	+	0	+	+	+
Carbon capture and storage	n/a	n/a	n/a	n/a	●●	0	0	0	0	+
Aggregates mining (sand, gravel, etc.)	n/a	n/a	n/a	n/a	●	0	0	0	0	0
Marine minerals mining	n/a	1.0	n/a	n/a	●●	0	0	0	0	0
Desalination	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
4. Leisure and tourism										
Coastal tourism (accommodation)	n/a	n/a	n/a	n/a	●	+	0	+	+	0
Yachting and marinas	n/a	n/a	n/a	n/a	●●	+	+	0	+	0
Cruise tourism	n/a	n/a	n/a	n/a	●●	+	+	0	+	0

Maritime economic activity	Innovation Indicators					Other indicators				
	Publication/GVA	Patents/GVA	R&D/GVA	R&D/turnover	Composite score ^a	Competitiveness	Employment	Policy relevance	Spill-over effects	Sustainability
5. Coastal protection										
Coastal protection	n/a	0.7	n/a	n/a	●●	0	0	+	+	+
6. Maritime monitoring & surveillance										
Maritime surveillance	2	2	n/a	n/a	●●	0	0	0	0	0
Environmental monitoring	26	2	n/a	n/a	●●●●	+	0	+	+	+

a) For those maritime economic activities for which no innovation indicators are available this is based on expert judgement

Based on the above indicator score 7 promising activities have been identified. This selection is primarily based on the composite innovation score, followed by the rank on the other indicators.¹⁸²

Table 3.5 **7 promising maritime economic activities**

Rank	Maritime economic activities
1.	Ocean Renewable Energy
2.	Blue Biotechnology
3.	Environmental monitoring
4.	Offshore wind
5.	Yachting & marinas
6.	Cruise tourism
7.	Coastal protection

¹⁸² The overall rank for the other indicators has been established by adding the + and deducting the -.

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 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)¹⁸³.”

4.1. Maritime clusters in Ireland

Building on the clusters already identified in the Blue growth study¹⁸⁴ and complemented with cluster identified in the EU Cluster Observatory¹⁸⁵, the following clusters have been identified for Ireland.

Table 4.1 Maritime clusters in Ireland¹⁸⁶

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 2.2. It also aims at assessing the maturity of the cluster (mature, growing or early development).

¹⁸³ Prof. Michael E. Porter, 20120213, MOC2012 (HBS course) Session 5 - final

¹⁸⁴ In the previous Blue Growth study, these were: Bretagne, Brest, Marseilles, ES: Galician Coast, Barcelona;

¹⁸⁵ The EU Cluster Observatory denotes maritime clusters and tourism clusters.

¹⁸⁶ 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 4.4):

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 4.2):

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.

Table 4.2 Description of the maritime clusters

Cluster	Maritime economic activities concerned	Unemployment rate at cluster level ¹⁸⁷ (NUTS III or II level)	Ongoing research: main research institutes / companies associated to the clusters
Galway	Blue biotechnology, Fisheries for human consumption and animal feeding, Yachting and marinas, Ocean energy, Marine Aquaculture	13.7% ¹⁸⁸	A couple of different actors make up a cluster in the Galway area. These are the Galway – Mayo Institute of Technology, the Marine Institute's Headquarters in Galway, the SmartBay test facilities, as well as the Ocean Energy test site. Besides, the Ryan Institute for Environmental, Marine and Energy Research at NUI Galway is 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 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 (SEMURU).
Cork	Marine Energy, Blue Biotech, Marine Engineering, Marine Biology, Coastal Mapping,	14.6% ¹⁸⁹	iMerc cluster, comprised of research institutions including the Coastal and Marine Research Centre, the Hydraulics and Maritime Research Centre (both hosted by University College Cork), the Cork Institute of Technology, and the National Maritime College of Cork. As well as SMEs and the Irish Naval Service. Substantial investment is committed and plans are underway to further boost the cluster and local and regional cooperation with regard to the maritime economic activities concerned.

¹⁸⁷ 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.

¹⁸⁸ Standardised unemployment rate, County Galway, May 2013. In: Stats Summary National & County Galway. June 2013. Available here: <http://www.galway.ie/en/media/Statistics%20June%202013.pdf>

¹⁸⁹ Central Statistics Office Ireland. Cork unemployment of the cluster (pre-defined).

Table 4.3 Education figures of the maritime clusters

Cluster	Number of students in higher education	Number of students in higher education following courses for employment in blue economy
Galway (NUI Galway, Ryan Institute, Galway-Mayo Institute of Technology)	17 000 at NUI Galway ¹⁹⁰ in 2013 out of which 3 500 postgraduate students ¹⁹¹	300 researchers at NUI Galway's Ryan Institute ¹⁹² At NUI Galway, B.Sc. of Science (Marine Science) with an average intake of 33 new students per semester ¹⁹³ Structured Ph.D programme in Marine Science at the Ryan Institute, students of the Galway Mayo Institute (in total 9,000 enrolled in 2013) ¹⁹⁴ of Technology enrolled in courses related to the blue economy
Cork (University College Cork (UCC), Cork Institute of Technology (CIT), National Maritime College of Ireland)	UCC: 19 000 students take its undergraduate and postgraduate programmes (2013) ¹⁹⁵ CIT: 12 000 registered students with approximately 2 000 new entries year on year. Of these approximately 6 000 are full-time and the remaining are part-time. ¹⁹⁶	UCC: Master of Biology – Marine Biology; M.Sc. Applied and Coastal Management; MEngSc. Marine Renewable Energy; CIT and Maritime College of Ireland: BSc in Nautical Science; BEng in Marine & Plant Engineering; BEng in Marine Electrotechnology ¹⁹⁷

Table 4.4 List and strengths and weaknesses of clusters¹⁹⁸

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. Focus areas lie in marine biotechnology research (Marine Institute Beaufort Award for Marine Biodiscovery Research, NutraMara - National Marine Functional Foods Research Initiative. Marine biotechnology as a driver in particular for the seaweed harvesting. 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> The sector will need to develop further and involve more industry stakeholders to reach a critical mass Strong research initiatives and facilitation in the sector – notably through participation in research programmes.</p>

¹⁹⁰ <http://www.nuigalway.ie/about-us/who-we-are/>

¹⁹¹ NUI Galway, 2013: Postgraduate prospectus— taught programmes 2014–2015. P.9.

¹⁹² NUI Galway, 2013: Postgraduate prospectus— taught programmes 2014–2015. P.6.

¹⁹³ <http://www.nuigalway.ie/courses/undergraduate-courses/marine-science.html> Overall, marine science is one of the seven key research activities of NUI Galway.

¹⁹⁴ http://en.wikipedia.org/wiki/Galway-Mayo_Institute_of_Technology

¹⁹⁵ <http://www.iaa.ie/the-irish-universities/university-profiles/university-college-cork/#>

¹⁹⁶ <http://www.cit.ie/aboutcit/factsandfigures/>

¹⁹⁷ <http://www.cit.ie/aboutcit/facultiesandcolleges/nmci/>

¹⁹⁸ Please note : these are based on the judgment of the country editor. For those information that is based on a clear reference, it is indicated as a footnote. Please also compare with the Strengths and Weaknesses for the sectors as mentioned in the Ocean Wealth publication that identifies Strengths and Weaknesses for some of the maritime economic activities at National level:

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

Cluster	Maritime economic activities covered	Status	Strengths	Weaknesses
	Fisheries for human consumption and animal feeding	Growing with recovery of the global economy	<p><u>Ireland:</u> Sound environment for production of high quality farmed fish and shellfish 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) <i>Research awards, e.g. 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 providing a scientific basis for rationalising the biotoxin monitoring and risk management systems used.</i> The Seaweed Aquaculture project is developing industry-scale hatchery and on-growing methodologies for a range of commercially relevant seaweed species. Company turnover is performing well in 2013.¹⁹⁹ Key milestones defined at national level to achieve growth in terms of aquaculture (17% increases by 2015).²⁰⁰ 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; <u>Galway:</u> 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>	<p><u>Ireland:</u> Gradual depletion of stock (on cod fish and whiting) fallen near to below safe biological limits Challenges to manage the economic transition to comply with international obligations to reducing the allowable catches (MSY) Fragmented domestic sales structure and lack of scale²⁰¹ Transition from niche market exporters to a more integrated domestic supply chain.²⁰²</p> <p><u>Galway:</u> Less favourable conditions compared to the major fishing ports (in terms of value of weight and landings) in Ireland, which are located on the North-Western (Killybegs), South-Western Shore (Castletownbeere) and Eastern shoreline (Kilmore Quay).</p>
	Aquaculture	Growing	<p><u>Ireland:</u> established system of environmental and food safety monitoring which meets EU and market demands.²⁰³ Funding support for aquaculture projects supported by BIM under the National Development Plan (NDP) U co-funded Measures AquaTT which facilitates joint projects in aquaculture <i>research projects</i> in the field of diversification of existing finfish culture into quality white fish (Eircod project) <u>Galway:</u> Long-standing experience with farmed cod (since Feb. 2007) from the Trosc Teoranta Large number of research institutes on Aquaculture (NUI Galway, Martin Rayo</p>	<p>Decline in certain species Better integration with local processing industry, licensing and funding difficulties arising from challenges on the State regulatory structure in achieving compliance with the Birds and Habitats Directive.²⁰⁷</p>

¹⁹⁹ Food Harvest 2020. Milestones for Success 2013. P. 25.

²⁰⁰ Food Harvest 2020. Milestones for Success 2013. P. 28.

²⁰¹ Food Harvest 2020, P. 53.

²⁰² Food Harvest 2020, P. 53.

²⁰³ Status of Irish Aquaculture, 2007 : A compilation report of information on Irish Aquaculture. Marine Institute, Bord Iascaigh Mhara and Udarás na Gaeltachta. Report compiled and prepared by: MERC Consultants Ltd. December 2008.P. 8-9.

Cluster	Maritime economic activities covered	Status	Strengths	Weaknesses
			Institute, Galway Mayo Institute of Technology Large amount of aquaculture licenses (oysters, mussels, scallops) and new aquaculture species sites in Galway Bay. ²⁰⁴ Notably, the potential in specialisation in organic and 'eco-certified' aquaculture is seen as an opportunity. ²⁰⁵ Two new sites have been selected in Galway Bay close to Inis Oirr. ²⁰⁶	
	Yachting and marinas	Growing	<u>Ireland:</u> 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; ²⁰⁸ <u>Galway:</u> Increasing attractiveness as a yachting location, not least due to hallmark events (e.g. Volvo Ocean Race stopover, 2009 and CONG – Galway sailing race, organized annually) Joint cooperation at local level in terms of place branding	<u>Ireland:</u> Underutilised potential in terms of marine sports Diversify yachting and marina experience outside the main agglomerations (Dublin, Cork) Expansion of sailing visitors would require further investment into existing port and marina infrastructure ²⁰⁹ <u>Galway:</u> limitations in growing the visitor marina network, notably on the West coast ²¹⁰ 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. ²¹¹
	Ocean energy	Growing	<u>Ireland:</u> High potential in ocean energy for both shallow and deeper waters in Ireland 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 Presence of SMEs and multinational companies. <u>Galway:</u> Smart Bay Galway harbours a quarter scale wave energy test site, supported by large corporations, e.g. IBM and SMEs Good horizontal links between ocean energy and ICT devices (monitoring and data solutions). The sector provides ample R&D opportunities which is seen as a key strength. ²¹²	<u>Ireland:</u> the further development will depend on the attraction of large capital investment, at national level (e.g. through action 25 of Harnessing our Ocean Wealth) as well as from the private sector. Equally so, a further development of the grid infrastructure. ²¹³ Next to mere technological barriers of the wave and tidal sector in general, the offshore planning and permitting process is seen as a constraint, in case it will not be streamlined further. ²¹⁴ <u>Galway:</u> The further development of the local cluster may be hampered by the extension of the offshore grid system Dependency on large-throughput

²⁰⁷ OUR OCEAN WEALTH, 2011: Towards an Integrated Marine Plan for Ireland Seeking Your Views on New Ways; New Approaches; New Thinking. Government Report prepared by the Inter-Departmental Marine Co-ordination Group. Introduction. P. 4.

²⁰⁴ 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.

²⁰⁵ OUR OCEAN WEALTH, 2011: Towards an Integrated Marine Plan for Ireland Seeking Your Views on New Ways; New Approaches; New Thinking. Government Report prepared by the Inter-Departmental Marine Co-ordination Group. Introduction. P. 4.

²⁰⁶ Food Harvest 2020. Milestones for Success 2013. P. 25.

²⁰⁸

http://www.ouroceanwealth.ie/SiteCollectionDocuments/MCG%202013%20Q%202%20Status%20Report%20of%20Implementing%20HOOV%20Early%20and%20Ongoing%20Actions%20_June_13.pdf

²⁰⁹ 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

²¹⁰ 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

²¹¹ Irish Tourist Industry Confederation, New Directions for Tourism in the West. . Compiled by Tourism & Transport Consult International (TTC)

²¹² OUR OCEAN WEALTH, 2011: Towards an Integrated Marine Plan for Ireland Seeking Your Views on New Ways; New Approaches; New Thinking. Government Report prepared by the Inter-Departmental Marine Co-ordination Group. Introduction. P. 21.

²¹³ OUR OCEAN WEALTH, 2011: Towards an Integrated Marine Plan for Ireland Seeking Your Views on New Ways; New Approaches; New Thinking. Government Report prepared by the Inter-Departmental Marine Co-ordination Group. Introduction. P. 21.

Cluster	Maritime economic activities covered	Status	Strengths	Weaknesses
Cork	Tourism ²¹⁵	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>There is a growing market of 'The Engaged Culture Seeker' type of tourism, which Cork satisfies very well.</p> <p>The "Wild Atlantic Driving Route" is a long-distance driving route ranging from Cork up to the North West of the Republic of Ireland.²¹⁶ It will assist in increasing visitor numbers, dwell time, spend and satisfaction along all parts of the route re-package the Atlantic seaboard as a destination to overseas and domestic visitors improve.</p> <p>The Wild Atlantic Driving Route is of many contributors to the growing market for marine activity / adventure – based tourism and recreation along the west coast of Ireland.</p>	<p>electricity transmission cables for scaling up ocean energy in Ireland</p> <p>Accessibility via airplanes and road from the capital and main tourism destination Dublin. To the country editors views, the domestic willingness to visit Cork is also rather low.</p>
	Yachting and marinas ²¹⁷	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>Old industrial sites and harbours now disused and available for regeneration.</p>	<p>Cork is also a busy commercial and Naval port with frequent traffic by large vessels. Lack of coordination between different authorities and partners. Current capacity in marinas and yards is complete, thus limiting space for further expansion.</p>
	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)²¹⁸ with more exploration in the area taking place.</p>	<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.</p>
	Ocean renewable energy	Research based	<p>Ireland has is looking into ways of harnessing its wave energy potential, including with the use of a test tank at the HMRC in Cork²¹⁹</p>	<p>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.²²⁰</p>
	Fisheries for human consumption and animal feeding	Growth in turnover, but decline	<p>There has been a steady increase in the turnover from landings, largely as a result of increased market price for products.</p>	<p>The quota has been decreasing steadily over the years leading to a steady decline in the size of the catch</p>

²¹⁴ OUR OCEAN WEALTH, 2011: Towards an Integrated Marine Plan for Ireland Seeking Your Views on New Ways; New Approaches; New Thinking. Government Report prepared by the Inter-Departmental Marine Co-ordination Group. Introduction. P. 21.

²¹⁵ 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

²¹⁶ <http://www.failteireland.ie/wildatlanticway>

²¹⁷ 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=JvJgUsnkMseo0AWEmYcADg&usq=AFQjCNG_AvVEC70NxXQgKfmJbkiHyDK5A&bvm=bv.54176721,d.d2k

²¹⁸ http://www.siptu.ie/media/media_14689_en.pdf

²¹⁹ SEAI, Industrial Development potential of offshore wind in Ireland, 2011

²²⁰ SEAI, Industrial Development potential of offshore wind in Ireland, 2011

Cluster	Maritime economic activities covered	Status	Strengths	Weaknesses
		in size of catch. ²²¹	Cork has a long history of commercial fishing and therefore very good infrastructure and facilities allowing for efficient commercial operations.	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	In Cork alone there were 90 licences (third largest) representing 17% of all Irish licences. The majority of these were in the shellfish production (oyster and mussels). There have been several research activities in the area, where the University College Cork participated. ²²² As wild fish stock decline there is an increasing tendency towards the aquaculture in particular when it comes to Salmon and Cod. There is therefore ample space for growth. Strong global demand of both finfish and shellfish of which	There is still a need for better integration of local processing industry as well as encouraging local demand for the products.
	Blue Biotech	Growing	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. Cork has the second highest concentration of Blue Biotech companies in Ireland (13%), second only to Ireland. ²²³ The University College Cork in particular is running several courses as well as research activities and is also involved in the Beaufort Marine Biodiscovery. The Beaufort facility aims to develop Ireland's capabilities and infrastructures in marine research, biotechnology, food and medical research to establish eventually new businesses. Besides, Cork benefits from the presence of a large concentration of Multinational Pharmaceutical companies	The sector is still rather new and therefore infrastructure and stronger research communities need to be developed.
	Maritime surveillance and security	Growing	iMerc, the Marine Energy and Resource cluster, located in Cork, is developing research into maritime surveillance further. As one of the four key thematic priorities, it is currently involving key enterprise and research institutes in creating the cluster. Phase 1 will construct the UCC National Beaufort Centre by May 2013, followed by Phase 2 aiming at an extended maritime and energy science and commercial park on the adjacent Port of Cork land.	

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

²²¹ SEMRU, Ireland's Economy 2010

²²² MERC 2006, Status of Irish Aquaculture

²²³ SEMRU, An Overview of the Irish Biotechnology Sector and its Position within the Atlantic Area, 2010

Table 4.5 Regional or national cluster strategy

Regional or national cluster strategy	Brief description of main objectives and features
Smart Ocean strategy ²²⁴	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. The SmartOcean cluster, established in 2010, is led by the Irish Marine Institute. It aims at expanding the links between enterprises and research and enhancing the marine ICT dimension in the future. It builds on the strong industrial base in Ireland in these sectors: over 50 ICT companies (SMEs and multinationals) are involved in the Irish SmartOcean cluster, targeting the fast-growing market for marine ICT products and services for the oil and gas, renewable ocean energy, and transport and shipping sectors and for environmental monitoring and maritime security and surveillance. This is an exciting niche opportunity for Ireland building on the strengths of a successful national ICT cluster.
Irish Maritime and Energy Resource Cluster (iMerc), Cork	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. ²²⁵ This has been later on transformed into the iMerc cluster Cork. ²²⁶

²²⁴ <http://www.smartocean.org/SmartOceanConsultation.aspx>

²²⁵ http://www.swra.ie/contentfiles/pdfs/SWRA_Cluster_Benchmarking_Report_Composite_FINAL_FINAL_July_09.pdf

²²⁶ <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)²²⁷.

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 5.1), focusing on legal/regulatory or financial measures.

Table 5.1 provides an overview of maritime policies (national, regional and EU level) and assesses their impact.

²²⁷ We understand this might differ for specific policies. See also table 3 of this country fiche.

Table 5.1 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 ²²⁸	<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: Goal 1 focuses on a thriving maritime economy, whereby Ireland harnesses the market opportunities to achieve economic recovery and socially inclusive, sustainable growth. Goal 2 sets out to achieve healthy ecosystems that provide monetary and non-monetary goods and services (e.g. food, climate, health and well-being). 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</p>	<p>The following measurable Ocean Wealth 2020 Targets have been defined:</p> <ul style="list-style-type: none"> • Double the value of our ocean wealth to 2.4% of GDP by 2030. • Increase the turnover from the ocean economy to exceed €6.4bn by 2020. 	<p>Among the direct consequences for maritime activities are:</p> <ul style="list-style-type: none"> • Good governance and maritime safety, security and surveillance are vital cornerstones and will receive further attention • Cross-sectoral integrated marine policy, planning and decision-making at • The delivery of more efficient and effective public services; the removal • Healthy marine ecosystems, including a clean, green environment, • Green marine products and services (e.g. in our food and tourism sectors) • implementation and compliance with environmental legislation. Equally, we need • drawing on strengths in Research, Technology, Development and Innovation (RTDI) in marine science and technology • An enabling infrastructure (e.g. ports, piers, 	<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>		

²²⁸ 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
	the sea.		<p>electricity grid, research infrastructure)</p> <ul style="list-style-type: none"> • Close North/South cooperation and collaboration with our Atlantic neighbours and international partners 			
The SmartOcean Research and Innovation Strategy ²²⁹	<p>The strategy, launched in 2010, is a part of the Marine Institute's 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>The 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.</p>	<p>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.</p> <p>Currently, a public consultation is launched to which Blue Growth stakeholders in Ireland are invited to contribute</p>	<p>There are currently over 50 indigenous and multinational companies based in Ireland engaged 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>	<ul style="list-style-type: none"> • 	
Sea Change – A Marine Knowledge, Research &	<p>The primary objective was aimed at driving the development of the marine sector as a dynamic</p>	<ul style="list-style-type: none"> • Strengthening the competitiveness and 	<p>Building upon the 2007 and 2008 investment commitments, new investment of ~€2.15m was committed by Marine</p>	<p>The SeaChange strategy has been implemented via three research measures (industry, discovery and policy support), and two supporting programmes</p>	<ul style="list-style-type: none"> • Since the launch of Sea Change, an estimated €119m has been 	

²²⁹ 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
Innovation Strategy for Ireland 2007-2013 ²³⁰	element of Ireland's knowledge economy.	<p>environmental sustainability of the marine sector by alignment between public sector & third-level research capacity and industry needs;</p> <ul style="list-style-type: none"> • Building new multidisciplinary research capacity and capability in fundamental technologies that can be applied to marine-related activities • Delivering a comprehensive planned policy research programme 	<p>Institute managed research funds in 2009, supporting research and training on board the national research vessels. This brings the total committed under the NDP Marine Research Sub-Programme to € 49.7m. During 2009, the Sea Change Team were actively engaged in supporting 3 major emerging national R&D programmes in Marine Biotechnology, Advanced Marine Technology and Renewable Ocean Energy.</p>	(innovation and infrastructure)	<p>committed (nationally and internationally) in marine-related research:</p> <ul style="list-style-type: none"> • 41% of which comes from Marine Institute managed NDP funds; • 39% from other national funding bodies; and • 20% from international funding. • research investment focuses on 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, 	

²³⁰ <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
					ocean energy and marine technology.	
Food Harvest 2020 ²³¹	National Strategy to align the entire food sector in Ireland (including also seafood) with the objectives of the Europe 2020 agenda and contribution to smart, green and sustainable growth.	The reports set out three measurable targets to be achieved by 2020: A 33% increase in the value of the primary agriculture An export target of €12 bn A 40% increase in value-added from 2008 baseline year	Seafood, aquaculture and fishing are included in the Food Harvest 2020 blueprint. In terms of concrete output of the Food Harvest 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 ²³²	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 & Innovation Strategy for Ireland 2007-2013. The objectives are to create and sustain Irish opportunities for research, development and innovation in marine biotechnology and to focus on strategically important		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.	MBI will establish a strong collaboration with the growing biopharma sector in Ireland; Building links between marine biotechnology research and the medical device and diagnostic sectors; Stimulating the use of marine origin materials by Ireland's agri-food sector; Encouraging the use of biological processes to help maintain healthy environments and Promoting the sustainable exploitation of Ireland's marine resources.	Since 2007, an excess of €20 m to develop national research capacity in marine biotechnology and marine biosciences have been invested. Additional national and international funding sources further support scientific investigation in molecular and nanosciences.	

²³¹ <http://www.agriculture.gov.ie/agri-foodindustry/foodharvest2020/> and also: Department of Agriculture, Food and the Marine: Food Harvest 2020. Milestones for Success 2013.

²³² <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
	research areas. Another objective lies in the fact of acquiring through the commercialisation of marine biotechnology research outputs.					
2013 National Ports Policy ²³³	Facilitate a competitive and effective market for maritime transport in Ireland Ultimately, to call for a more differentiated support structure of ports according to their significance To pool public support at national level to the ports of national significance	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 harbours under the control of a port company.	Commercial port activities will be geared more towards generating economies of scale and increase capacity Individual port companies will have to be open to private-sector driven investments More regional / local policy support (for ports of regional significance)	Policy framework to allow the commercial port sector to develop in a sustainable manner	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 (commercial basis with commercial return)	
Steering a New Course – Strategy for a restructured, Sustainable and Profitable Seafood Industry for the period 2007–2013 ²³⁴	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		It recommended a budget of €55 m for marketing over the seven-year period, which on an average annual basis amounts to €7.8 m. In all a total of €334 m is being requested over the seven year duration of the	

²³³ 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

²³⁴ <http://www.agriculture.gov.ie/media/migration/fisheries/marineagenciesandprogrammes/seafooddevelopmentinireland/SteeringaNewCourse141111.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
					programme. This State supported investment will in turn be used to leverage a further €263 m by way of private sector funding. ²³⁵	
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"> Increasing the knowledge on Atlantic Ocean Aligning ocean observation efforts to improve sustainable ecosystems Coordinate data sharing, interoperability and coordination of observing infrastructures 	<ul style="list-style-type: none"> Promote citizen's understanding of the value of the Atlantic by promoting oceans literacy. Indicate how results of ocean science and observation address pressing issues facing our citizens Coordinate the planning of relevant activities, including researcher's mobility 			

²³⁵ Steering a New Course – Strategy for a restructured, Sustainable and Profitable Seafood Industry for the period 2007–2013. P. 142.

6. Annex I – Detailed description of the sources and the methodology on maritime economic activities

The following table refers to section 2.1 Overview of relevant maritime economic activities in a Member State (Table 2.1). 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 2.1). Detailed reference regarding the sources of the data will complement the data.

In order to complete Table 2.1, 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.

Table 6.1 Selection table of the most relevant figures and detailed references

Maritime economic activity		Source	GVA (m €)	employment (abs. nrs)	Comments
0. Other sectors					
0.a	Shipbuilding and repair	Eurostat	7	155	Ship repair (NACE 33.15) only. No data for NACE 30.11 (new building) and 3012 (Building of pleasure and sporting boats) for IE
		National statistics	n/a	n/a	
		Alternative	n/a	n/a	
0.b	Construction of water projects	Eurostat	4	17	Eurostat, data for 2010
		National statistics	n/a	n/a	
		Alternative	110	1 600	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
1. Maritime transport					
1.a	Deep-sea shipping	Eurostat	n/a	n/a	No data in Eurostat on almost all NACE sectors relevant to this MEA
		National statistics	n/a	n/a	
		Alternative	23	154	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.b	Short-sea shipping	Eurostat	n/a	n/a	No data in Eurostat on almost all NACE sectors relevant to this MEA
		National statistics	n/a	n/a	
		Alternative	283	1,886	See 1.1
1.c	Passenger ferry services	Eurostat	n/a	n/a	No data in Eurostat on almost all NACE sectors relevant to this MEA
		National statistics	n/a	n/a	
		Alternative	23	154	SEMRU; Ireland's Ocean Economy 2010
1.d	Inland waterway transport	Eurostat	n/a	n/a	Eurostat, data for 2010 (only NACE 50.40; no data in Eurostat on other NACE sectors relevant;

Maritime economic activity		Source	GVA (m €)	employment (abs. nrs)	Comments
		National statistics	n/a	n/a	
		Alternative	0	560	Since 99% of IE's total imports and exports by volume are transported via the Sea, In: Ireland's Ocean Economy 2007. P. 18. ; employment based on Eurofund, European Industrial Relations observatory online http://www.eurofound.europa.eu/eiro/studies/tn0809017s/ie0809019q.htm
2. Food, nutrition and health					
2.a	Fisheries for human consumption	Eurostat	259	6,391	JRC (fishing), Eurostat (fish processing), PRODCOM (share of human/animal). No data for NACE 46.38 wholesale and 47.23 retail available in Eurostat.
		National statistics	n/a	n/a	
		Alternative	191	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 seafood processing and 1 185 in ancillary services. Source: Fish & Seafood Industry, Irish Food Board, 2013: http://www.bordbia.ie/industryinfo/fishseafoodindustry/pages/default.aspx // 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.b	Fisheries for animal consumption	Eurostat	n/a	n/a	
		National statistics	n/a	n/a	
		Alternative	included in 2.1	included in 2.1	No data has been found on catching fish for animal consumption; no split between catching fish human consumption vs. animal feeding
2.c	Marine aquaculture	Eurostat	37	1,578	JRC
		National statistics	n/a	n/a	
		Alternative	42	1,705	Employment: BIM, 2012: Annual Aquaculture Survey 2012
2.d	Blue biotechnology	Eurostat	n/a	n/a	
		National statistics	n/a	n/a	
		Alternative	8.7	185	SEMUR Company survey 2007, reported in: Ireland's Ocean Economy, 2010
2.e	Agriculture on saline soils	Eurostat	n/a	n/a	
		National statistics	n/a	n/a	
		Alternative	n/a	n/a	
3. Energy and sea bed materials					
3.a	Offshore oil and gas	Eurostat	n/a	n/a	
		National statistics	n/a	n/a	
		Alternative	137	790	NACE 11.1. Based on CSO - Census of Industrial Production 2007; SEMRU Company Survey. In: Ireland's Ocean Economy, 2010
3.b	Offshore wind	Eurostat	n/a	n/a	
		National statistics	n/a	n/a	
		Alternative	4.4	101	SEMRU Company survey, reported in: Ireland's Ocean Economy, 2010
3.c	Ocean renewable energy	Eurostat	n/a	n/a	
		National statistics	n/a	n/a	
		Alternative	0.5	50	GVA based on: Morrissey, K. (2011). The Economic Opportunity of Ocean Energy for the Island of Ireland,

Maritime economic activity		Source	GVA (m €)	employment (abs. nrs)	Comments
					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.d	Carbon capture and storage	Eurostat	n/a	n/a	
		National statistics	n/a	n/a	
		Alternative	n/a	n/a	country editors unable to access sector specific data from Ireland's Central Statistics Office; no relevant alternative sources found for quantification of the maritime economic activity
3.e	Mining	Eurostat	n/a	n/a	
		National statistics	n/a	n/a	
		Alternative	n/a	n/a	country editors unable to access sector specific data from Ireland's Central Statistics Office; no relevant alternative sources found for quantification of the maritime economic activity
3.f	Marine minerals mining	Eurostat	n/a	n/a	
		National statistics	n/a	n/a	
		Alternative	n/a	n/a	country editors unable to access sector specific data from Ireland's Central Statistics Office; no relevant alternative sources found for quantification of the maritime economic activity
3.g	Desalination	Eurostat	n/a	n/a	
		National statistics	n/a	n/a	
		Alternative	n/a	n/a	No significant activity, GVA and employment contribution negligible
4. Leisure and tourism					
4.a	Coastal tourism (accommodation)	Eurostat	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
		National statistics	n/a	n/a	
		Alternative	453	5,836	Water-based tourism, includes both Domestic and Overseas visitors. Derived from ESRI Report 2004, SEMRU Company Surveys, Faite Ireland Statistics, CSO Estimates for 2002-2007. Reported in: Ireland's Ocean Economy, 2010
4.b	Yachting and marinas	Eurostat	n/a	n/a	
		National statistics	n/a	n/a	
		Alternative	45	800	ICOMIA Statistics 2011 (2012) Statistics concerning July 2011 to June 2012
4.c	Cruise tourism	Eurostat	n/a	n/a	No data in Eurostat on almost all NACE sectors relevant to this MEA
		National statistics	n/a	n/a	
		Alternative	30,3 // 40,9	// 212	Total of 130 calls in 2007 to three ports, carrying 102,000 passengers; in: Ireland's Ocean Economy, 2010 // including http://www.portofcork.ie/index.cfm/page/cruise
5. Coastal protection					
		Eurostat	n/a	n/a	
		National statistics	n/a	n/a	
		Alternative	4	44	Eurostat COFOG, data for 2010; PRC the Economics of Climate change, data for 2008
6. Maritime monitoring and surveillance					
6.a	Maritime surveillance	Eurostat	n/a	n/a	
		National statistics	n/a	n/a	
		Alternative	n/a	n/a	
6.b	Environmental	Eurostat	n/a	n/a	

Maritime economic activity		GVA	employment	Comments
	Source	(m €)	(abs. nrs)	
monitoring	National statistics	n/a	n/a	
	Alternative	n/a	n/a	

7. Annex II – Growth rates of the maritime economic activities

Maritime economic activity	Indicator	Source	Availability	CAGR (2008-2010)	CAGR (2000-2012)	Notes	
0. Other sectors							
0.a	Shipbuilding and repair	GVA	Eurostat	2008-2010	-15.3%	n/a	
0.b	Construction of water projects	GVA	Eurostat	2008-2010	-29.7%	n/a	
1. Maritime transport							
1.a	Deep-sea shipping	Volume of deep sea cargo shipped, 1000 tons	Eurostat	2000-2011	-14.1%	-0.6%	
1.b	Short-sea shipping	Volume of short sea cargo shipped, 1000 tons	Eurostat	2000-2011	-1.3%	2.7%	
1.c	Passenger ferry services	1000PASF - 1000 passengers (excluding cruise passengers)	Eurostat	2004-2011	2.0%	-2.8%	
1.d	Inland waterway transport	1000 tonnes transported on inland waterways	Eurostat	no data			
2. Food, nutrition and health							
2.a	Fisheries for human consumption	GVA	Eurostat	2008-2010	5.4%	n/a	
2.b	Fisheries for animal feeding	GVA	Eurostat	2008-2010	n/a	n/a	
2.c	Marine aquaculture	n/a			n/a	n/a	
2.d	Blue biotechnology	n/a			n/a	n/a	
2.e	Agriculture on saline soils	n/a			n/a	n/a	
3. Energy & sea bed minerals							
3.a	Offshore oil and gas	primary production of oil and gas in TOE	Eurostat	2000-2011	-5.5%	-10.5%	
3.b	Offshore wind	n/a			n/a	n/a	
3.c	Ocean renewable energy	n/a			n/a	n/a	
3.d	Carbon capture and storage	n/a			n/a	n/a	
3.e	Mining	Marine Aggregates (millions tonnes) - UEPG data	Eurostat	no data	n/a	n/a	No activity
3.f	Marine minerals mining	n/a			n/a	n/a	
3.g	Desalination	n/a			n/a	n/a	
4. Leisure & tourism							
4.a	Coastal tourism (accommodation)	Index turnover, Gross data (all accommodation NACE 55)	Eurostat	no data	n/a	n/a	
4.b	Yachting and marinas	n/a			n/a	n/a	
4.c	Cruise tourism	1000PASC - 1000 cruise passengers starting and ending a cruise	Eurostat	data unreliable	n/a	n/a	

Maritime economic activity	Indicator	Source	Availability	CAGR (2008-2010)	CAGR (2000-2012)	Notes
5. Coastal protection						
5.a	Coastal protection	n/a			n/a	n/a
6. Maritime monitoring & surveillance						
6.a	Maritime surveillance	n/a			n/a	n/a
6.b	Environmental monitoring	n/a			n/a	n/a