

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

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Preface

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

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

Comments received up to the 4th of October have been incorporated in the present draft. A final version will be prepared based on the last round of comments. This final version will also be designed and edited to provide an easily accessible document.

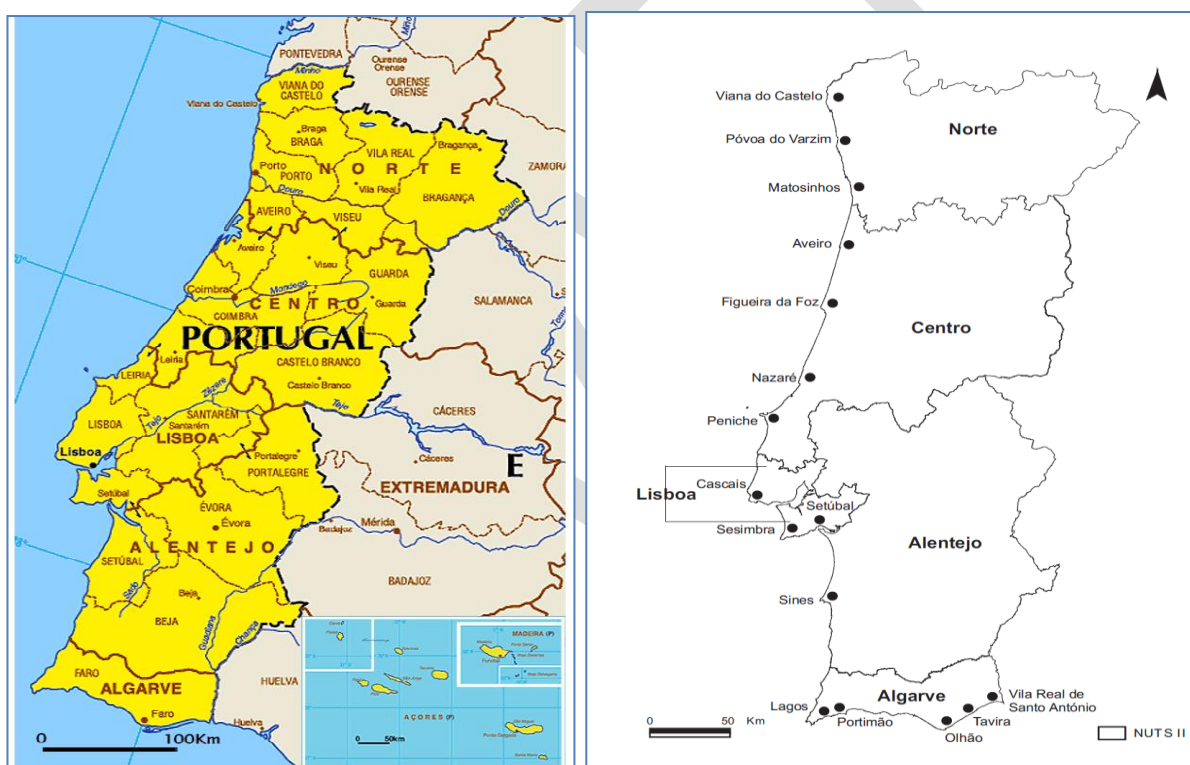
Note:

An extensive set of comments was received from Portugal on the 14th of October. These comments (from Direcao-Geral do Politica de Mar) have not yet been elaborated in the present version. By submitting the current country fiche we would like to allow Portugal to expand on their current set of comments.

0. General overview

0.1 Country overview

Portugal's economic activity is experiencing a contraction since the beginning of the 2008 crisis. The fiscal adjustments' policies, i.e. confronting low levels of domestic demand against a background of lower permanent income prospects are some of the reasons attributed to this development. Gross Domestic Product of Portugal stood at € 165.25 bn in terms of GDP in 2012 which represented a decrease of 3.2%, as compared to 2011¹. In the first quarter of 2013 GDP further decreased with 3.9% in real terms (in comparison to the same quarter in the previous year). According to latest data provided by the National Statistics Office of Portugal, the country recorded a population of 10,521,400 people in the 1st quarter 2013 with an employment rate of 17.7 %².



Source: Europa.eu

Between 1995 and 2011 the structure of the economy's total GVA changed markedly. In particular, the relative weight of services increased significantly, in contrast to a marked decline in the relative importance of industry and agriculture. However, there was an increase in the relative weight of industry in the past few years, from 13.0% in 2009 to 14.5% in 2011

Notwithstanding that fact, the contribution of fishing and agriculture economic activities dropped to less than 2% of the country's GDP in 2012.³ On the other hand, in 2011, industrial production of fishery and

¹ Statistical National Office, Portugal

² Statistical National Office, Portugal

³ Statistical National Institute, Portugal.

aquaculture dropped by 2.2%⁴. This was seen as a result of the structural adjustment of the economy produced by technological improvements in the first sector, and the subsequent diversification of the economic activity towards the industry and service sectors. Fishery Labour input plunged to half of the value recorded in 1986, and was 13, 6 %⁵ in 2008. According to the results of the Census, only 13,156 individuals worked in the fishing sector in 2011, representing 0.3% of the total employed population⁶.

An important issue in Portugal is the overexploitation of fishery resources, as a consequence of multiple factors, including the loss of potential in high sea fisheries, increased efficacy of gear devices and operational methods. In return, an accelerated increase of aquaculture activities has been observed, meeting a GVA of 5.3% in 2011 and constituting around 5% of the total fish production⁷. The urgency to preserve the existing resources, along with the need to safeguard the economic viability of the fishing industry is a major priority for the country.

According to secondary literature⁸, the direct contribution of maritime activities amounts to about 2% of GDP and generates approximately 75,000 direct jobs. Another study⁹ sketches a less conservative economic outlook, pointing to values close to 2.2% of GDP although it also refers to the lack of consolidation in the national accounts national that enables a more contextualized sampling. Overall, the direct contribution of the maritime economy amounted to about 2.5% of national gross value added in 2010 and 2.3% of national employment.¹⁰

0.2 Coastal regions¹¹

Portugal has a long coastline: it approximately measures 1,860 km, thus including the continental territory (943km) and the archipelagos of Açores (667km) and Madeira (250km).¹² In total, this represents 2.7% of the total EU coastline¹³. Besides, the country has one of the largest Economic Exclusive Zone (EEZ) in Europe covering more than 1,700,000 Km² (equal to more than 18 times the Country's territorial space). Coast population living at 10km from the sea is 4,920,000 which represent 49.2% of total population¹⁴.

Lisboa and Zona Norte being the most important regions and representing ¾ of the employment and GVA of the industry¹⁵, geographical disparities can be observed. Besides, they also play a major role in terms of maritime economy, notably shipbuilding, sea shipping (Lisboa) and fishing. In Zona Norte the bulk of aquaculture production is concentrated.

Tourism, on the other hand, is gaining an important weight in the economy and is currently representing 8.8% of the national GVA¹⁶. Tourism accounts for 48% of employment of the total employment related to maritime activities¹⁷, as the country is widely known as a sun and beach destination within Europe counting

⁴ Fishing Statistics, 2012. Statistical National Institute, Portugal.

⁵ Statistical National Institute, Portugal.

⁶ "Encuesta Pesca 2012", Statistical National Institute Portugal

⁷ « Encuesta de Pesca 2012 », Statistical National Office, Portugal.

⁸ See also SAER / ACL: 2009 : The Hypercluster the economy of the sea.

⁹ Blue Growth for Portugal: a vision of business ocean economy, COTEC, 2012

¹⁰ Directorate-General for Political Sea (DGPM), 2012: Economics of the sea in Portugal. The study involved involved a wide range of institutional representatives of the different maritime sectors.

¹¹ An EU coastal region is a statistical region of the European Union (EU), at NUTS level 3, defined according to one of the following criteria: The region has a sea border; The region has more than half of its population within 50 km from the sea, that is based on the GEOSTAT 2006 population grid. Previous to the availability of this grid, all coastal regions were defined as a NUTS level 3 region with a sea border; Hamburg German region, not meeting either of the two previous criteria, but still included because of its strong maritime influence (Definition from Eurostat).

In the case of Portugal, the criteria is "Region with a Sea Border", this is a total of 13 regions: Algarve, Alentejo Litoral, Península de Setúbal, Grande Lisboa, Oeste, Pinhal Litoral, Baixo Vouga, Baixo Mondego, Minho Lima, Grande Porto, Cávado, Açores and Madeira (Source Eurostat).

¹² CIA The world factbook, interval scale of 200km.

¹³ European Union coastline is around 66.000 Km

¹⁴ Landscan. Coastal population living at 20km from sea is 6,000,000m which is 60.5% of the total population.

¹⁵ « Empresas em Portugal 2010 », Statistical National Institute

¹⁶ « Anuário das estatísticas do Turismo 2009 », Turismo do Portugal.

¹⁷ Economia do Mar Em Portugal, Annex A of the Estrategia Nacional para o Mar 2013-2020, Portuguese Government

with a wide accommodation and restoration infrastructure. The main touristic destinations are Madeira, Lisbon and Algarve.

The autonomous regions of the Açores and Madeira, are characterised by their “ocean” touristic appeal, with a vast offer of water sports, whale watching, diving and leisure fishing activities. The Islands have rich and diverse natural resources (forest, wildlife, landscapes, etc.) although have unexploited development potential, mainly with respect to recreational boating. Highly dependent and almost entirely supplied by merchandise handled in Portuguese ports, the Islands meet an intense maritime transport traffic with the peninsula that is nonetheless poorly exploited towards new transport lines and business opportunities with the African Continent.

The port of Lisbon receives every year around 500,000 tourists coming, and the capital city hosts the major port of the country in terms cruise landings and the third port in terms of cargo transport. The Grande Lisboa region also concentrates the national shipbuilding and repair industry and is the fourth region in terms of fishery activities.

The Algarve region, is the most southern Portuguese region of mainland Portugal, and the development achieved in the last decades reflects a dynamic tourism industry, specialised in the Sun and Beach product. . Tourism has gradually been diversifying its business in leisure and sports products as golf or nautical and cruise tourism. The regional economy also maintains some activities such as agriculture and fisheries and knowledge based activities begin to emerge especially related to marine science and research units in this scientific area.

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1. Marine and maritime economic activities

1.1. Overview of relevant maritime economic activities in Portugal

This section provides an overview of the main maritime activities and their related socio-economic impacts in **Portugal**. 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 aim is to use the same basic method for all countries. .
- The second step provides a **qualitative review** of the maritime activities and their status. The information presented builds on the data collected, supplemented with specific inputs and analysis by the country editors.

Quantitative overview of maritime economic activities

Table 1 provides an overview of the most reliable data for each of the maritime economic activities¹⁸. 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.

¹⁸ The maritime economic activities are consistent with the activities discerned in the Blue Growth Study. In deviation to this initial study Shipbuilding, the Construction of Water projects and fishing are added as separate economic activities.

Table 1 – Portugal - Overview of relevant maritime economic activities at NUTS-0 level

Maritime economic activity		Private/public driven ^a	GVA (EUR, million)	Employment	Number of enterprises	Sources for number of enterprises	Source & Reference year for GVA and employment data
0. Shipbuilding							
0.1	Shipbuilding (incl. leisure boats) and ship repair	Pr/pu (naval)	78.4	3,472	349	National Statistical data 2010, where not possible Eurostat, data for 2010	Eurostat, data for 2010
0.2	Construction of water projects	Pu	83.60	1,520	54	National Statistical data 2010, where not possible Eurostat, data for 2010	Eurostat, data for 2010
1. Maritime transport							
1.1	Deep-sea shipping	Pr	121.73	1,758	108	National Statistical data 2010, where not possible Eurostat, data for 2010	Eurostat, data for 2010
1.2	Short-sea shipping (incl. Ro-Ro)	Pr	189.59	2,739	168	National Statistical data 2010, where not possible Eurostat, data for 2010	Eurostat, data for 2010
1.3	Passenger ferry services	Pr	35.58	698	91	National Statistical data 2010, where not possible Eurostat, data for 2010	Eurostat, data for 2010
1.4	Inland waterway transport	Pr	minimal	Minimal	n/a	National Statistical data 2010, where not possible Eurostat, data for 2010	
2. Food, nutrition, health and eco-system services							
2.1	Catching fish for human consumption	Pr	834.39	47,050	11,872	National Statistical Data 2010, NACE 03.11 for fishing, Eurostat (fish processing, wholesale & retail), PRODCOM (share of human/animal), data for 2010	Eurostat, data for 2010
2.2	Catching fish for animal feeding	Pr	4.51	281	44	National Statistical Data 2010, where not possible JRC (fishing), PRODCOM (share of human/animal), data for 2010	Eurostat, data for 2010
2.3	Marine aquatic products	Pr	6.30	2,085	1,561	Estadísticas da Pesca, INE, data for 2010, aquaculture only	JRC, STECF (2013) Aquaculture only
2.4	Blue biotechnology	Pr	n/a	n/a	n/a	Sector not visible in Eurostat or National Statistical Office	Negligable

Maritime economic activity		Private/public driven ^a	GVA (EUR, million)	Employment	Number of enterprises	Sources for number of enterprises	Source & Reference year for GVA and employment data
2.5	Agriculture on saline soils	Pr	119.68	24,604	n/a	n/a	Eurostat, data for 2010 (agriculture in coastal NUTS-2 and percentage saline soils).
3. Energy and raw materials							
3.1	Offshore oil and gas	Pr	0	0	1		Still in a study phase
3.2	Offshore wind	Pr	0	0	0	Sector not visible in Eurostat or National Statistical Office	Still in study phase
3.3	Ocean renewable energy	Pr	minimal	Minimal	minimal	Sector not visible in Eurostat or National Statistical Office	
3.4	Carbon capture and storage	Pr	0	0	0	Sector not visible in Eurostat or National Statistical Office	Non-existent
3.5	Aggregates mining (sand, gravel, etc.)	Pr	0	0	0	Sector not visible in Eurostat or National Statistical Office	negligible
3.6	Marine minerals mining	Pr	0	0	0	Sector not visible in Eurostat or National Statistical Office	Non-existent
3.7	Securing fresh water supply (desalination)	Pu	minimal	Minimal	minimal	Sector not visible in Eurostat or National Statistical Office	Some local hotel desalination installations
4. Leisure, working and living							
4.1	Coastal tourism	Pr	1,001.43	48,877	2,028	National Statistical Data 2010 completed by Eurostat, data for 2009 (data for NACE 55.10, 55.20, 55.30, 55.90)	Eurostat, data for 2009 (data for NACE 55.10, 55.20, 55.30, 55.90)
4.2	Yachting and marinas	Pr	n/a	n/a	n/a	Sector not visible in Eurostat or National Statistical Office	n/a
4.3	Cruise tourism	Pr	38.65	758	n/a		(low estimate) Eurostat, data for 2010
			170	7,300	98	(low estimate) National Statistical Data 2010	(high estimate) European Cruise Council, data for 2010
5. Coastal protection							

Maritime economic activity		Private/public driven ^a	GVA (EUR, million)	Employment	Number of enterprises	Sources for number of enterprises	Source & Reference year for GVA and employment data
5.1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats	Pu	6.3	100	n/a	Sector not visible in Eurostat or National Statistical Office	Eurostat COFOG, data for 2010; PRC the Economics of Climate change, data for 2008
6. Maritime monitoring and surveillance							
6.1/ 6.2	Traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods,	Pu	n/a	n/a	n/a	Sector not visible in Eurostat or National Statistical Office	n/a
6.3	Environmental monitoring	Pu	n/a	n/a	n/a	Sector not visible in Eurostat or National Statistical Office	n/a

Note: a) activity is mainly predominantly triggered by public or private expenditure. Pr = private, pu = public. NB this does not mean that the activity is carried out by public companies.

Qualitative description of the maritime economic activities in Portugal

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

Shipbuilding and water projects

Shipbuilding and ship repair

Commercial and naval shipbuilding

According to COTEC, shipbuilding in Portugal is a traditional and old sector that it is seen as a non-innovative industry. It is a relatively small sector within the Portuguese maritime economy and it has been decreasing in size over the last three years.¹⁹ In this sense, global orders are at a high number, which does not affect production levels at a global scale, amounting to 46,000 CGT (in 2011). In the same period, however, no production was recorded in Portugal. This is in contrast to the data recorded in the EU zone, with an order book of 5,794,000 CGT and a total of 2,446,000 CGT constructed.²⁰

In fact, the reduction in the number of new orders for construction and low freight rates in the international market has affected the domestic shipbuilding industry. In 2011, the turnover of repair / maintenance and naval shipbuilding (members of AIN), fell respectively 22% and 68% compared to the period 2001-2011²¹. The scarce domestic demand for this maritime economic activity has decisively affected its development along with other factors, e.g. the barriers to accessing debt finance.²² According to industry stakeholders, a supporting maritime cluster including the various maritime economic activities in Portugal (Hypercluster) would benefit in particular the domestic naval construction and maintenance activities.²³ Besides, and according to some stakeholders, a more clear and active national industrial policy for the shipbuilding industry would provide a further boost.²⁴

It is a labour-intensive industry, which employed 3,500 people in 2010 (Table 1.1.). The sector is made up of a small number of naval shipyards and several fragmented SMEs devoted to fishing, recreational boating, sport and traditional boats construction and repairing. Around 75% of turnover is concentrated in a reduced number of large companies, in particular *Estaleiros Lisnave*, the largest shipyard in Portugal, Arsenal do Alfeite and Estaleiros Navais de Viana do Castelo.

Construction of leisure boats

Regarding the leisure boats sector, in Portugal, most marinas are served by shipyards that are installed in their own or nearby marina and providing repair and maintenance services to vessels that are parked there. Portugal, with the exception of some manufacturers of marine equipment, especially for the canoes and surfboards, has not developed an industry in shipbuilding and repairing of recreational boats, which to some extent is understandable, given the weak domestic demand for leisure activities and marine tourism.

¹⁹ Blue Growth for Portugal: a vision of business ocean economy, COTEC, 2012.

²⁰ According to figures communicated at the Conference: The shipbuilding industry in 2020: Economic potential and perspectives – AIN, Association of Naval Industries

²¹ According to figures communicated at the Conference: The shipbuilding industry in 2020: Economic potential and perspectives – AIN, Association of Naval Industries

²² Hypercluster da Economia do mar, 2012. Please note that evidence, that this is related to other factors, e.g. a lack of small companies providing components or a lack of trained staff (skills), could not be found through our literature review.

²³ According to Hypercluster da Economia do mar, 2012

²⁴ A industria naval no horizonte 2010, http://www.ain.pt/index.php?mod=articles&action=viewArticle&article_id=217&category_id=66

Construction of water projects

According to Eurostat data this sector offered employment to some 1,500 people in 2010. Construction of water projects in Portugal has taken place and is foreseen in many different areas, especially in ports and harbour infrastructures. In this sense it is important to mention the following public and private initiatives that are underway or ongoing²⁵:

- Leixões Port: several works develop and foreseen amounted to more than 300 million Euros, such as the construction of Port Logistic Platform
- Lisboa Port: Construction of the New Container Terminal Trafaria (under study) and the cruise terminal in Lisboa and Santa Apolonia
- Sines Port: important initiatives foreseen like the extension of the East quay extension, the container terminal and the Liquefied Natural Gas Terminal and the construction of the new container terminal in Vasco da Gama. It is estimated that the total investment would rise to the overall amount of 1,300 million Euros

Overall, investments in ports and related infrastructure have seen a slight positive trend in Portugal.²⁶

Maritime transport

The sea is a unique strategic asset for Portugal. The favourable location of the border of Portugal in Western Europe, where maritime traffic converges from worldwide, its long coast line and the size of its Exclusive Economic Zone are unique competitive advantages for this country. Bearing in mind the importance of maritime shipping in the international trade, the port and maritime sector plays a key role to foster the development of the country, the economy, and in particular the exports.

In Portugal, 67.5 million tonnes of seaborne goods were handled in continental ports²⁷, of which, 41% corresponded to liquid bulk goods, 24% to solid bulk goods and 35% to general cargo. Between 2009 and 2011 there was a 10% increase in total movement of goods.

First, the movement of general cargo has increased by 35% between 2009 and 2011, resulting in a sharp increase in the transportation of breakbulk and containerized cargo (44% and 34% respectively). The ro-ro cargo dropped by 15% between 2009 and 2011. Second, the movement of solid bulk cargo has shrunk by 5%. While the transport of coal and agricultural products has declined during the years under review (23% and 9% respectively), the movement of minerals and other bulk solids grew 50% and 10% respectively between 2009 and 2011. Finally, the movement of bulk liquids has risen 3% between 2009 and 2011, which is mainly due to 32% growth in the transportation of other bulk liquids (which includes the transportation of liquid natural gas) and 1% increase in the transport of goods petroleum. The movement of crude oil declined 0.15% between 2009 and 2011.

In terms of specialization by port, the ranking is led by Port of Sines holding a share of 39% of all goods loaded and discharged in mainland Portugal. It is followed by the Port of Leixões with a share of 24%. The Port of Lisbon ranks third in the country with a market share of 18% of all goods transported in mainland Portugal. It is observed that the ports of Sines, Lisbon and Douro and Leixões hold a nearly uniform share in terms of general cargo (breakbulk, containerized and ro-ro). Regarding the bulk solids, the Ports of Douro and Leixões hold a share of only 15% of the total volume of this type of goods, while the Port of Lisbon and Porto de Sines hold a share of 28% and 25% respectively. The transport of liquid bulk is led by the Port of Sines, with 59% of the total volume of cargo handling for this type of goods, while the Ports of Douro and Leixões move 28% of all bulk liquids transported in continental Portugal²⁸.

²⁵ Strategic plan for transport. sustainable mobility, 2011-2015

²⁶ This is partly due to the liberalisation process of the ports and infrastructure with investment having increased capacity and productivity having improved. See also: The Economist, 24th March 2012: Building euro-zone competitiveness. Ports in the storm - Portugal needs to privatise its ports to reap the full benefits of its location. The latest in our series on reforming Europe's economies. See here: <http://www.economist.com/node/21551072> (last accessed on 25th Sept. 2013).

²⁷ No data available for Madeira and Açores region

²⁸ Port Statistics, IPTM - Institute for Ports and maritime transport and Blue Growth for Portugal, Uma visão empresarial da economia do mar".

In terms of ports, Portugal holds strategic positioning along the Atlantic coast of the Iberian Peninsula at the crossroads of major shipping north-south and east-west routes, whose full use should be made based on ports capability of receiving the largest ships of the intercontinental traffic, including port container. The Port of Sines, one of the few deep water ports at European level, is currently one of the few ports on the Atlantic coast of the Iberian coast capable of meeting those requirements, and it can act as gateway of goods shipped to Europe.

Ports sector has been subject to new policies and progressed greatly in their form of organization and government. The importance of the maritime-port sector for Portugal is reflected in the priority assigned to it in the context of public policy. As from 1984 Portugal's port have gradually moved to an intermediate public-private "landlord" model where ownership and port administration are public, but the port operation itself is concessioned to private groups²⁹. This liberalisation process has improved their capacity and productivity and has been able to attract considerable investments amounts since the 90s until today³⁰. At present, notwithstanding the current need for budgetary consolidation, this is still one of the sectors in which the public investment efforts are maintained to improve the competitiveness of the country and contribute to overcome the current country's economic and financial situation, boosting exports, growth economic development and job creation. In fact, the Strategic plan for transport. Sustainable Mobility 2011-2015 approved to meet the EC, the ECB and the IMF³¹ requirements foresees important investments in different locations such as: Viana do Castelo, Figueira da Foz, Leixões, Aveiro, Lisboa, Setúbal and Sines (see above: "construction of water projects").

However, some bottlenecks, still persists and further improvements are needed. First, it is necessary to increase competition and transparency when it comes to public tendering process (this would reduce service costs and would improve the services provided by private companies). Second, the unions must be tackled³², and finally Portugal should improve the governance model of the ports system³³ and reconsider its role as a port landlord³⁴.

Unlike the positive trend in terms of investment and improvements in ports' infrastructure, national maritime transport companies have not followed the same evolution. The fierce competition in international shipping and the fact of being a capital-intensive sector have pushed national shipowners to merge on large business groups or to concentrate almost exclusively in coastal traffic and insular maritime transport. As a matter of fact, as of June 2013 the Portuguese Fleet counted 114 vessels, representing a total of 1,589,530 deadweight tons, relatively small taking in hand the vast extension of the country's EEZ³⁵. The sector has a total of 19 national shipowners essentially engaged in transport operations between the mainland and the islands of Azores and Madeira, although some are now beginning to diversify their services to transport lines linking Portugal with Africa, or even the intra- European short sea shipping. Few companies - namely Portline, Naveiro and Transinsular with 12, 10 and 8 ships respectively- operate outside Portugal.

As a result of the above, the country has a much more robust economic performance in the port sector than in the shipping industry. This decline of the Portuguese merchant shipping, according to the White Paper on Maritime Policy-Port³⁶, negatively affects the presence of Portugal in world markets for goods and traffic, limiting the country's autonomy, to provide or obtain essential products for its economy, and

²⁹ Ports in the Storm" – The Economist, 24 May 2012

³⁰ Blue Growth for Portugal: a vision of business ocean economy, COTEC, 2012

³¹ Memorandum of Understanding on Specific economic policy conditionality, CE, BCE, IMF and Portuguese Government

³² Also stated in the as stated in the MOU: *Portugal should revise the legal framework governing port work to make it more flexible, including narrowing the definition of what constitutes port work, bringing the legal framework closer to the provisions of the Labour Code*

³³ Memorandum of Understanding on Specific economic policy conditionality, CE, BCE, IMF and Portuguese Government

³⁴ Ports in the Storm" - The Economist, 24 May 2012

³⁵ Shipowners and Ships, Maritime Transport Department of the Ports and Maritime Transport Institute, June 2013.

³⁶ White Paper of the Maritime and Port Policy Towards the XXI Century

import or export them from/to more convenient places, causing the loss of opportunities generated by international traffic from other countries, such as Africa and Latin America.

Deep sea shipping in Portugal

Deep sea shipping represents some 40% of maritime transport in Portugal (both in terms of goods handed and economic activity) (based on Eurostat). The commercial ports sector has had a significant economic development, accompanied by a diversification of infrastructure and port services, associated to increased availability of skills and capabilities to meet significant traffic requirements, such as import / export activities and transshipment of containerized cargo and petroleum products, natural gas and coal.

Short sea shipping

Some 60% of all goods handled in Portuguese ports are categorized as short sea shipping. Short sea shipping is divided into the activities of feeding, coastal trade (“cabotage”) and micro coastal trade as well as river transport, including the recently created Highways of the Sea. Feeding combines deep sea transport with the redistribution through secondary ports in smaller boats, structuring the activity in a small harbours network around a main port. Coastal trade consists in transports of passengers and goods among a country’s ports or at the EU scale, among EU ports. Short Sea shipping is strongly promoted in both European and Portuguese policy hence making it conducive to continued growth. In 2011, Portugal reported growth rates of more than 20% in short sea shipping of TEUs compared with the previous year³⁷.

In the framework of the Motorway of the Sea to promote the use of short sea shipping in the EU zone, the Commission has envisaged the creation of a *Motorway of the Sea of Western Europe* (leading from Portugal and Spain via the Atlantic Arc to the North Sea and the Irish Sea). Nonetheless some major difficulties should be mentioned regarding the construction of the Maritime Motorway in Portugal water land: the long distance between the different countries’ ports and their specificities demand flexible and integrative ways to adapt to the circumstances of the Atlantic space. Despite these differences, all states are aware of the importance the project entails and had created a logical integration of its services and maritime infrastructure, where the leadership in the preparation of various initiatives was assumed by France, Ireland and Spain. Portugal has also progressed with projects in this area in the ports of Leixões and Sines³⁸.

Passenger ferry

Various ferry operators are active in Portugal, including: Atlanticoline and Transmaçor (operating ferry services in the Azores Islands), Naviera Armas (offering ferry services between Portimao and Madeira) and Transtejo & Soflusa (operating services from Lisbon across the Tagus river). In 2008, a new ferry service was launched from Portugal (from the port of Portimao in the south) to Madeira. This was the first ferry connection between the island and the mainland for over 30 years. As a result of this new ferry service this activity presents one of the biggest growth rates from 2008 to 2010. In fact, the highest volume of future passengers ferry movement is experienced between the maritime ports of the Autonomous Region of Madeira and continental Portugal. Apart from Portimao, the most important ports on the Portuguese continent in terms of passenger movements are Lisboa port (Lisboa Region) and Leixões in the Norte Region. According to statistical data from 2010, more than 700, 566 passengers were transported among those ports in 2010. Smaller in volume but also important in terms of passengers movement is that between the islands part of the Açores archipelago, with a total of 480,921 passengers transported in 2010.

³⁷ http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Maritime_transport_statistics_-_short_sea_shipping_of_goods

³⁸ Portmos report D13 – Organisation and configuration of pilot actions for the development of the motorways of the sea in Portugal, Portuguese Ports Association http://ec.europa.eu/transport/modes/maritime/studies/doc/mos/portmos_final_report_global_d13.pdf

Inland waterway transport³⁹

Inland waterway transport in Portugal is negligible in volume and focuses mainly in passenger transport and tourism. Fluvial activity in major rivers could be summarised as it follows:

- Douro river: The river provides a waterway of around 210 km, available for maritime tourism and recreational navigation. Commercial shipping is only possible in an area of 102km, between Porto and Ruler, due to limitations in the Tua zone that limit the passage of vessels of greater tidal shift - up to 2500 tons. The number of ships entering the ports of the Douro river showed a slight decrease (6.3%) since 2010.
- Algarve Region: In 2011, transport movements in the Algarve inland rivers, mainly to the Barreira islands and between Vila Real de Santo António and Ayamonte, reached 2,085,272 passengers.
- Tagus river: River Tagus has good natural conditions to be navigable and offers several possibilities for waterway uses. Nonetheless to be navigable, important investments and regularisation works are needed, since the current conditions only allow cargo barges movement up the Valada river zone.
- Guadiana River: Potentially navigable up to Mértola, the Project Guadiana, cofinanced by the FEDER, aims to improve the navigation characteristics of the river, both in the Spanish and Portuguese stretch to enhance sustainable tourism, sports and recreational use.

Food, nutrition, health and eco-system services

Fishery

Fishing and its subsidiary activities, such as fish processing and wholesale, constitute an industry with huge tradition in Portugal and with a high importance in terms of social and economic contribution.

One of the main features of this sector is its fragmented structure composed of a vast number of SMEs and small vessels with a crew of one or two people. The Portuguese fleet is highly diversified with a broad range of vessel types (9 types of gears with different vessel length) targeting different species predominantly in the Portuguese Exclusive Economic Zone.⁴⁰ On December 31, 2012 a total of 8,276 vessels were registered in the national fishing fleet register, representing a total gross tonnage of 99,836 GT. Small vessels with a gross tonnage of less than 5 GT accounted for about 84.2% of the total number of vessels, although they represented only 8.4% of the total tonnage. The large vessels (over 100 GT) accounted for only 2.4% of the total number of vessels, holding approximately 68.2% of the total tonnage⁴¹.

This fact led to the creation of *Organizações de Produtores* (Producers Association), implemented with the aim to regulate the market. In the meantime, these organisations have evolved and some of them have become major producers, distributors and fish processors. In 2012, 33% (equal to 1, 525 units)⁴² of the licensed vessels in Portugal were members of Producers Association, corresponding to a decrease of 2.1% compared to the previous year.

The total number of employment for licensed fishermen - a group characterized by higher age groups with lower levels of formal education - has decreased⁴³ during the period 2008 and 2012.⁴⁴

39 Inland waterway in Portugal - The use of the major rivers - http://www.revistademarinha.com/index.php?option=com_content&view=article&id=1150:navegacao-fluvial-em-portugal-o-aproveitamento-dos-principais-rios-portugueses&catid=106:marinha-mercante&Itemid=390

⁴⁰ The 2012 Annual Economic Report on the EU Fishing Fleet (STECF-12-10) (JRC) <https://stecf.jrc.ec.europa.eu/reports/economic>

⁴¹ Fishing statistics Report 2012 – National Statistics Institute, Portugal

⁴² Estatísticas da Pesca 2012, National Statistics Institute Portugal

⁴³ Blue Growth for Portugal: a vision of business ocean economy, COTEC, 2012

Fishing has maintained in recent years, almost constant level of fish catches, however, it is remarkable its low productivity index: average production per fisherman is below 10 tonnes per year against averages above 20 tons in other European countries⁴⁵. One of the reasons that might explain that is the fact that artisanal fishing continues to be the most prevalent "business model" of this economic sector in Portugal implying important losses in terms of productivity. The absence of a rigorous scientific knowledge of stocks exploited by the Portuguese fleet and the lack of knowledge and technologies applied to the fish transformation are other factors that hampered the sector's productivity. In fact, the majority of the Portuguese fish processing enterprises are small companies with less than 11 employees. By contrast, only 2% of the enterprises have more than 250 employees.⁴⁶ The trade balance is negative, since imports of fish have grown (Portugal is the largest consumer of fish in the EU and the fish demand is high) while the national catches have decreased.

The profitability of fishing enterprises is also poor, given that the most lucrative part of the value chain corresponds to the final stages of this chain, especially in the sale to the final consumer.

The sea areas under Portuguese jurisdiction do not have particularly high levels of fish stocks. With the exception of some migratory species, commercially exploitable fish stocks tend to be coastal species captured in small quantities in the coastal areas (accounting only for 2% of the total Portuguese Exclusive Economic Zone). However, those areas are especially rich in terms of variety of fish stocks and also the quality of the products is considered to be excellent.

Therefore, and given the relative scarcity of natural resources, according to Cotec Portugal⁴⁷, the focus should be set on the quality and variety of the fish rather than on the quantity. It is essential to create a brand attached to the product and particularly generate a national brand of seafood. For that it will be necessary to advance to certification schemes denomination of fish, origin certification, quality certification and also the certification of sustainable fisheries. Moreover, the sector must also improve and modernize its managing structure and restructure the market and the fishing trade. Furthermore, the appreciation of the fish through the transformation emerges as another way to improve economic performance of the fishery. Those measures will increase competitiveness and employability in the sector.

The majority of fish caught in Portugal in **fish for human consumption**. Regarding the processing fish industry, in 2011 the Manufacturing Fisheries and Aquaculture Industry presented a joint production of 207,000 tonnes of "frozen", "dried, salted" and "prepared or preserved" fish, which represented a decrease of 2.2%⁴⁸ compared to the previous year. Regarding the structure of production activities, "frozen" fish category ranked first, followed by the group of "dry and salty" fish in the second place and "prepared or preserved" fish in the third place, the latest reinforcing its relevance in the Portuguese processing industry.⁴⁹

Within this sector, it is worth noting the cod processing activity which is the largest subsector within the fish processing industries - where the 3 main companies of the country together represent 60% of cod processing production turnover. Nonetheless, the industry is heavily dependent on imported raw materials, given the sharp decline in cod catches made by the national fishing fleet.⁵⁰

Marine aquatic products

⁴⁴ whether this has pure economic reasons and a decreasing return on investment of the fishermen, due to increasing scarcity in fish stocks, or whether it is linked to the economic crisis could not be assessed through desk research.

⁴⁵ Blue Growth for Portugal: a vision of business ocean economy, COTEC, 2012

⁴⁶ Economic Performance of the EU Fish Processing Industry Sector (STECF-OWP-12-01) http://stecf.jrc.ec.europa.eu/documents/43805/324157/2012-02_STECF+OWP+12-01+-+Fish+Processing+Sector_JRC69584.pdf

⁴⁷ Cotec is a Business Association for Innovation chaired by the President of Portugal

⁴⁸ Fishing Statistics, National Statistics Institute, Portugal 2012.

⁴⁹ Fishing Statistics, National Statistics Institute, Portugal 2012

⁵⁰ Blue Growth for Portugal: a vision of business ocean economy, COTEC, 2012

Aquaculture⁵¹

Portugal has favourable natural conditions to the development of aquaculture production, stemming from its physical and geographical conditions (extension of the coastline and the intrinsic quality of the sea), and a growing domestic and international demand for fish and the fishing quotas. In this scenario, aquaculture is seen as an important alternative to traditional forms of fish supply

Notwithstanding that potential, the sector is still in an embryonic stage, having produced only about 9,000 tons (in 2011), mainly bivalves, representing 1.5% of the domestic fish consumption.⁵² This production has corresponded to an income of 58.2 million Euros (increase of 20% compared to 2010⁵³). Partly, this is due to the fact that only a small percentage of those areas with optimal conditions for aquaculture are being explored to date. As a result the turnover of aquaculture products in Portugal is relatively low. The production of aquaculture represents less than 10% of the caught fish, which is well below European levels (25%) not to mention global levels.

It is an industry characterized by the presence of a large number of small family firms under extensive exploitation and producing bivalve molluscs and with some big players having a dominant position. This is evidenced by the fact that the entry in the market of Acuinova (Group company Pescanova) has caused a growth of 76% of turnover in the sector. In fact, Acuinova⁵⁴ generates a turnover that is 40% of the turnover of the largest 50 companies. In 2010, around 1,500 active establishments could be counted 94 % of them were bottom culture, 4 % were ponds and tanks and 2 % were floating structures. They offered direct employment to some 2,300 people.

Catching fish for animal feeding is essential for aquaculture and in Portugal is dominated by a single company, Aquasoja Sorgal Group. It sells more than 20 tons in Portugal and abroad, including in the Iberian market, South American and Asian markets. Other important companies are Narciso Dias in Peniche, Sorgal and Empresa Figueirense de Pesca (Figueirense Fishing company) which producing oil and fish meal also necessary for the aquaculture industry.

Important barriers for future growth are the obsolete production methods, barriers to accessing the credit, difficulties in obtaining production licenses or the lack of institutional commitment, in particular related to the maritime and costal development plans establishing specific areas to develop aquaculture activities. On this last point some positive actions have been taken recently. In this sense on January this year it has been approved by the Portuguese Parliament a resolution urging the Government to approve specific measures to support the sector by improving its competitiveness and sustainability⁵⁵.

Algae

Portugal counts with an important historical experience in collecting algae to be used as fertilizers. Although, this activity declined with the rise of chemical-based fertilizers during the twentieth century, some remnants of this activity can still be found on the North coast and in the Ria de Aveiro. Also in the seventies, Portugal was one of the largest producers of Agar in the world. Over-exploitation of algae and changes in the marine ecosystem accelerated the decline of this industry since then.

Therefore, nowadays, in Portugal there is no algae production neither for human consumption nor for other purposes, except for some experiments in microalgae for CO2 absorption.

51 The Economic Performance of the EU Aquaculture Sector – 2012 exercise (STECF-13-03) http://stecf.jrc.ec.europa.eu/documents/43805/410684/2013-04_STECF+13-03+-+EU+Aquaculture+sector_JRC81620.pdf

52 Blue Growth for Portugal: a vision of business ocean economy, COTEC, 2012

53 Fishing Statistics, National Statistics Institute, Portugal 2012

54 It has entered into an arrangement with creditors (summer 2013)

55 Parliament Resolution n.º 6/2013, <http://dre.pt/pdf1sdip/2013/01/02100/0058900589.pdf>

Nevertheless, for the future, and given that the waters of the mainland and the Azores are good production regions of various species of agarofito algae and the vast tradition in the country, it seems reasonable that Portugal could develop a market niche in the algae production and farming both for human consumption or to be used in various industries, including animal feed, cosmetic and pharmaceutical products and potentially the production of biofuels and biomass for energy purposes.

Although formally not part of this sector **salt production** is also a sizeable activity in Portugal. Weather conditions, the extent of Portuguese coast along with the biophysical characteristics of the sea makes the country a suitable place for producing salt. The Algarve with about 20 companies operating in this sector is the main producing area of sea salt. Nowadays, traditional salt and high added value, such as *fleur de sel*, have gained importance and are considered as a new trend. This has led to a revitalization of the Portuguese salt production activities although without sufficient impact to change the trend of declining production in recent years.

Blue biotechnology

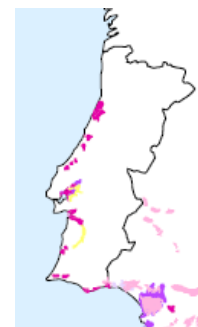
Marine biotechnology, along with underwater robotics or ICT companies are among the so-called “new uses and resources of the sea”. They form an emerging sector in Portugal and in view of its extended maritime area, Portugal could eventually be a major player in this industry. The Blue technology industry is considered one of the most promising activities of the maritime economy in the country. Some estimates assign a growth rate of 5% per year in all components from marine biotechnology, marine ingredients, aquaculture and exploitation of algae for human consumption, but also for use in therapeutics, bio remediation, cosmetics and nutraceuticals.⁵⁶ A current growth rate of the Blue biotechnology in Portugal (2013) is not available.

Currently some companies are already operating and well positioned, e.g. Bioalvo, S.A, Ceramed, Stemmaters, Necton, and also Sparos, Fish Care, Marsensing or Abyssal among others. The latter are often highly innovative start-ups and spin-offs from universities and Sea Research Centres. Therefore they are small enterprises operated by few young and highly skilled employees producing high added-value products, generally for the international markets. It is also worth mentioning the role of IBET, the “Instituto de Biologia Experimental e Tecnológica”, created in 1989, which is a private non-profit institution and the largest Biotechnology Research Organisation in Portugal. IBET acts as an interface between institutions and industries and as a support to its autonomous knowledge. IBET brings together, as partners and collaborators, private companies and public institutions, creation leading to competencies for product and process development.

Nevertheless, those efforts have to be accompanied by an innovative industry serving the world market for biotechnology able to absorb the solutions developed by the scientific research, as well as political measures and initiatives to incentivize this sector.

Agriculture in saline soils

Based on Eurostat data the number of people employed in agriculture on saline soils is estimated at some 700,000. According to JRC saline soils are found at various places along the Atlantic and Mediterranean coast (see coloured areas marked in the map on the right hand).⁵⁷ Any information with regard to growth in the output (growing/shrinking production) could not be retrieved through literature research. Similarly, information on the types of crops in the saline soils was missing.



⁵⁶ Blue Growth for Portugal: a vision of business ocean economy, COTEC, 2012.

⁵⁷ <http://eusoils.jrc.ec.europa.eu/library/themes/Salinization/Resources/salinisation.pdf>

Energy and raw materials

Portugal, despite being the European country with the largest offshore area, still lacks a truly economic sector dedicated to the offshore energy since this industry has not yet got past the exploration stage in the case of fossil fuels, and has not reached yet the stage of commercial exploitation of renewable energy.

It is crucial for the Portuguese economy to boost those sectors, especially considering its high dependence on imported energy. Moreover, the impact of this new industry and its ability to induce economic development is notable. Indeed, those offshore energies requires large investment amounts and it forces development of ports, industrial design, construction of offshore structures, as well as the development of underwater grids, transportation and turbine installation, and still other necessary activities (and highly profitable) to support the operation and maintenance of offshore infrastructures. Its potential in terms of converting old and obsolete shipyards into manufacturing companies of offshore wind structures is remarkable.

Offshore oil and gas

The weight of this sector within the maritime economy in the country is rather small. Only from 2007 onwards, the Portuguese Government has allowed exploration in various locations off the coast of mainland Portugal. Nevertheless, to date no drilling has yet undertaken, meaning that there is not yet any certainty about the existence of fossil fuels in the maritime basin.

From 2007 to May 2012 the total investment was around € 165m that has been fully supported by the concessionaires. If the results are positive, it is expected the emergence of an entire industry with the positive affects that it implies in terms of job creation, investment, technological development and reducing the energy dependence.

Offshore wind

Offshore wind in Portugal is still non existent, although clear potential is recognized. Offshore wind in intensity and regularity is superior to the onshore wind. Moreover, Portugal counts with important comparative advantages related to its specific geography. First, it has a vast maritime territory to develop those offshore renewable energies. Second, Portugal has a long coastline, which concentrates the bulk of cities and population and which it has optimal infrastructures in terms of grid, harbours and even shipyards to be used in the process of offshore renewable energy developing. On the other hand, the lack of an offshore industry to serve as a vehicle for the transmission of technologies and naval means, the lack of experience in developing industrial technology innovation and the limited financial capacity to invest in such projects may hinder the development of the sector.

According to the survey that was conducted in 2008 by INETI / LNEG for the fixed platform technology, the existing potential would be 3.5 GW (assuming a minimum of 2700 hours per year of operation, which would allow production electricity corresponding to 9.45 TWh / year), or 2.5 GW (assuming a minimum of 3,000 hours per year of operation, which would result in the generation of 7.5 TWh / year). Regarding the floating platform technology and assuming that 40 GW can be installed implying an average of 3,500 hours per year of operation, will reach 140 TWh of electricity production.

According to the National Action Plan for Renewable Energy, the goal for 2020 will be the installed capacity not exceeding 75 MW, which will be used mainly for research and technological development. It is important to mention the project Windfloat⁵⁸, the second large scale floating system, that was installed off the Portuguese coast in 2011 and started to produce energy in 2012. Developed by Principle Power and EDP, it is equipped with a 2MW Vestas wind turbine. It is the first offshore wind turbine to be installed without the use of any heavy lift vessels or piling equipment at sea. All final assembly, installation and

⁵⁸ WindFloat Project – EDP –

http://ec.europa.eu/maritimeaffairs/policy/sea_basins/atlantic_ocean/atlanticforum/events/brest/presentations/forum_brest_maciel_en.pdf

precommissioning of the turbine and substructure took place on land in a controlled environment.

However, this, along with other initiatives currently underway, is still in an early stage. In the coming years, particularly from 2015, it is predicted that there will be a clearer understanding on the economic and technical viability of such projects.

Ocean renewable energy in Portugal

Wave energy

Although Portugal does not have high amplitude tides or strong currents, it is one of the European countries with a large potential for wave energy in particular on the West coast of Portugal. The specific characteristics of Portugal further offer some comparative advantages for marine energy production similar to offshore wind (see above). In addition, there are also two public support schemes in place, the Feed-in tariff per kWh for wave energy (Decree-Law 225/2007) and the Pilot zone for wave energy projects (Decree-Law 238/2008 Law 238/2008). All those aspects will encourage wave energy in the country that is expected to reach an installed Capacity of 250 MW by 2020⁵⁹

Like the wind energy, the wave offshore energy at present is still in its testing and exploration phase. By its strong potential Portugal has been chosen for the development of several projects promoted by both Portuguese and foreign promoters, such as the Wave energy demonstration centre in Aguçadoura, the Pilot Project in S. Pedro de Moel, or the Pico Wave energy plant in the Azores⁶⁰. It is also worth to mention the existence of important R&D organizations like the Technical Superior Institute or the Wave Energy Centre (WEC) and the involvement in the European project MARINET (2011-2015), focused on the study of offshore renewable energy conversion systems.

Algal energy

In Portugal, it is also significant the use of seaweed to produce renewable energy, either for production of next generation bio fuels, or for the production of biomass. Portugal has also in this area an appreciable natural potential, the biophysical characteristics of at least a part of its wide sea area, make it suitable to produce high amounts and in a relatively short time certain types of algae rich in ethanol.

With regard to algal energies, an important project in Portugal is the Seaweed Energy Solutions (SES), a joint initiative between Portugal and Norway to large-scale farming of algae in the sea to produce energy in the form of biofuels. SES is a Norwegian company that has operations both in Norway and Portugal. According to its web site, SES has since 2009 been involved in governmental sponsored seaweed projects with combined budgets of EUR 10 million. Funding has been obtained from The Research Council of Norway, Innovation Norway and others. Recently, SES got approved a EUR 2,5 million Eurostars project and 2 projects backed by the Norwegian Research Council of about EUR 3 million. However, there is no specific information regarding its activities in Portugal⁶¹.

Carbon Capture and storage

n/a

Aggregates mining (sand, gravel, etc.) and marine minerals mining⁶²

There are deposits of sands, sands gravel, glauconite and carbonates (shells) spread over the continental shelf, particularly in the west area, especially those located in the north of cannon Nazareth. There is also an important potential of geological mineral resources present on the Portuguese continental shelf.

⁵⁹ PNAER - National Action Plan for Renewable Energy

⁶⁰ See for example European Ocean Energy Association

⁶¹ <http://www.seaweedenergysolutions.com/>

⁶² Marine Strategy for the subdivision of the Continental Shelf and the Extended Continental Shelf - Marine Strategy Framework Directive

mineralogical prospecting campaigns have been undertaken in order to determine the existence and localisation of gold, tin, ilmenite, heavy metals, sand, gravel, polymetallic nodules and crusts, polymetallic sulphides, sulphides and fosforites. Those campaigns detected in the deep area of the Continental Shelf, cover particularly the Atlantic northeast seamounts with a number of areas potentially rich in ferromanganese and phosphates. Moreover, Iron-Manganese rusts rich in cobalt have been found at Mount Submarine Antialtair (extended Continental Shelf).

The weight of this economic sector is quite small due to several reasons, such as the important requirements of capital investments, the lack of extraction technologies and market conditions that make it attractive for exploitation. However, the growth potential of the sector is important and should merit serious attention from the government and the largest Portuguese companies, particularly in the area of energy, or other heavy industries, since the return on their investments should also be very high. It would be also important to make an important effort in terms of resources exploration and generate greater national knowledge about these activities through a real involvement from the education and scientific community. In this sense, the Marine Geology Unit within the National Laboratory for Engineering and Geology studies the geological resources immersed and its potential economic and performs mapping of the continental shelf and coastal areas, among other research activities.

Securing fresh water supply/desalination

Two desalination plants are operating in the mainland of Portugal, in Algarve. Those plants, belonging to two hotel groups, are devoted to produce water to irrigate gardens, filling swimming pools, cleaning and leisure activities. There is another desalination plant in Porto Santo (Madeira), also securing fresh water for two hotels in the island. In the mainland, besides the expansion of one of the existing plants in Algarve to supply three more hotels, four new desalination projects to supply tourist resorts are foreseen in the Alentejo coast (1) and in the Algarve (3).

It is unknown the exact impact that this sector could have in terms of GVA and economic activity, since no data is available. Also the employment rate and investment in this activity is low, estimating a total amount of € 350, 000 invested.

A major obstacle of desalination is its high consumption of energy, along with the low productivity of units that results in a high cost of exploration. In fact, those practices have raised controversy in Portugal. From the captured water, only between 35% and 40% is transformed into drinking water. The costs per cubic meter of treated water are about 53% higher than the “traditional” water sources, due to the high energy consumption required.

Given that a maximum annual volume of 14, 174 m³ will be captured and that, only about 40% will be transformed into drinking water and the average production cost per cubic meter will be around € 14,176.50, the value of this production will be around an annual amount of € 10,844. This value is negligible compared to the amount of water supply in Portugal, which may be justified by the high unit cost of production, due to the high energy consumption required.

For that reason, except for specific uses as the ones described above and for particular areas very close to the sea, desalination will probably not be in the coming years a significant economic activity in the country.

Leisure and tourism

Leisure and tourism is a large sector of the economy of the sea, which has enormous potential, particularly in a country with the geography and climate of Portugal. Nevertheless, in Portugal, this industry is still underdeveloped, in particular when compared with other European coastal countries.

There is a difficulty in estimating the turnover generated by the Nautical Tourism, as internal statistical services are not prepared to provide this kind of information. On the same hand, data within the country show high discrepancies. Taking in hand the estimative data provided by the *Hipercluster da Economia do*

mar report, while the growth rate of the “Recreational Boating and Nautical Tourism” is of 8-10% per year at the international scale, in Portugal, the growth rate of the sector for the next 10 years can be higher – obtaining a cumulative annual growth rate of 11%, with a linear increase of 175%. This is due to a higher margin growth, as a result of the reduced volume of current activity and the great potential that the country has.

On the other hand, the *National Tourism Plan* states that nautical tourism is very susceptible to economic swings, and has stagnated during the last years, especially at the level of recreational boating. Despite all this, it recorded an annual growth of 0.5% during the last 5 years, which is less than the 9% recorded between 2000 and 2005. The future growth is estimated to be of 3%- 4% per year.

Either way, the sector has a significant potential of growing in the short term. At this respect, the National Tourism Plan⁶³, recently approved, committed the country to become a main destination in Europe by offering a quality and added value product based on inherent distinctive features such as its natural environment, its history, culture and tradition.

Either way, the sector has a significant potential of growing in the short term. At this respect, the National Tourism Plan⁶⁴, recently approved, committed the country to become a main destination in Europe by offering a quality and added value product based on inherent distinctive features such as its natural environment, its history, culture and tradition.

The PENT will be implemented through a set of programs 11 structured in five main areas, namely quality sustainable tourism, enrichment supply, products and destinations, markets and accessibility and promotion and distribution. The maritime tourism plays a fundamental role in this plan. In this sense, two out of the 10 strategic products identified are related to this sector: “sun and sea” and “nautical and cruises”. The plan also mentions the thalassotherapy as one of the water-related activities to be boosted in the framework of the “health and wellness” industry.

Thus, in general, and regarding the coastal tourism, the plan is intended to diversify and add value to the already obsolete “sun and sea” model, by offering quality nautical activities inserted in integral touristic products benefiting from the Portuguese gastronomy, and the environmental, landscape, historical and artistic heritage.

It will be also important to increase the size of the enterprises, since in general; the sector is made up by a significant number of SMEs. Besides, an increase of the quality of services, diversification of the products and a higher degree of attracting foreign customers, will contribute to the decrease of the seasonality of coastal tourism Portuguese. It is also crucial to make the government play an active role in developing this sector, in particular by reducing legal constraints, and bureaucratic administrative burden and by improving the infrastructures.

The development of the marine leisure sector will also have an effect on all the blue economy as a whole. It will foster the shipbuilding of leisure vessels activities, will boost territorial and maritime development and will put in place water plans and initiatives to convert those degraded coastal areas. It will also stimulate economic activity in coastal communities dependent on fishing activities. Finally, the development of the

⁶³ National Strategic Plan Of Tourism Proposals For Review On The Horizon 2015 - Version 2.0 - http://www.turismodeportugal.pt/Portugu%C3%AAs/turismodeportugal/Documents/PENT_Revis%C3%A3o.pdf

⁶⁴ National Strategic Plan Of Tourism Proposals For Review On The Horizon 2015 - Version 2.0 - http://www.turismodeportugal.pt/Portugu%C3%AAs/turismodeportugal/Documents/PENT_Revis%C3%A3o.pdf

sector will contribute decisively to boost the Portuguese "maritime culture" that has been lost and that will determine the success of the maritime economy in general.

Coastal tourism

The component "Recreational Boating and Nautical Tourism" includes various types of activities, covering the different Water Sports - cruising, dinghy sailing, windsurfing, kitesurfing, surfing, boogie boarding, rafting, rowing, canoeing, kayaking, water skiing, jet skiing, sport fishing, spearfishing, diving - that can be practiced in the sea, rivers and estuaries, and natural or artificial lakes (reservoirs), and other more contemplative and / or resting activities such as simple stroll or sightseeing the coast and its attractions, such the thalassotherapy or Nautical Cruises.

Regarding results of the study realised by the Recreational Boating Working Group⁶⁵, and given its relevance, recreational boating and cruise tourism sectors have been treated separately. The rest of activities are encompassed under the title "coastal tourism".

Coastal tourism is one of the largest maritime economic activities in Portugal directly employing almost 50,000 people and creating over € 1bn in GVA⁶⁶, corresponding to 39% of the GVA and 48% of the employment of the maritime economy as a whole.

With a 1,800 km of coastline including the continental territory (943km) and the archipelagos of Açores (667km) and Madeira (250km), 86%, 228.963, of the bedrooms and bed-places are located in the coast⁶⁷. Among them, more than 40% are in Algarve, the main tourist destination in Portugal⁶⁸.

Moreover, according to *Turismo de Portugal*, there are over 600 tourist operators (OMT) operating in Portugal. In general, they are local companies with little or no infrastructure, few employees (the owner and 1 or 2 employees), who explore its activity in a particular beach or a marina.

A particular development in this sector is the fast increase of surfing in the country which has experienced a huge development in recent years, either in terms of practitioners, or services, or the number of tourists. According to the Portuguese Surfing Federation and the National Association of surfers, there are now about 165 surf schools in the country and are manufactured and sold over 4,000 surfboards per year, equivalent, with the other expendable supplies and services, to 100 million Euros annually.

Moreover, conducting world class nautical events, such as the America's Cup, Volvo Ocean Race, The Tall Ships Race and Extreme Sailing Series, has contributed to raise the positive image and the brand of "made in Portugal" and to attract an important number of tourists.

Yachting and marinas

Portugal has an extensive coastline between the main nautical routes and favourable conditions for practicing water and marine activities. In 2012, the maritime economic activity was featuring 38 infrastructures to access the sea, among which 58% corresponded to ports moorings, 26% to marinas and 16% to recreational docks. In terms of regional distribution, 65% supply is concentrated in the regions of Algarve and Lisbon, accounting for more than 7,200 berthing places⁶⁹ (35.1% and 30.1%, respectively). In the archipelagos of Açores and Madeira there are more than 2,400 berthing places. The Alentejo Region has the lowest share with 230. Moreover, and when comparing the number of moorings per kilometre of coastline in Portugal (5) with the figures in the Netherlands (412), it becomes evident that the potential

⁶⁵ « Recreational boating in Portugal a pillar of local development and economy of the sea », Recreational Boating Workgin Group, Maritime Economy Business Forum

⁶⁶ Economia do Mar Em Portugal, Annex A of the Estrategia Nacional para o Mar 2013-2020, Portuguese Government

⁶⁷ National Statistics Institue Portugal

⁶⁸ National Statistics Institue Portugal

⁶⁹ « Listagem de infraestruturas de acesso ao mar e operadores» – year 2012

growth is immense.

Until 2007, the recreational boating was a growing activity in Portugal. Nevertheless, nautical tourism, very susceptible to economic fluctuations, stagnated in the recent years, especially at the level of recreational boating. Thus, the number of recreational boats and nautical licences has decreased in recent years. At his respect, Portugal stands behind the other countries in terms of the number of recreational boats per 1000 inhabitants (6 boats vs. 174 and 136 in Norway and Finland).

Thus, given the low domestic demand, the future of this sector lays on the internationalization of recreational boating. Another important activity within this sector is the leisure shipbuilding and repair that has the largest profit margins within the shipbuilding sector.

Portugal, with exceptions of some manufacturers of marine equipment, especially for the canoes and surfboards, and minor repair and maintenance services provided by the marinas themselves to vessels that are parked there, , has not developed an industry in shipbuilding and repairing of recreational boats, which to some extent is understandable, given the weak domestic demand for leisure activities and marine tourism.

Cruise tourism

Given the saturation of traditional routes and destinations in the Mediterranean and the Baltic Sea, Portugal is taking an important share of the cruise tourism, in particular in the Lisbon and Funchal Ports, but also in the Portimão and with growth expectations in other Ports such as the Leixões and Ponta Delgada.

Thus, cruise tourism is a growing industry in Portugal, based on foreign operators calling at Portuguese ports. In fact, the scale of cruise ships and passenger movement in the main Portuguese ports has grown in recent years to reach 850 calls and 1,219,614 passengers in 2011. The direct and indirect effects for the national economy generated by this activity are important. According to a study by the European Cruise Council, in 2011, Portugal has been the 12th European country to benefit from the direct impact of the cruise industry: 195 million euros. The same study indicates that the cruise industry is responsible for about 7.500 jobs in Portugal, including services crew and ship repair services⁷⁰.

Nevertheless, except for the company Douro Azul, no national operator companies exist but only foreign ones. It is not expected that a national cruise industry will be developed in the mid-term given the important capital investment required, the strong competition from major international players, as well as the trend towards an industry made up of a reduced number of global cruise companies.

Thus, for Portugal the cruise business is mainly on land, with the local economy to benefit from the expenditure incurred by passengers in ports and cities. According to COTEC, for further development of the cruise industry, the country should invest in improving the infrastructures, building passenger terminals and proceed to the establishment of agreements between the port cities visited, its ports, airports and industry hospitality of the region.⁷¹

Coastal protection

Coastal protection (protection against flooding and erosion, preventing salt water intrusion, protection of habitats)

According to the figures provided in Table 1 (GVA and Employment) related to coastal protection, there is lack of official data on Eurostat and the National Statistics Institute. According to alternative sources⁷² there is a deviation on the employment figure according to the different sources adopted (0.1 thousand

⁷⁰ European Cruise Council

⁷¹ Blue Growth for Portugal: a vision of business ocean economy, COTEC, 2012

⁷² Eurostat COFOG, data for 2010; PRC the Economics of Climate change, data for 2008 and the Estratégia Nacional para o mar 2013,2020 (Ref. year 2010)

people versus 0.5 thousand employees). Regarding the GVA figure, data is only available from one source, amounting to € 31.9 million⁷³.

The “Coastal valorisation and protection Plan for Portugal”, with a budget of 106 Million of Euros, foresees 173 coastal protection works to be performed until 2015. There are 31 actions classified with the highest priority, out of which 21 refer to coastal defence.

In 2008, the expenditure to protect the Portuguese coastal zones against flooding and erosion amounted to € 11.72 million. Of this amount, 80% is equally divided between the construction and rehabilitation of hard protection structures, such as dikes and breakwaters, and soft measures including dune rehabilitation and beach nourishments. Indirect measures include preparatory studies to define the most appropriate measures as well as technical planning.

Currently in Portugal, the expenditure against flooding and erosion is funded by national expenditure as well as EU funds. Since 1998, the the expenditure to protect the Portuguese coasts against flooding and erosion amounted to approximately €8 m per year.

In Portugal, coastal defense is mainly dealt with at national level. The responsible authority depends on the type of coastal area. The main actors involved are the Ministry for Environment, Spatial Planning and Regional Development, the Port Administrations and the Ministry of Defense. In the autonomous regions of Azores and Madeira, the regional governments have the responsibility of developing plans for their coastal zones.

The Ministry for Environment, Spatial Planning and Regional Development (MAODTR) is responsible for the Public Maritime Domain (PMD), a 50 m coastal strip which is mainly preserved from occupation and in which land can not be turned into private property. As a result, the state is responsible for providing and funding protection if erosion affects an area landward of the PMD zone.

The Port Administrations are responsible for port areas and the Ministry of Defense has responsibility for areas under military administration.

Furthermore, the whole Portuguese continental coastal zone is covered by nine Coastal Zone Spatial Plans (POOCs) which have all been approved and published. The development of the plans was supervised by the Water Institute INAG and in protected areas by the Nature and Biodiversity Conservation Institute. The Water Institute furthermore implements the coastal defense works and takes care of maintenance. Both institutes are subordinated to the MAODTR who ensures the overall coordination through a Strategic Coordination Group.

Maritime monitoring and surveillance

Maritime monitoring and surveillance includes the traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods, and environmental monitoring. As this sector is not directly registered hard data are hard to find.

In the area of maritime monitoring and surveillance in Portugal, notably the National Maritime Authority (Marinha Portuguesa) plays the most significant role as this activity is one of its statutory competences. In the sub area of prevention and protection against illegal movements of people and goods, the Forças Armadas and the Forças e Serviços de Segurança also contribute to this action.⁷⁴ In addition to these, other administrative corps that also contribute to maritime monitoring and surveillance in Portugal are:

- Direção–Geral de Política do Mar
- Força Aérea Portuguesa
- Guarda Nacional Republicana
- Serviço de Estrangeiros e Fronteiras
Sistema de Segurança Interna

⁷³ Maritime Strategy, Anex A, Maritime Economy in Portugal

⁷⁴ DQEM: Directiva Quadro Estratégia Marina Portugal.

- Direção-Geral de Recursos Naturais, Segurança e Serviços Marítimos
- Polícia Judiciária
- Direção-Geral da Autoridade Marítima
- Polícia Marítima
- Autoridade de Segurança Alimentar e Económica
- Autoridade Tributária e Aduaneira

Regarding environmental monitoring in particular, the role played by the Institute of Oceanography at the University of Lisbon is also worth mentioning.

Portugal participates actively in European projects, such as Bluemassmed and M @ RBIs - Information System for Marine Biodiversity, aimed at the integration of maritime surveillance, through the exchange of information between different agencies of the Member States participating in the project, in particular with regard to border control and customs, fisheries and marine pollution from ships and ports, the prevention and suppression of illicit activities and the safety of navigation and protection of human life and property. There are several bureaucratic and administrative barriers that hamper Portugal's maritime in the field of surveillance and monitoring.

In correlation with the need for increased monitoring of fishery resources, including through awareness research, the need arises to create one network of marine protected areas (MPAs) in Portugal and to expand the Network Natura 2000 towards the marine environment.

DRAFT

1.2. Breakdown of maritime economic activities at regional level (NUTS 1 or NUTS 2)

This section allocates the data from table 1 to maritime regions in the country. The results of this analysis are intended to provide a breakdown of maritime economic activities at regional level and to assess maritime regions.

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

Table 2 - Breakdown of maritime economic activities at regional level

EU Member State	NUTS 1	NUTS 2	Geographical allocation to Sea-basin (NUTS 2 regions)
Portugal	Continental Portugal (except for Açores and Madeira) ⁷⁵	Norte	Atlantic Arc
		Algarve	Atlantic Arc
		Centro	Atlantic Arc
		Lisboa	Atlantic Arc
		Alentejo	Atlantic Arc
	Acores and Madeira ⁷⁶	Região Autónoma dos Açores	Atlantic Arc
		Região Autónoma da Madeira	Atlantic Arc

Table 4 presents the percentage share of each region per specific maritime economic activity. This share can be applied both to the GVA figures and the employment figures in table 1. As hardly any data can be found in regionalised statistics allocation has been done on the basis of other parameters. The methodology used is explained in footnotes to the table.

⁷⁵ Formally not a NUTS 1 classification. Figures refer back to the NUTS 1 figure for Portugal minus the figures for Açores and Madeira.

⁷⁶ This is formally not a NUTS 1 classification but is done to distinguish the island regions from the continent of Portugal. It needs to be build up from two NUTS 2 regions.

Table 3 - Overview of employment and GVA per maritime economic activity per region in Portugal

Sea-basin		Atlantic Arc						Qualitative description of the split
		Norte	Centro	Lisboa	Alentejo	Algarve	Região Autónoma dos Açores	
Regional percentages apply on Employment and GVA data								
0.	Shipbuilding							
0.1	Shipbuilding (excl. leisure boats) and ship repair ⁷⁷	20%	10%	66%	0%	3%	1%	0%
0.2	Construction of water projects ⁷⁸	23%	0%	77%	0%	0%	0%	0%
1.	Maritime transport and shipbuilding							
1.1	Deep-sea shipping ⁷⁹							
1.2	Short-sea shipping (incl. Ro-Ro)	12%	11%	54%	16%	0%	7%	0%
1.3	Passenger ferry services ⁸⁰	0%	n/a	4%	n/a	n/a	55%	41%
1.4	Inland waterway transport	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2.	Fishing							
2.1	Catching fish for human consumption ⁸¹							
2.2	Catching fish for animal feeding	22%	28%	13%	6%	16%	11%	3%
2.3	Marine aquatic products ⁸²	0%	77%	5%	5%	5%	5%	5%
2.4	Blue biotechnology	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2.5	Agriculture on saline soils							
3.	Energy and raw materials							
3.1	Offshore oil and gas	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3.2	Offshore wind	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3.3	Ocean renewable energy	n/a	n/a	n/a	n/a	n/a	n/a	n/a

⁷⁷ Regional data on shipbuilding has been extracted from the Portuguese National Statistical Institute (INE), corresponding to CAE (NACE) 33.15 Repair and maintenance of ships and boats and 30.11 Building of ships and floating structures

⁷⁸ Regional data has been extracted from INE corresponding to CAE (NACE) 42.91 Construction of water projects

⁷⁹ Regional Deep-sea and short-sea shipping data has been estimated based on the number and turnover of Port Operators established in each region

⁸⁰ Regional Passenger Ferry Services data has been estimated based on the Volume of passengers transported by ferry services in each port

⁸¹ Regional data for Catching fish for human consumption and for animal fishing has been estimated based on the percentage of fish landed per region

⁸² Regional data on Marine aquatic products has been extracted from INE, corresponding to CAE 321 Saline and brackish waters aquaculture

Sea-basin		Atlantic Arc							Qualitative description of the split
Regional percentages apply on Employment and GVA data		Norte	Centro	Lisboa	Alentejo	Algarve	Região Autónoma dos Açores	Região Autónoma da Madeira	
									Aguçadoura (Norte), S. Pedro do Muel (Centro) and in the Azores
3.4	Carbon capture and storage	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3.5	Aggregates mining (sand, gravel, etc.)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	No data available. Detected in the Atlantic northeast seamounts, a number of areas potentially rich in geological mineral resources
3.6	Marine minerals mining	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
3.7	Securing fresh water supply (desalination)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	No data available. Two desalination plants are operating in Algarve
4.	Leisure, working and living								
4.1	Coastal tourism ⁸³	12%	10%	22%	3%	35%	3%	15%	
4.2	Yachting and marinas ⁸⁴	9%	13%	21%	3%	31%	10%	13%	
4.3	Cruise tourism ⁸⁵	6%	0%	40%	0%	1%	8%	45%	
5.	Coastal protection								
5.1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
6.	Maritime monitoring and surveillance								
6.1/ 6.2	Traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods,	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
6.3	environmental monitoring	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

⁸³ Regional Coastal tourism data has been estimated based on the number of nights spent in touristic accommodation establishments

⁸⁴ Regional yachting and marina data has been estimated based on the regional distribution of berths

⁸⁵ Regional Cruise Tourism data has been estimated based on the number of passengers in the different ports. This percentage has been applied over the average employment and GVA data in Table 1

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

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

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

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

Table 4 – Listing the 7 largest maritime economic activities in a MS at NUTS-0 level

Rank	Maritime economic activities	GVA (billion EUR)	Employment (in 1,000)	Score
1.	Coastal tourism	1.0	48.0	29.76
2.	Catching fish for human consumption	0.8	47.0	24.09
3.	Short-sea shipping (incl. Ro-Ro)	0.1	2.7	2.41
4.	Shipbuilding (incl. leisure boats) and ship repair	0.08	3.7	2.31
5.	Deep-sea shipping	0.1	1.7	1.54
6.	Construction of water projects	0.08	1.5	1.18
7.	Catching fish for animal feeding	0.004	0.2	0,43

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

This section identifies and selects the 7 fastest growing maritime economic activities as emerged over the past 3 years. This part of the analysis is important 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.

The CAGR (compound annual growth rate) has been calculated taking into account the GVA and employment figures for 2008, 2009 and 2010. Those figures are not available for all activities, but just for eleven of them and therefore the above ranking of the 7 fastest growing maritime activities has been calculated taking into account only the available data.

Table 5 - Ranking order of the 7 fastest growing maritime economic activities in a MS at NUTS-0 level⁸⁶

Rank	Maritime economic activities	GVA (CAGR)	Employment (CAGR)	Score
1.	Catching fish for animal feeding	727.08%	753.08%	7.40
2.	Marine aquatic products	205,15%	-5,05%	1.00
3.	Passenger ferry services	60.57%	34.35%	0.47
4.	Cruise tourism	47.84%	23.70%	0.36
5.	Construction of water projects	17.07%	10.67%	0.14
6.	Catching fish for human consumption	-1.35%	-0.57%	-0.01
7.	Agriculture on saline soils	-0.86%	-5.82%	-0.03

It can be observed that the fastest growing activities are the most consolidated or “traditional ones”, where more data is available. In this sense, there is a divergence among this ranking and the one reflecting the most promising activities (see table 8 measuring the future potential of economic activities). This result is somehow logic as the most promising activities are normally in an embryonic developing stage, with a high future growth potential.

It can also be observed that the only two maritime activities that are both in the ranking of the fastest growing and in the most promising ones are cruise tourism and short sea shipping, that are also two activities included in the list of the largest ones.

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

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

- Table 8 presents the scoring of all maritime economic activities (at NUTS 1 or 0 levels) alongside the indicators identified in the initial Blue Growth study.⁸⁷
- Table 9 suggests the ranking order for the 7 most promising maritime economic activities

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

⁸⁶ This ranking has been elaborated according to the data provided by the central research team, so there is a limitation related to the data used.

⁸⁷ Ecorys, Deltares, Océanique Développement, 2012: Drivers and Scenarios for Sustainable Growth from the Oceans, Seas and Coasts. Blue Growth Final Report. Annex I. Maritime economic activities data. Available here: <https://webgate.ec.europa.eu/maritimeforum/content/2946>

Table 6 - Future potential of economic activities

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

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

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

“-” in case of negative impact;

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

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

“?” will not affect the final score.

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

Rank	Maritime economic activities	Score
1.	2.4 Blue Biotechnology	6

2.	3.2 Offshore wind	6
3.	3.3 Ocean renewable energy (wave, tidal, OTEC, thermal, biofuels, etc.)	6
4.	3.1 Offshore oil and gas	5
5.	1.1 Deep-sea shipping	3
6.	1.2 Short-sea shipping (incl. RoRo)	3
7.	4. Leisure and tourism	2

The most promising activities are those that belong to those sectors intensive in innovation and R&D, such as Blue Biotechnology and offshore energies. All of them are in an embryonic stage and have a high growth potential. Nevertheless, energies are still in a commercial exploration phase, with the offshore oil and gas being a short step behind as the existence of oil and gas fields is still to be determined.

In all of them the potential of future job creation is very high though at the moment the employment rate is not so (being those sectors in a developing phase). Spill-over effects in these sectors are high as they imply energy development and infrastructure building in the case of the energies.

Sectors concerning maritime transport (deep sea shipping and short sea shipping) are promising in spite of not being as competitive as the other ones as they are more traditional sectors.

Nevertheless, those activities are at the moment being promoted at a European level through the European Transport Network and the European Maritime Transport Strategy 2018. The strategy identifies key areas where action by the EU will strengthen the competitiveness of the sector while enhancing its environmental performance. Promotion and development of maritime transport in conjunction with railway transport has the final purpose to reduce the percentage of road transport.

Within the general context of the maritime economy in general and maritime transport in particular, innovation is a factor in this development particularly in the ports sector. Indeed, the use of new technology has allowed the major domestic ports to develop positively in their productivity and competitiveness. Examples of innovation is the "single window port", present in two different versions in national ports, the "conciierge only" in Port of, the "follow container" also Leixões, or 'single card port' in the Port of Sines, which serves as card-accounts between ship-owners and the various port authorities. It should be noted that today a system of "single window port" is already being exported to other foreign ports and in 2011 a high percentage of investments in equipment of the port of Sines – (over 50%) was directed to the acquisition of technology, especially information technology and communication.

There is a need to keep on allocating capital, human resources and innovation to maritime transport sector, as they play a key driver role on the entire value chain of the real economy of the sea.

As far as the "Leisure, working and living" activity is concerned, tourism sector in Portugal in general shows low levels of competitiveness and innovation. It is a sector mostly composed of SME and workforce intensive. In this activity there is a high potential of job creation and an open field to introduce innovation. This activity's potential may also be measured by the current high political will to improve it, as it is materialized in the National Strategic Plan for Tourism in Portugal which defines the initiatives that will foster sustained growth of Portuguese tourism over the next 10 years.

The results of the ranking of the 7 most promising maritime economic activities is coherent with the analysis of the different maritime economic activities' potential performed in the study "Blue Growth for Portugal, Uma visão empresarial da economia do mar".

3. Identification of the most innovative components of Blue Growth

3.1. Innovation indicators the maritime economic activities / sectors

This chapter assesses the innovation scores of each of the maritime economic activities in the country. The innovation indicators are inspired on the EU Innovation Scoreboard which aims to capture the innovation level of a country. The following indicators are included⁸⁸:

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

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

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

Comment:

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

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

See comment above

⁸⁸ Dependent on data availability

3.2. Assessment of innovation reports compiled at national level

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

Table 9 – Qualitative assessment regarding innovation scoring

Source	Qualitative assessment regarding innovation potential per maritime economic activity/sector
<p>“Blue growth for Portugal. Uma visão empresarial da economia do mar”</p>	<p>General assessment to all maritime activities: the reduced innovation is one of the major shortcomings of the Portuguese maritime economy and without it; it cannot be competitive on a global scale. There is potential in terms of act on scientific knowledge that ends up in innovation, being at the service of the economy itself.</p>
	<p>Maritime enterprises (enterprises operating in the marine sector): there are barriers and constraints to maritime enterprises competitiveness in Portugal, due to the deficient functioning and lack of dynamism and innovation in the sector, as well as due to the opaque action of the State, that has not incentivized the sector. Those barriers can be overcome and there is potential for innovation in this sector.</p>
	<p>Renewable offshore energies in Portugal: It is an innovation-intensive industry. However, there are still lack of skills and sufficient experience in the development of industrial technological innovation processes. Nevertheless, there are some good examples of innovation in this sector, as the adaptation of shipyards to build compounds for offshore renewable industries.</p>
	<p>Shipbuilding and ship repair: there is a need for investing in innovation in these activities (high potential of innovation).</p>
	<p>Catching fish both for animal and human consumption: there is a need in Portugal to invest in fresh fish conservation to avoid fish damage.</p>
	<p>Maritime transport: within the general context of the maritime economy in general and maritime transport in particular, innovation is a factor in this development particularly in the ports sector.</p>
	<p>Aquaculture: Existence of large number of small family businesses with weak management capacity, innovation and introduction of new technologies, where the introduction of innovation and diversification of aquaculture production is foremost. There is also a need for innovation in aquaculture to overcome fishery restrictions imposed by the EU and the reduction in fishery resources. Links between innovation and the strengthening of sustainable fishing capture methods.</p>
	<p>Leisure: There is a general need to invest in innovation in this sector.</p>
	<p>There is a need in Portugal for developing R&D projects in different MEAs such as: fishery and aquaculture and technologies to explore renewable offshore energies.</p>

Based on the available information an preliminary assessment is made of the 7 most innovative maritime economic activities.

Table 11 - Ranking order of the 7 most innovative maritime economic activities in a MS at NUTS-0 level⁸⁹

Rank	Most innovative maritime economic activities
1.	2.4 Blue Biotechnology
2.	3.2 Offshore wind
3.	3.3 Ocean renewable energy (wave, tidal, OTEC, thermal, biofuels, etc.)
4.	3.1 Offshore oil and gas
5.	1.1 Deep-sea shipping
6.	1.2 Short-sea shipping (incl. RoRo)
7.	2.3 Marine aquatic products

⁸⁹ The practical total coincidence between this ranking and that of the most promising maritime activities is no surprising as most of them are maritime developing activities with a high degree of innovation, as it was also assessed by the qualitative sources consulted for this study. On the contrary, traditional activities are more work force intensive rather than technology intensive. Leisure industry has a high developing and innovation potential but currently greatly lacks innovation, which is why it does not appear in this ranking.

In its place, we have included the activity marine aquatic products, as in the data provided by the central research team it is placed in the first place of innovative activities, according to the limited indicators provided.

4. Identification and analysis of maritime clusters

This section identifies the key Blue Growth clusters in Portugal 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)⁹⁰.”

4.1. Maritime clusters in Portugal

Building on the clusters already identified in the Blue growth study⁹¹ and complemented with cluster identified in the EU Cluster Observatory⁹², the following clusters have been identified for Portugal.

Table 12 – Maritime clusters in Portugal⁹³

Longlist of maritime clusters EU Cluster Observatory	Suggested clusters for in-depth analysis		
	Cluster	Location of the cluster	Maritime economic activities in the cluster
Centro		Atlantic Arc	
Norte	Porto	Atlantic Arc	deep and short-sea shipping; coastal, nautical and cruise tourism; marine minerals mining;
Lisboa	Lisbon	Atlantic Arc	(industrial) fisheries, marine biotechnology, metallic and non-metallic minerals, freight transport, marine aquaculture, offshore wind farms; cruise tourism

⁹⁰ Prof. Michael E. Porter, 20120213, MOC2012 (HBS course) Session 5 - final

⁹¹ In the previous Blue Growth study, these were: Bretagne, Brest, Marseilles, ES: Galician Coast, Barcelona;

⁹² The EU Cluster Observatory denotes maritime clusters and tourism clusters.

⁹³ 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.

Longlist of maritime clusters EU Cluster Observatory	Suggested clusters for in-depth analysis		
	Cluster	Location of the cluster	Maritime economic activities in the cluster
Algarve		Atlantic Arc	
Açores		Atlantic Arc	

Shortlist of maritime clusters in Portugal for in-depth analysis⁹⁴

The cluster analysis builds further on the regional allocation of economic activities as described under section 1.2. It also aims at assessing the maturity of the cluster (mature, growing or early development). Two specific clusters have been selected for a more in-depth assessment.

- Porto
- Lisbon

4.2. Cluster analysis

The shortlisted and selected clusters (Lisbon, Porto) are analysed according to the following aspects (table 13):

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

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

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

⁹⁴ This selection is based on the longlist compiled through the EU cluster observatory. It has been approved by DG MARE and follows the logic of the request for services.

Table 13 - List and strengths and weaknesses of clusters

	EU Member State	Maritime economic activities concerned	Status	Strengths	Weaknesses
Porto	Portugal	Deep and short-sea shipping	Mature	<p><u>Portugal</u></p> <ul style="list-style-type: none"> Portugal ports are located right on the major north-south and east-west shipping routes, are part of the TENT-T Priority Projects and MOS initiative Favourable natural conditions (deep water, low tidal amplitude, short-channel access, and climate) Ports are a priority for the Government (expected high amounts of investment within the Strategic plan for transport. Sustainable mobility) Public-private management of ports (“landlord” model) has improved their capacity and productivity and has attracted important investments <p><u>Porto</u></p> <ul style="list-style-type: none"> Porto Metropolitan Area is a regional strong hinterland in terms of industry and commerce Porto da Rede Core, on the field of RTE-T Port of Leixões ranks the second port in the country (24% of all goods loaded and discharged in mainland Portugal) The port has focused on a strategy of integration of port services and internationalization Port of Leixões has implemented 2 Port single window initiatives: “portaria única” (unique guesthouse), that allows trucks remain in the port only 50 minutes, and “siga contentor” (follow the container), that allows to know at any time where each container is located 	<ul style="list-style-type: none"> Benefits coming from the main European transport initiatives (Motorways of the Sea, TEN-T projects and short sea shipping networks) not yet been fully exploited Decline of the national maritime transport companies operating mainly in coastal traffic and insular maritime transport Fierce competition in international shipping Lack of large tonnage ships
		Coastal, nautical and cruise tourism	Slight growth	<ul style="list-style-type: none"> Significant potential of growing in the short term Strategic sector for the Government (2 out of 19 strategic products identified in the National Tourism Plan committed the country are related to maritime tourism) Major sector within the blue economy (39% of the GVA and 48% of 	<ul style="list-style-type: none"> Tourism industry is still underdeveloped, in particular when compared with other European coastal countries. Coastal tourism is not an strategic niche to be developed in Porto but rather in the Algarve

				<p>the employment)</p> <ul style="list-style-type: none"> • Important business opportunities related to surfing and world class nautical events 	
		Marine minerals mining	Early development	<ul style="list-style-type: none"> • Potential of geological mineral resources present on the Portuguese continental shelf • The Marine Geology Unit within the National Laboratory for Engineering and Geology studies the marine geological resources and their economic potential and performs mapping of the continental shelf and coastal areas • Mineralogical prospecting campaigns are been undertaken and have detected seamounts with a number of areas potentially rich in ferromanganese and phosphates 	<ul style="list-style-type: none"> • Quite small sector • The exploration effort is not sufficient • The economic activity resulting from the exploitation of mineral resources is almost nonexistent
Lisboa	Portugal	Fishery	Mature	<p><u>Portugal</u></p> <ul style="list-style-type: none"> • Portuguese coastal waters are rich in terms of variety and quality of fish stocks • Fishery is a traditional industry in Portugal • High fish demand: Portugal is the largest consumer of fish in the EU and the third in the world <p><u>Lisbon</u></p> <ul style="list-style-type: none"> • The majority of the vessels are registered in the region (19,7%) • Lisbon Region concentrates 12,7% of fish landing • Most fish processing industries are located in Lisbon 	<ul style="list-style-type: none"> • Restrictive fishing quotas imposed by the EU • Relative scarcity of fish stocks • Fragmented structure composed of SMEs and small vessels with weak capacities in terms of management, innovation and new technologies • Labour force: higher age groups with lower levels of formal education • Low productivity • Artisanal fishing continues to be the most prevalent "business model" • Negative trade balance • Drop in the average price of fish landed
		Marine biotechnology	Early development	<ul style="list-style-type: none"> • Existence of a vast ultra-deep geographical area still largely unexplored • Expected growth rate of 5% per year • Some companies are already operating and well positioned, a significant number of them being located in Lisbon • Existence of a large number of scientific sea research centres, among which the Institute of Experimental and Technological Biology (IBET) 	<ul style="list-style-type: none"> • The sector is still poorly developed
		Metallic and non-metallic minerals	Early development	<ul style="list-style-type: none"> • Potential of geological mineral resources present on the Portuguese continental shelf • The Marine Geology Unit within the National Laboratory for Engineering and Geology studies the marine geological resources and their economic potential and performs mapping of the 	<ul style="list-style-type: none"> • Quite small sector • The exploration effort is not sufficient • The economic activity resulting from the exploitation of mineral resources is almost nonexistent

				<p>continental shelf and coastal areas</p> <ul style="list-style-type: none"> • Mineralogical prospecting campaigns are been undertaken • Seamounts with a number of areas potentially rich in ferromanganese and phosphates have been detected in the deep area of the Continental Shelf, covering particularly the northeast Atlantic 	
		Freight transport	Mature	<p><u>Portugal</u></p> <ul style="list-style-type: none"> • Portugal ports are located right on the major north-south and east-west shipping routes, are part of the TENT-T Priority Projects and MOS initiative • Favourable natural conditions (deep water, low tidal amplitude, short-channel access, and climate) • Ports are a priority for the Government (expected high amounts of investment within the Strategic plan for transport. Sustainable mobility) • Public-private management of ports (“landlord” model) has improved their capacity and productivity and has attracted important investments <p><u>Lisbon</u></p> <ul style="list-style-type: none"> • The Port of Lisbon ranks the third port in the country (18% of all goods loaded and discharged in mainland Portugal) • The hinterland of the Port of Lisbon covers not only the metropolitan area but also part of the Andalusia region (Spain) 	<ul style="list-style-type: none"> • Benefits coming from the main European transport initiatives (Motorways of the Sea, TEN-T projects and short sea shipping networks) not yet been fully exploited • Decline of the national maritime transport companies operating mainly in coastal traffic and insular maritime transport • Fierce competition in international shipping • Lack of large tonnage ships
		Marine aquaculture	Early development	<ul style="list-style-type: none"> • Growing domestic and international demand for fish • Difficulties in the capture industry bring out the opportunities related to the aquaculture sector • Organisation of the sector: Portuguese Association of Aquaculture (Associação Portuguesa de Aquacultura - APA) • Priority for the government (Parliament Resolution nº 6/2013) 	<ul style="list-style-type: none"> • Constraints on the conditions of the open sea coast • Lack of maritime and costal development plans establishing specific areas to develop aquaculture • Complexity of the licensing process of new units • Sector still in an embryonic stage and only a small percentage of those areas with optimal conditions for aquaculture has been explored to date • Sector composed mainly of small family businesses using obsolete production methods • Sector concentration – small number of big players
		Offshore wind farms	Early development	<ul style="list-style-type: none"> • Optimal infrastructures in terms of grids, harbours and even shipyards to be used in the process of offshore renewable energy developing 	<ul style="list-style-type: none"> • Portugal still lacks of a specific economic sector dedicated to the offshore energy exploration • The survey study on the wind blowing on the offshore basins, adjacent to the Atlantic coast of

				<ul style="list-style-type: none"> • Important projects and initiatives are being implemented: Windfloat 	<p>Portugal, still has to be carried out</p> <ul style="list-style-type: none"> • Lack of an offshore wind industry to serve as a vehicle for the transmission of technologies • Limited financial capacity to invest in offshore wind projects • Lack of a clear understanding on the economic and technical viability of offshore wind projects
		Cruise tourism	Growing	<ul style="list-style-type: none"> • Saturation of traditional routes and destinations in the Mediterranean and the Baltic Sea constitutes an opportunity for Portugal • cruise ships and passenger movement in the main Portuguese ports has grown in recent years • Portugal has been the 12th European country to benefit from the direct impact of the cruise industry • Lisbon is one of the main touristic destinations in Portugal • Lisbon Port is the main port in the country in terms of cruise passengers 	<ul style="list-style-type: none"> • Mediterranean ports are still a fierce competence for Portugal • The industry is based on foreign operators calling at Portuguese ports

Table 14 – In-depth analysis of clusters

	EU Member State	Maritime economic activities concerned	Education policy		Unemployment rate at cluster level ⁹⁵ (NUTS III or II level)	Ongoing research: main research institutes / companies associated to the clusters
			Number of students in higher education	Number of students in higher education following courses for employment in blue economy		
Porto	Portugal					<ul style="list-style-type: none"> • Universidade Católica do Porto / Escola Superior de Biotecnologia / Centro de Incubação e Desenvolvimento de Empresas de Biotecnologia • Centro Interdisciplinar de Investigação Marinha e Ambiental – Universidade do Porto • Instituto de Engenharia Mecânica e Gestão Industrial, com sede no Porto • Faculdade de Engenharia da Universidade do Porto / Instituto de Engenharia de Sistemas e Computadores • Laboratório de Sistemas e Tecnologia Subaquática • Faculdade de Engenharia do Porto • Instituto de Engenharia de Sistemas e Computadores do Porto • Pólo do Mar do Parque de Ciência e Tecnologias da Universidade do Porto (UPTEC MAR)
Lisbon	Portugal					<ul style="list-style-type: none"> • Centro de Estudos do Mar - Universidade

⁹⁵ 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.

						Autónoma de Lisboa • Centro de Oceanografia (CO), • Universidade de Lisboa • ISR-Lisboa
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Other relevant national institutes operating also in the Lisbon and Porto are:

- Instituto Português do Mar e da Atmosfera
- Laboratório Nacional de Engenharia e Geologia
- Centro Português de Atividades Subaquáticas- CPAS
- Instituto para o Desenvolvimento do Conhecimento e da Economia do Mar
- Instituto do Mar
- IBEROMARE - Centro Multipolar de Valorização de Recursos Marinhos
- Instituto Nacional de Engenharia, Tecnologia e Inovação / Departamento de Geologia Marinha

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

Table 15 – Regional or national cluster strategy

Regional or national cluster strategy	Brief description of main objectives and features
<p>Economic Sea Hypercluster (Hypercluster da Economia do Mar)</p> <p>Business Forum for the Economy of the Sea (Forum Empresarial da Economia do Mar)</p>	<p>The study "Economic Sea Hypercluster" is a political economy study which identifies 12 strategic components of the sea economy (Marine Visibility, Communication, Image and Culture; Recreational Boating and Nautical Tourism; Maritime Transport, Ports & Logistics; Ship Construction and Repair; Fishing, Aquaculture and Seafood Industry; Energy, Minerals and Biotechnology; Marine Works; Marine Services; Production of Strategic Thinking; Environment and Nature Conservation; Defence and Security in the Sea; Scientific Research, Development and Innovation, Education and Training). This study set the goal of doubling the GDP resulting directly from the ocean economy, from the current 4-5% to 10-12%.</p> <p>One of the proposals of the study was the establishment of a Business Forum for the Economy of the Sea, gathering the main actors and mainly those companies interested in different activities of the Hypercluster and in contributing to the attainment of the objectives of the study.</p>
<p>OCEANO XXI – Association of the Marine Knowledge and Economy (Associação para o Conhecimento e Economia do Mar)</p>	<p>This association aims to make the most of the SEA resource by developing a set of activities, products and services that promote economic growth, employment and internationalization of the region, focusing on strengthening R&D&I, training, entrepreneurship and cooperation in order to contribute to a sustainable competitiveness of the region.</p> <p>In this framework, OCEANO XXI has set five priority lines that guide its actions in the short and medium term:</p> <p>Priority 1 – To develop Research, Technological Development, Innovation and Training directed to the modernisation of traditional activities and the development of emerging activities in the field of maritime economy and its sustainability;</p> <p>Priority 2 – To improving the quality and value of fishery products, aquaculture and salt production, as well as health food;</p> <p>Priority 3 – To promote the modernisation and innovation of maritime industries, port activities and logistics;</p> <p>Priority 4 – To develop recreational boating and nautical tourism and enhance the material and immaterial maritime heritage;</p> <p>Priority 5 – To promote the internationalisation of activities, enterprises and institutions of the Economy of the Sea.</p>

5. Analysis of measures, policies and strategies to stimulate growth and good practices in the sea-basin

In the framework of the Marine Strategy Framework Directive⁹⁶ the Portuguese General Directorate of Natural Resources, Security and Maritime Services has already prepared the Marine Strategy for the subdivision of the Continent and for the Extended Continental Shelf.

In parallel, Portugal has developed the **National Maritime Strategy 2013-2020**, an instrument of public policy that set the Portuguese vision to long-term sustainable blue growth. The strategy has been developed at a national level, by the *DG de Política do Mar* together with the competent regional bodies. Other relevant public and private stakeholders as well as the civil society have been also involved through a process of public discussion.

This strategy is complemented with specific sectorial strategies listed in the table below. Moreover, the Government is preparing the following strategies

- National Strategic Plan for Fisheries 2014-2020
- National Strategic Plan for Fishing Ports 2014-2020
- National Strategic Plan for Aquaculture 2014-2020

Moreover, the "Report for sustainable growth - a post-troika vision" presented in December 2012 by the Platform for Sustainable Growth, defends five strategic orientations that should be assumed in order to consolidate sea related activities as a driving force for economic development in Portugal: reorganize, restructure and regulate ocean's economy, create a distinctive brand anchored in the approach of the Portuguese sea; enhance knowledge, science and technology and skills in the area of the sea; establish a new financing and governance of the sea model, and protect the oceans against the consequences of climate change

Table 16 – Assessment of maritime and generic policies

Policy	Objectives	Priorities	Consequences for maritime activities and impacts on sustainable growth	Investment and funding
National Ocean Strategy 2013-2020 (<i>Estratégia Nacional do Mar 2013-2020</i>)	<ol style="list-style-type: none"> 1. Recover a national maritime identity 2. Foster the economic, geostrategic and geopolitical potential 3. Create conditions to attract domestic and international investment in all sectors of the maritime economy to promote growth, employment, social cohesion and territorial 	<p><u>Natural resources:</u> Ocean, Atmosphere and Integrated System</p> <p><u>Governance:</u> Administration, Strategic thinking Education, science and technology, Communication and culture and protection and safeguarding</p> <p><u>Non-living natural resources:</u> marine mineral resources and marine energy resources</p>	<p>Given its integrated approach and its cross cutting nature, the strategy will have an impact to all maritime activities. Although the strategy has not been implemented yet, the following (illustrative) impacts can be foreseen:</p> <ul style="list-style-type: none"> - the development of the onshore and offshore aquiculture will reduce the negative fishing trade deficit - the enhancement of the R&D activities and genetic resources will have develop the blue technology sector - the underwater and its non-living resources exploration will develop a wide range of activities and sectors, 	<p>The total investment has not been designed yet. The plurianual budgets will be determined under the different action plans together with the other stakeholder. In general, it can be said the the funding will come from national (from the government and from other relevant maritime-related organisms) and European sources as</p>

⁹⁶ Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)

Policy	Objectives	Priorities	Consequences for maritime activities and impacts on sustainable growth	Investment and funding
	<p>integrity, and reaching, by 2020, a 50% of direct contribution of the maritime sector to the national GDP</p> <p>4. Strengthen scientific and technological activities to increase the “knowledge of the sea” and to promote an efficient and sustainable use of resources</p> <p>5. Enhance the role of Portugal within the European IPM, in particular for the Atlantic Area</p>	<p><u>Living natural resources:</u> fishing and seafood industry, aquaculture and blue biotechnology</p> <p><u>Other activities:</u> ports, transports and logistics leisure, sports and tourism, shipbuilding and repairing and water projects</p>	<p>from shipping and port infrastructure, environmental monitoring and technology development</p> <ul style="list-style-type: none"> - the enhancement of the maritime renewable energies will contribute to the decarbonisation of the economy as well as the improvement of the domestic industry - shipbuilding and shipyard sector restructuring will enhance the competitiveness and production of the sector - improving marinas infraestructuras and sector internationalization will boost the coastal and maritime tourism 	<p>well as other cooperation financial instruments available. It is also expected to attract private invest, mainly FDI and venture capital funds.</p>
<p>Strategic plan for transport. Sustainable mobility, 2011-2015 (<i>Plano Estratégico dos Transportes. Mobilidade Sustentável 2011-2015</i>)</p>	<ol style="list-style-type: none"> 1. Meet external commitments assumed by Portugal and make the sector financially balanced and affordable for taxpayers 2. Enhance the competitiveness and development of the national economy; 3. Ensure efficient mobility and accessibility for people and goods, promoting social cohesion. 	<p>Passengers Public transports Road infrastructure Maritime transports and ports Logistics Air transport Governance and regulation</p>	<p>In the field of maritime transport, the Plan foresees a number of important investments in Portuguese ports related to building and enlarging container terminals, construction of Port Logistics Platforms, improvement of the Zones of Logistic Activities and cruises terminals.</p> <p>Those projects will improve the Portuguese ports system and will positively affect the competitiveness in the maritime transport sector as well as the cruise tourism.</p>	<p>Given the scarcity and limited public resources, the Plan encourages the participation of the private sector. As far as the investment in the maritime transports is concerned, the Plan presents investment projects (underway or under study) with a value of 2,456.85 million Euro to be funded via private, public investment and EU funds.</p>
<p>Coastal valorisation and protection Plan for Portugal (PAPVL) 2012-15 (<i>Plano de Ação de Proteção e Valorização do Litoral 2012-2015</i>)</p>	<p>Define the political and strategic vision to improve and valorise the coastal area in Portugal</p>	<p>Coastal defense and risk areas Studies, management and monitoring Plans and regeneration projects</p>	<p>The main objective of the plan is to protect and improve the Portuguese coastal through an important number of initiatives such as:</p> <ul style="list-style-type: none"> - Interventions to ensure the safety of persons and property; - Maintenance / rehabilitation works of defense / coastal protection; - Monitoring of the evolution of coastal systems - Inventory, mapping and evaluation of resources and sedimentary reserves (sand) on the continental shelf - Plans addressed to risk areas, particularly where there is erosion / retreat of the shoreline - Rehabilitation of degraded urban areas in Domain Hydride 	<p>The plan include 3030 action with a total cost of 41 thousand million Euros:</p> <ul style="list-style-type: none"> - Coastal defense and risk areas: 98 actions, 211 thousand million Euros - Studies, management and monitoring: 23 actions, 16 thousand million Euros - Plans and regeneration projects: 182 actions, 189 thousand million

Policy	Objectives	Priorities	Consequences for maritime activities and impacts on sustainable growth	Investment and funding
			<ul style="list-style-type: none"> - Rehabilitation of degraded natural areas <p>Thus, given the general and strategic approach of the plan, it will improve the physical conditions of the coastal areas having positive consequences to all maritime activities in particular:</p> <ul style="list-style-type: none"> - The improvement in the security (goods and persons) will have an impact on the maritime transport, tourism and ports - The rehabilitation of degraded areas will mainly improve the quality of the tourism - Actions to reduce erosion risks will also - The improvement of the marine environment will improve MAEs such as fishery, fresh water, marine mining, agriculture on saline soils or aquaculture - In general, ensuring and improving access to natural resources marine will also boost technological development (blue biotechnology, energy...) 	Euros
National Strategic Plan for Tourism 2013-2015 (<i>Plano Estratégico Nacional do Turismo - PENT 2013-2015</i>)	<p>Quantitative targets for 2013 – 2015:</p> <ul style="list-style-type: none"> - Number of night spent: growing by an annual average of 3.1% the main engine for growth and continuing the diversification of demand - Revenues: growing 6.3% over the same period by increasing the average consumption of the tourist in Portugal, only possible with the skills and innovative offer of experiences. 	<p>The Plan puts the focus on the development of 10 touristic products. The ones related with the blue economy are:</p> <ul style="list-style-type: none"> - Add value to the “sun and sea” model, improving resource conditions, equipment, services and surrounding landscape - Develop coastal tourism, mainly recreational boating and surfing 	<p>The following maritime related-activities are foreseen:</p> <ul style="list-style-type: none"> - Enhance environmental quality and accessibility of beaches - Stimulate the add value to “sun and sea” tourism with complementary activities; - Development and revitalization of the Algarve as an excellence sun and sea destination - Accessible tourism - Promote surf beaches - Improvement of the marinas (infrastructures, management) - Stimulate the development of nautical activities - Organize and promote international nautical events and competitions <p>With all those activities, it is expected that the Plan will have positive consequences for coastal tourism.</p>	The budget has not been designated

The following evidence indicators to identify successful good practices will be analysed depending on the specific context of the individual good practice identified.⁹⁷ The assessment presents an expert opinion as to how far the targets and the objectives of the particular good practice have been met and in how far those have been met.

⁹⁷ Provided that data is available to identify indicators of success of the good practice (evidence for impact).

Table 17 Assessment of good practices derived

Good practice	Assessment
<p>National Maritime Strategy 2013-2020</p>	<p>The approach followed by Portugal in its National Maritime Strategy aligned with global trends, mainly at a European level, that state that the management and governance of oceans and coastlines, included human-related activities, should be seen in an integral way in order to ensure the effective coordination of maritime affairs and guarantee sustainable blue growth.</p> <p>Portugal, together with France and Ireland, has been one of the first countries putting in place this vision through it a cross-cutting maritime strategy, thus becoming one of the most active countries regarding the European integrated maritime policy.</p> <p>Although the strategy has not been implemented yet - impact and consequences cannot be evaluated yet – it is already possible to assess that a strategy with such characteristics can be defined as a best practice for other countries.</p>

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1. Annex I – Detailed description of the sources on maritime economic activities

The following table refers to section 1.1 “Overview of relevant maritime economic activities” (table 1). It provides an overview of relevant figures sourced from Eurostat, Official national statistical sources or alternative sources (as indicated by the columns of table 1). Appropriate references are supplied.

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Table 12 – Selection table of the most relevant figures and detailed references

		Eurostat			Official National Statistical Sources			Alternative sources (outside official statistics)			Other indicators		
Maritime economic activity		GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	SMEs	Enterprises	Source & reference year + notes
0. Shipbuilding													
0.1	Shipbuilding (excl. leisure boats) and ship repair	78.4	3,472	Eurostat, data for 2010	80.41	3,472	National Statistical data 2010, where not possible Eurostat, data for 2010	113	4,400	Estratégia Nacional para o mar 2013,2020 (Ref. year 2010)		349	National Statistical data 2010, where not possible Eurostat, data for 2010
0.2	Construction of water projects	83.60	1,520	Eurostat, data for 2010	85.36	1,520	National Statistical data 2010, where not possible Eurostat, data for 2010					54	National Statistical data 2010, where not possible Eurostat, data for 2010
1. Maritime transport													
1.1	Deep-sea shipping	121.73	1,758	Eurostat, data for 2010	127.51	1,821	National Statistical data 2010, where not possible Eurostat, data for 2010	128	2,700	Estratégia Nacional para o mar 2013,2020 (Ref. year 2010)		108	National Statistical data 2010, where not possible Eurostat, data for 2010
1.2	Short-sea shipping (incl. Ro-Ro)	189.59	2,739	Eurostat, data for 2010	198.60	2,836	National Statistical data 2010, where not possible Eurostat, data for 2010					168	National Statistical data 2010, where not possible Eurostat, data for 2010
1.3	Passenger ferry services	35.58	698	Eurostat, data for 2010	15.86	457.6	National Statistical data 2010, where not possible Eurostat, data for 2010					91	National Statistical data 2010, where not possible Eurostat, data for 2010
1.4	Inland waterway transport	0	0	Eurostat, data for 2010	0	0	National Statistical data 2010, where not possible Eurostat, data for 2010					-	National Statistical data 2010, where not possible Eurostat, data for 2010
2. Food, nutrition, health and eco-system services													

2.1	Catching fish for human consumption	834.39	47,050	JRC (fishing), Eurostat (fish processing, wholesale & retail), PRODCOM (share of human/animal), data for 2010	750.39	40,695.58	National Statistical Data 2010, JRC (fishing), Eurostat (fish processing, wholesale & retail), PRODCOM (share of human/animal), data for 2010	367	11,300	Estratégia Nacional para o mar 2013,2020 (Ref. year 2010)	11,872	National Statistical Data 2010, NACE 03.11 for fishing, Eurostat (fish processing, wholesale & retail), PRODCOM (share of human/animal), data for 2010
2.2	Catching fish for animal feeding	4.51	281	JRC (fishing), PRODCOM (share of human/animal), data for 2010	12.27	751.41	National Statistical Data 2010, where not possible JRC (fishing), PRODCOM (share of human/animal), data for 2010				44	National Statistical Data 2010, where not possible JRC (fishing), PRODCOM (share of human/animal), data for 2010
2.3	Marine aquatic products	6.30	2,085	JRC, data for 2010	5.789	601	National Statistical Data, 2010	5.8	600	JRC, data for 2010	1,565	Estadísticas da Pesca, INE
2.4	Blue biotechnology	n/a	n/a		n/a	n/a		n/a	n/a		n/a	Sector not visible in Eurostat or National Statistical Office
2.5	Agriculture on saline soils	119.68	24,604	Eurostat, data for 2010 (agriculture in coastal NUTS-2 and percentage saline soils.	119,68	24,604.31	National Statistical Data 2010 completed with Eurostat, data for 2010 (agriculture in coastal NUTS-2 and percentage saline soils.				-	National Statistical Data 2010 completed with Eurostat, data for 2010 (agriculture in coastal NUTS-2 and percentage saline soils.
3. Energy and raw materials												
3.1	Offshore oil and gas	0	0	Eurostat, data for 2010 (zero values). No data on NACE 09.10.	0	0	Eurostat, data for 2010 (zero values). No data on NACE 09.10.				1	

3.2	Offshore wind	n/a	n/a	n/a	n/a					0.017 ²	* http://ec.europa.eu/maritimeaffairs/documentation/studies/document/economic_effects_maritime_spatial_planning_annex_en.pdf ** European Wind Energy Association (2009), Pure Power – Wind energy targets for 2020 and 2030
3.3	Ocean renewable energy	n/a	n/a	n/a	n/a					1,805.55 ⁹⁸	Wave Energy Centre Portugal Patent list: Ecorys (2012) Blue Growth report. http://en.wikipedia.org/wiki/Wave_power#Wave_farms
3.4	Carbon capture and storage	n/a	n/a	n/a	n/a			n/a	Sector not visible in Eurostat. No alternative sources found for Portugal		Sector not visible in Eurostat or National Statistical Office
3.5	Aggregates mining (sand, gravel, etc.)	n/a	n/a	n/a	n/a			0,0	No offshore aggregates mining in Portugal according to UEPG		Sector not visible in Eurostat or National Statistical Office
3.6	Marine minerals mining	n/a	n/a	n/a	n/a			n/a	No data found centrally		Sector not visible in Eurostat or National Statistical Office
3.7	Securing fresh water supply (desalination)	n/a	n/a	n/a	n/a			n/a	No data in Global Water Insights on sea & brackish water share for Portugal		Sector not visible in Eurostat or National Statistical Office
4. Leisure, working and living											

⁹⁸ Future projection of employment figure for 2020. Source : http://www.wavec.org/content/files/Vantagens_competitivas_de_Portugal.pdf

4.1	Coastal tourism	1,001.43	48,877	Eurostat, data for 2009 (data for NACE 55.10, 55.20, 55.30, 55.90)	1.024,15	49,280.15	National Statistical Data 2010 completed by Eurostat, data for 2009 (data for NACE 55.10, 55.20, 55.30, 55.90)	1,300	48,800	Estratégia Nacional para o mar 2013,2020 (Ref. year 2010)	2,028	National Statistical Data 2010 completed by Eurostat, data for 2009 (data for NACE 55.10, 55.20, 55.30, 55.90)
4.2	Yachting and marinas	n/a	n/a		n/a	n/a	n/a				n/a	Sector not visible in Eurostat or National Statistical Office
4.3	Cruise tourism	38.65	758	(low estimate) Eurostat, data for 2010	17,23	497.14	(low estimate) National Statistical Data 2010	101	3,600	Estratégia Nacional para o mar 2013,2020 (Ref. year 2010)	98	(low estimate) National Statistical Data 2010
		170	7,300	(high estimate) European Cruise Council, data for 2010	170,0	7,300	(high estimate) European Cruise Council, data for 2010					
5. Coastal protection												
5.1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats	n/a	n/a		n/a	n/a		6,3	100	Eurostat COFOG, data for 2010; PRC the Economics of Climate change, data for 2008		Sector not visible in Eurostat or National Statistical Office
								31,900	500	Estratégia Nacional para o mar 2013,2020 (Ref. year 2010)		
6. Maritime monitoring and surveillance												
6.1 /6.2	Traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods,	n/a	n/a		n/a	n/a			n/a	No data found centrally. Problem of different definitions applied across sources & countries.		Sector not visible in Eurostat or National Statistical Office
6.3	environmental monitoring	n/a	n/a						n/a	No data found centrally on this MEA		
Total												

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

Table 19 provides a detailed overview of the Compound Annual Growth Rate (CAGR) of the maritime economic activities. This is based on the last three years (2008, 2009, and 2010). The data sources follow the same logic as for table 1, i.e. includes Eurostat, Official National Statistical Sources and Alternative Sources (as far as data is available). The most valid CAGR % for each maritime economic activity will be presented in table 7 (chapter 2.2. ranking order for the 7 fastest growing maritime economic activities over the past 3 years).

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Table 13 – Table of CAGR of Eurostat, Official National Statistical Sources and Alternative Sources

Maritime economic activity		Eurostat			Alternative sources (outside official statistics)		
		CAGR (%) GVA	CAGR (%) Employment	Source & Reference year	CAGR (%) GVA	CAGR (%) Employment	Source & Reference year
0. Shipbuilding							
0.1	Shipbuilding (incl. leisure boats) and ship repair	-5,3%	-9,3%				
0.2	Construction of water projects	17,07%	10,67%				
1. Maritime transport							
1.1	Deep-sea shipping	-13,46%	-5,79%				
1.2	Short-sea shipping (incl. Ro-Ro)	-9,59%	-1,58%				
1.3	Passenger ferry services	60,57%	34,35%				
1.4	Inland waterway transport	n/a	n/a				
2. Food, nutrition, health and eco-system services							
2.1	Catching fish for human consumption	1,35%	-0,57%				
2.2	Catching fish for animal feeding	727,08%	753,08%				
2.3	Marine aquatic products ⁹⁹	205,15%	-5,05%				
2.4	Blue biotechnology	n/a	n/a		No data available. It is an emerging sector in Portugal made up by small start-ups with a negligible impact in terms of GVA and employment. This sector is estimated to grow 5% per year ¹⁰⁰		
2.5	Agriculture on saline soils	-0,86%	-5,82%				
3. Energy and raw materials							
3.1	Offshore oil and gas	n/a	n/a		No data available. There is not any certainty about the existence of fossil fuels in the maritime basin. Explorations are taking place.		
3.2	Offshore wind	n/a	n/a		No data available. Those sectors are in a pre-commercial phase with negligible impacts in terms of GVA and employment.		
3.3	Ocean renewable energy	n/a	n/a				
3.4	Carbon capture and storage	n/a	n/a				
3.5	Aggregates mining (sand, gravel, etc.)	-13,71%	-11,74%				
3.6	Marine minerals mining	n/a	n/a				
3.7	Securing fresh water supply (desalination)	n/a	n/a		No data available. The sector is rather small with only 3 desalination plants.		
4. Leisure, working and living							
4.1	Coastal tourism	n/a	-70,74%				
4.2	Yachting and marinas	n/a	n/a				
4.3	Cruise tourism	47,84%	23,70%				
5. Coastal protection							
5.1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats	n/a	n/a				
6. Maritime monitoring and surveillance							
6.1/ 6.2	Traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods,	n/a	n/a				
6.3	environmental monitoring	n/a	n/a				

99 Rates calculated using GVA and employment for NACE code 3.21 ((Saline and brackish waters aquaculture), source : National Statistics Institute Portugal.

100 Bluegrowth for Portugal, Uma visão empresarial da economia do mar, Cotec Portugal, November 2012

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