

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

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DRAFT

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

Note:

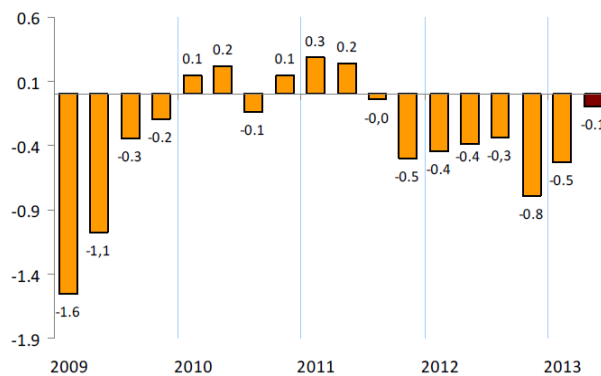
Further comments (postings) were received from Spanish stakeholders via the Maritime Forum website from Foro Marítimo Vasco (13th September 2013), the Organización de Productores Piscicultores (5th September 2013) and Technalia (4th Sept. 2013). These comments have not yet been elaborated in the present version, but will be addressed in the next revision of the draft final country paper (following deadline for submitting comments on 15th November 2013).

0. General overview

Country overview:

The economic crisis has marked a period of serious economic decline in Spain, reversing the economic expansion that was observed in the receding period. In the first quarter of 2013 a downturn of - 0.5% GDP was registered (total GDP value of € 255 billion).¹ Fiscal adjustments policies and the bank system restructuring process have had important consequences on the national demand, counterbalanced by a timid increase in exports.

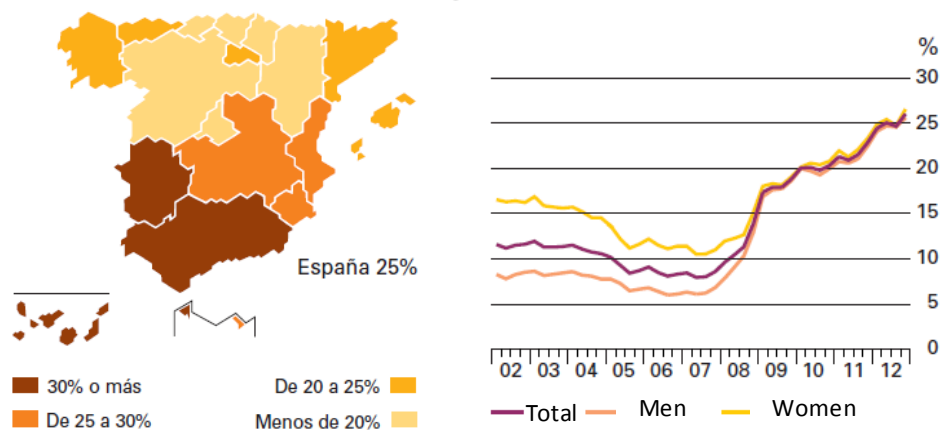
Picture 1: Gross Domestic Product (quarter-on-quarter growth rates)



Source: European Central Bank, Statistical National Office and Bank of Spain.

The population of the country has steadily decreased since the beginning of the economic crisis mainly due to the tight pressures on the labour market forcing the exodus of emigrants and the return of immigrants. On 1st of January 2013, the population of the country amounted to 46,704,314, with an unemployment rate of 27.16% as published by the Statistical National Institute.²

Picture 1: Unemployment figures for 2012



Source: INE

At present, Spain's Structural Reform and Economic Policy Programme focusses on unemployment, one of the main challenges of the country for prospective years along with productivity, flexibility and

¹ Statistical National Office, Spain. Data: 1st quarter 2013.

² Statistical National Office, Spain.

competitiveness. Traditionally, stemming from an agrarian economy specialised in olive oil and wine production, the industry has developed since 1960 in diverse sectors, including textile, food-processing, machinery, and iron and steel. However, the key contributors to the Spanish economy are the automotive industry and tourism. Some 1% of GDP in Spain stems from fishery activities, representing a GVA of € 2 billion. Compared to the previous year (2010), this presents a 9% increase. Aquaculture formed some 30% of these fishery activities. For the same period, fishery employed 37,495 people facing high unemployment and labour market pressure that, accompanied by the ageing of the occupied population (average age of 40 years old) and the lack of generational replacement, sheds some lights on the future prospects of this maritime economic activity. Nonetheless, other sea related activities are reporting positive trends, such as maritime transport and the coastal tourism. The strategic geographic location of Spain, as a gateway to the Southern European Hemisphere and EU neighbouring regions (Union for the Mediterranean) makes it a perfect logistic platform towards the African and the South American continents. At this regard, maritime transport and port activities represent for Spain around 1.1% of GDP, and provide around 35,000 direct and an additional 110,000 indirect jobs³.

Tourism, in particular the Mediterranean coastal tourism and cruise, are important sources of income for the country: the total number of nights spent by both residents and non-residents in Spain during 2012 was 382,670,976, of which 79% were coastal⁴. Employees in accommodation and food services activities amount to 16,635 in the 1st quarter of 2013⁵, although the figure is shrinking since 2011. Besides, nearly 30% of positions are temporary⁶ and follow season-bound fluctuations with slight increases during the summer period. Maritime passenger transport has gained in significance for the Spanish economy, in part explained by the increasing relevance of cruises in this market area with a total of € 1.255 m billed in 2012⁷.

The shipbuilding industry, currently in crisis, is one of the main maritime traditional activities in Spain, at the leading edge in the international markets and in clear competition with Asiatic countries. During the period 2008-2011, the annual billing amounted to € 3,000 m and provided 8,000 direct and 17,000 estimated indirect jobs⁸. Nonetheless, the decreasing demand and the low levels of order bookings in the last year show that the sector is in decline

Coastal regions:⁹

Spain has the largest coastline of all EU countries, with a total of 7,876 km¹⁰ of sea and oceanic water¹¹ bordering the Iberian peninsula and the Canary and Balearic Islands;¹² this equals to 12.12% of the European Coastline¹³. The Economic Exclusive Zone (EEZ) covers 551,874 Km² for the continental mainland

³ Puertos del Estado.

⁴ Eurostat.

⁵ Eurostat.

⁶ Eurostat.

⁷ Informe anual de contribución económica 2013. Puertos del Estado.

⁸ ICEX.2001. España Sector de Construcción Naval.

⁹ 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: 1) The region has a sea border, 2) The region has more than half of its population within 50 km from the sea, that is based on the GEOSTAT 2006 population grid. See also: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:Coastal_region.

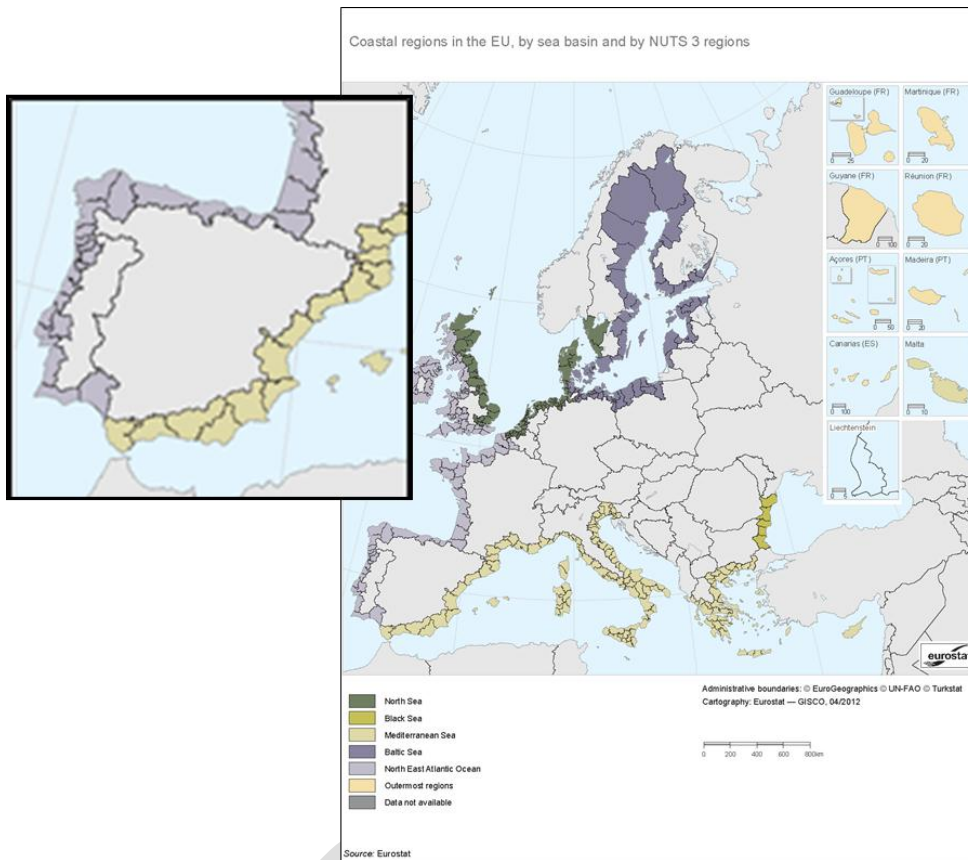
¹⁰ The World Resources Institute data, spanish coastline is 8000km, using and 50km interval scale.

¹¹ Statistical National Office, Spain. Data : 2008. Alternative data from the 2012 Annual Report of the Ministry of Agriculture, Food and Environment states that the Spanish coastline is of 10,250 km², measured according to the procedure described by the Spanish Coastal Law. This difference could be attributed to the fact that the Spanish Coastal law determines the coast borderline and delivers cartography drawing of mentioned line at scale 1:1000. http://www.magrama.gob.es/es/ministerio/servicios/publicaciones/10-II-F-Costas_y_medio_marino_tcm7-286714.pdf - page 639

¹² However, this figures will have to be treated with caution due to the coastline paradox. It states that "...a coastline does not have a well-defined length. Measurements of the length of a coastline behave like a fractal, being different at different scale intervals (distance between points on the coastline at which measurements are taken). The smaller the scale interval (meaning the more detailed the measurement), the longer the coastline will be.[Note 1] This 'magnifying' effect is greater for convoluted coastlines than for relatively smooth ones." See also: http://en.wikipedia.org/wiki/List_of_countries_by_length_of_coastline

¹³ European Union coastline is around 66.000 Km.

and 455,397 Km² for the Canary Islands¹⁴. Coast population living at 10km from sea is 13,000,000 which represents 33.2% of total population¹⁵.

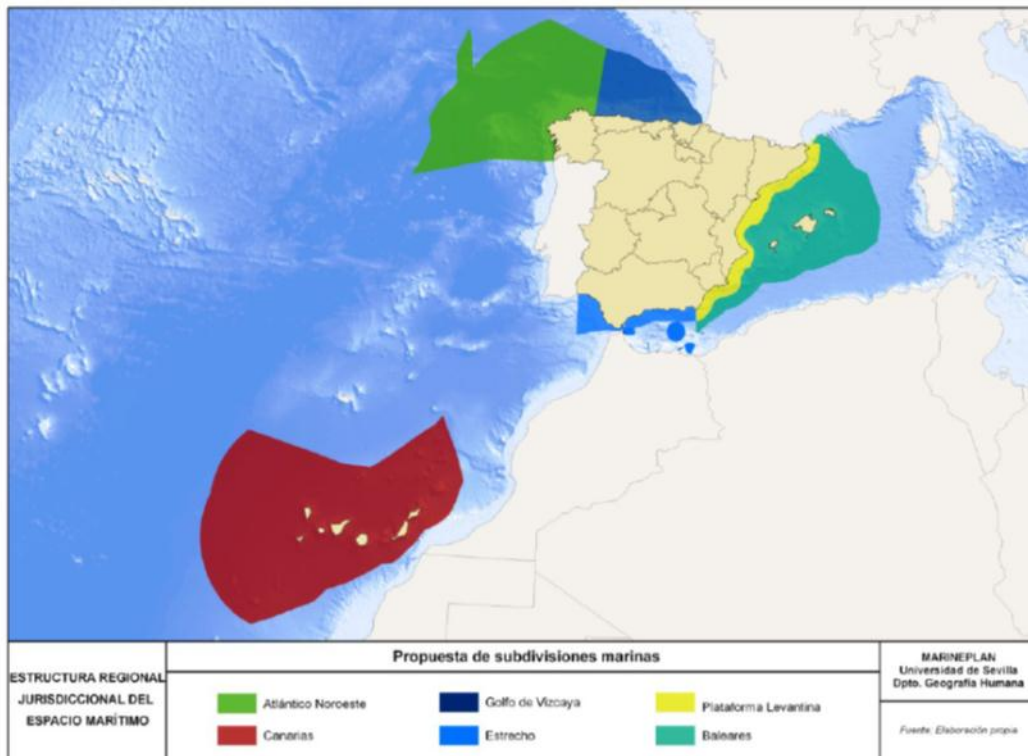


Its mainland is bordered to the south and east by the Mediterranean Sea except for a small land boundary with Gibraltar; to the north and north east by the Bay of Biscay; and to the west and northwest by the Atlantic Ocean. It is one of the three countries on the Atlantic Arc (along with Morocco and France) to have both Atlantic (4,419 km) and Mediterranean coastlines (3,457km).

¹⁴ Sea Around Us Project, The Pew Institute. www.searoundus.org

¹⁵ Landscan. Coastal population living at 20km from sea is 16,100,000m which is 41.1% of the total population.

Picture 3: Maritime regional subdivision in Spain



The maritime-regional subdivision of Spain shows the different regional areas exposed to the sea, meeting different levels and intensities of maritime activities¹⁶.

Golf of Biscay - Cantabria

The Gulf of Biscay-Cantabria, situated in the north of the country (Dark Blue), is characterised by an important and specialised level of innovation and technological development associated to shipbuilding and R&D in maritime sciences. The regions of Asturias, Cantabria and País Vasco concentrate the largest number of around 23.3% of the national shipbuilding companies. In general the Atlantic region has also a more relevant role, comparing to the Mediterranean arc, in terms of fishing and aquaculture and offshore renewable energies. On the other hand, the offshore oil and gas reserves and, above all, the touristic activities are more important in the Mediterranean.

At a regional level, the maritime economy represents 2.5% of the Basque Country's GDP, with a total value of € 2,100 M and 17,000 employers. The Port of Bilbao moved around 33,3415 Million Tonnes so far this year and is ranked the fourth Port in term of traffic activity at the national scale (data June 2013)¹⁷.

Northwest Atlantic

The Northwest area, covering mainly Galicia (Green), is characterised by its biological *richness*, intensive fishing and aquaculture activity, maritime transport traffic (Port of Vigo) and shipbuilding industry (15.3% of the National Shipbuilding Companies). The Galician Fleet capacity represents 6% of the total fleet of the UE, and is the largest of Spain. Fishing production raised to €182 M in 2006, and the percentage of employment in the field of extractive fishing if compared with national levels is 45,5% in and 65% in aquaculture. On the

other hand, Galicia accounts for 87% of Shellfish state Affiliates according to the Ministry of Agriculture, Fishery and Food (2006).

Andalucía – Straits area The autonomous region of Andalucía covers the Straits area (Light Blue), distinguished by its geostrategic location, biological richness of the marine ecosystem, traditional fishing development and aquaculture potentiality. Andalucía ranks first in terms of national shipbuilding companies. The fishing production and processing industry is meeting a reconversion that has produced a drop in its activities during the last years towards the development of aquaculture. Notwithstanding, fishing production raised to €44M and Fishing Processing €184 M in 2006. On the other hand, the Port of Algeciras is the main port of Spain in terms of Maritime traffic volume, and the first in the Mediterranean Region, steadily increasing the cargo transport and cruise tourism in the last years and becoming the third port at the national scale (data June 2013)¹⁸.

Levantine platform

The Levantine platform covering the South-East regions of Murcia, Valencia and Catalunya is characterised by a potent port system (Barcelona, Valencia, Cartagena and Tarragona), accompanied by a developed tourism infrastructure and industry sector established along the coast. Cruise tourism is increasing in the region, mainly in Barcelona, Valencia, Alicante and Cartagena, sharing the space with marinas and maritime leisure sports. On the other hand, fishing activities are exposed to the increase of industrial emissions and wastes.

Canary Islands

Spanish Islands are marked by a strong economic dependence to the sea and coastal tourism. The Canary Islands (Red), traditionally a European touristic destination is also increasingly meeting high standards of maritime traffic, given its intrinsically characteristics as an island, its geographical distance with the Peninsula and its geographic location at the center of the African, South American and European Continents. The ports meet an intensive activity in terms of fishing, fuelling and provisioning of vessels, cargo traffic, ship repair and cruise destinations. In this sense the Port of Las Palmas has experienced an extraordinary increase in terms of maritime traffic, representing 22,34% of the national volume in 2007. The biodiversity and ecosystem of the maritime protected areas are also the scene for the development of leisure and sport activities such as diving, cetaceans sighting, surf, windsurf, etc. From its side, the Balearic Islands has a predominant position in the country and the EU Zone as a destination for international tourism and recreational boating, that generates important revenue sources for the Island. Intensive traffic is due to cruise shipping and recreational boating that let the entrance of a total of 294.118 nautical tourists in 2007, thus generating an income amount of € 527 M. The region has the highest number of moorings and marinas of the country.

1. Marine and maritime economic activities

1.1. Overview of relevant maritime economic activities in a Member State

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

The analysis is carried out in two steps:

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

Quantitative overview of maritime economic activities

Table 1 provides an overview of the most reliable data for each of the maritime economic activities¹⁹. More detailed information from all relevant sources is provided in **Annex I**. Annex I provides further explanation on the methodological assumptions and the underlying definitions that have been used. A separate Methodology Annex provides further explanation on the methodological assumptions and the underlying definitions that have been used.

¹⁹ The maritime economic activities are consistent with the activities discerned in the Blue Growth Study. In deviation to his study Shipbuilding and the Construction of Water projects are added as separate economic activities.

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

Maritime economic activity		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	1,391.5	24,122	1,018	Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations	Eurostat, data for 2010
0.2	Construction of water projects	944,5	19.813	135	Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations	Eurostat, data for 2010
1. Maritime transport						
1.1	Deep-sea shipping	621,1	8,864	1,093	Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations	Eurostat, data for 2010. No data on NACE 77.34 and 52.22 available in Eurostat
1.2	Short-sea shipping (incl. Ro-Ro)	649,1	9,262	1,142	Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations	Eurostat, data for 2010. No data on NACE 77.34 and 52.22 available in Eurostat
1.3	Passenger ferry services	353,0	5,582	622	Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations	Eurostat, data for 2010. No data on NACE 77.34 and 52.22 available in Eurostat
1.4	Inland waterway transport	4,5	94	39	Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations	Eurostat, data for 2010. No data on NACE 77.34 and 52.22 available in Eurostat
2. Food, nutrition, health and eco-system services						
2.1	Catching fish for human consumption	3,720,0	129,230	6,377	Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations	JRC (fishing), Eurostat (fish processing, wholesale & retail), PRODCOM (share of human/animal), data for 2010
2.2	Catching fish for animal feeding	11,5	454	16	Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations	JRC (fishing), PRODCOM (share of human/animal), data for 2010
2.3	Marine aquatic products	130,0	22,882	4,985		-JRC, data for 2010 -Agricultura y pesca (Informe sectorial 2013 - Barcelona Activa)
2.4	Blue biotechnology	n/a	n/a	n/a		Not available in Eurostat. No alternative data on Spain found centrally
2.5	Agriculture on saline soils	4,573.4	406,946	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	0	n/a	113	Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations	Sector not visible in Eurostat, nor official national statistical sources
3.2	Offshore wind	n/a	n/a	n/a		Sector not visible in Eurostat.
3.3	Ocean renewable energy	n/a	n/a	n/a		Sector not visible in Eurostat. Report 2010: « Impacto socioeconómico y climático de las energías renovables »
3.4	Carbon capture and storage	n/a	n/a	n/a		Sector not visible in Eurostat.

3.5	Aggregates mining (sand, gravel, etc.)	0.0	0	1,152	Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations	No offshore aggregates mining in Spain according to UEPG
3.6	Marine minerals mining	n/a	n/a	n/a		Sector not visible in Eurostat.
3.7	Securing fresh water supply (desalination)	n/a	n/a	n/a		Sector not visible in Eurostat. Global Water Insights, data for 2010 based on production share of sea & brackish water & Eurostat NACE 36.00
4. Leisure, working and living						
4.1	Coastal tourism	6,921.0	216,568	11,737	Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations	Eurostat, data for 2010 (data for NACE 55.10, 55.20, 55.30, 55.90)
4.2	Yachting and marinas	n/a	n/a	2,359		Sector not visible in Eurostat.
4.3	Cruise tourism	232.1	3,670	409	Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations	(low estimate) Eurostat, data for 2010. No data on NACE 77.34 and 52.22 available in Eurostat Further indicators: (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	49.8	498	n/a		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,	n/a	n/a	n/a		Sector not visible in Eurostat.
6.3	environmental monitoring	24.2	n/a	At least 7		EMODNET Sector not visible in Eurostat.

Review of maritime economic activities in Spain

Shipbuilding and water projects

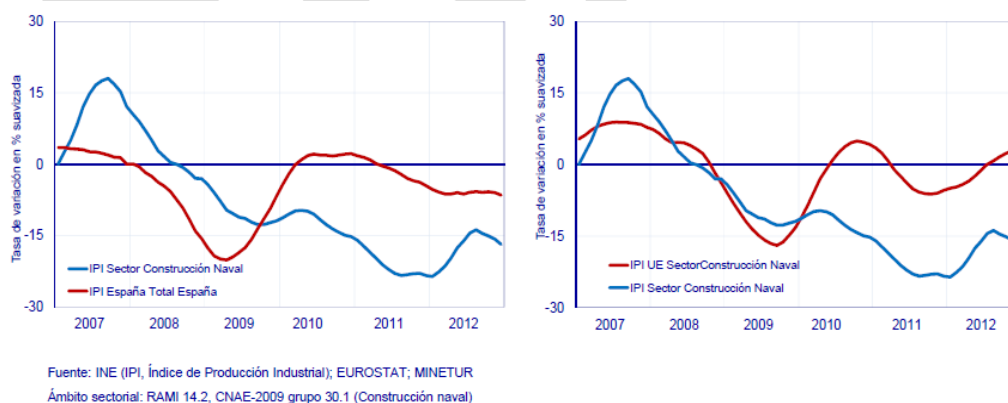
Shipbuilding (incl. leisure boats) and ship repair²⁰

Commercial and naval shipbuilding

Traditionally, the shipbuilding sector in Spain has been an emblematic industry²¹ and economic engine in certain regions (mainly in the Northwestern and Cantabrian coast, as well as Andalusia). It was forced into conversion in the 80s, as a response to the growing internationalization of the shipbuilding market (civil and military) and following European policies and standards. Within the European naval framework, initiated in the 1970s total convergence with competitiveness principles and horizontal norms applicable to other industrial sectors is pursued, limiting the scope of state economic aids to the shipbuilding sector. At this regard the “Gerencia del Sector de la Construcción Naval” created in 1984 is commissioned to the steady and coordinated reconversion of the Spanish shipbuilding industry and the elaboration of the assessment reports on the concession of state aids in accordance to the European naval framework.

New business strategies involved internal re-organisation and innovative access to finance mechanisms to reduce costs, to achieve maximum independence in process and technology productivity, labour specialisation and maintenance of know-how. Besides, it created the incentive to instal a more integrated production network to facilitate the relationships between the industry and the supplier side. The recent economic crisis, and the New European Naval Framework adapted in 2011 which establishes the end of State Aids in the sector in the time-frame 2012-2013, has accelerated the process of consolidation and adjustment by a near halt of recruitment in 2011. As a consequence, during that same year, only new orders were made for the production of an amount of 21,793 CGT. The backlog in the fourth quarter amounted to only 175.427 CGT, which represents a fall in the portfolio of almost 30% over 2010. Following the same trend, the Industrial Production Index has met a significant decrease both in comparison with the whole of the Spanish industry IPI and the European Shipbuilding sector IPI, thus stating that the real production output of the Shipbuilding sector is below EU standards. The following graph shows the evolution during the last years.

Graph 2: Evolution of the Industrial Production Index (in terms of annual variation rate)



Source: National Statistical Office , Spain.

The status quo of the Spanish shipbuilding industry makes that the industry is essentially export-oriented, based on high-tech and R&D . It provides over 25,000 jobs, both in the public and private shipyards and in the supply and equipment industry, services, and research centers, most of them requiring high

²⁰ Source: LA SITUACIÓN DE LA CONSTRUCCIÓN NAVAL EN ESPAÑA PERSPECTIVAS EN UN MERCADO GLOBAL, ALFREDO SUAZ GONZÁLEZ, Secretario Técnico Gerencia del Sector de la Construcción Naval

²¹ Although the naval sector represents less than 0,1% of GDP in the national economy, the sector is emblematic due to the long tradition and its positive spill over in the whole of the industry sector, in terms of its export capacity, competitiveness, and technology development.

qualification skills. Today, it presents a key economic sector in several Spanish regions, due to its economic and employment impact: between 2008 and 2011, shipbuilding in Spain assumed an annual production capacity of 300,000 CGT²², with an average turnover exceeding € 3,000 m.

In terms of employment, it directly employed some 8,000 workers (3,000 in private shipyards and 5,000 in public²³). Besides, the shipbuilding industry generates around 17,000 jobs indirectly, notably in the supply industry. The current production is specialised in the construction of ferries, dredges, tugs, offshore vessels, vessels equipped with earthquake and natural disasters detection systems. Besides, some ocean and marine research as well as general cargo ships.

Currently, the shipbuilding sector in Spain is composed of two types of firms: on the one hand, shipyards with better educated labour force, but of an advanced age. In these shipyards, employment is rather stable, despite market labour pressures and potential licensing in the future; on the other hand, the supply industry companies, which usually employ young workers with little training and very unstable employment, dependent on the economic cycle. In auxiliary companies, most of which are SMEs, as in shipyards, strategies are focusing in technological improvement, more sophisticated and complex ship construction and decreasing delivery times, in order to bring this sector to the requirements and demands established by the highly internationalized and competitive market. The sector encompasses currently a total of 307 companies according to the Ministry of Industry, Tourism and Commerce²⁴. The main companies are the state Company Navantia, and private companies Astilleros Gondán, Astilleros Armón and Navales Paulino Freiro.

Initially oriented to the military sector, Navantia has developed several ambitious Projects and Programmes for the Spanish Navy such as the frigate F-100, the amphibious assault ship LHD "Juan Carlos I", the combat supply ship "Cantabria" and currently the submarine S-80 and the construction of sea-going vessels. It has also involved in the design and final construction of the first diesel electric submarine of the world the S-81 Isaac Peral and the first gas propulsion vessel, the aircraft carrier Príncipe de Asturias. Currently the company has a major project with the Australian Royal Navy, and it has sell military vessels to Norway, Venezuela, Malaysia, Chile, India, Thailand, and Egypt. Due to the economic constraints, Navantia is investing in new projects seeking the diversification of activities from shipbuilding and repair towards the field of offshore wind energy. At this regard the state company is currently developing 3 high-tech projects, such as the design and construction of steel structures for the improvement of wind power plants (SEAMAR project), the design of floating-platforms and production procedures for its commercialisation (FLOATGEN project), and the development of floating- platform and offshore wind turbine for ocean wind speed measurement and prediction.(IN-OFF MET project).

Construction of leisure boats

During the period 2002-2006 the sector has met a stabilised economic situation, recording an accumulated growth rate of 22%²⁵. In 2008, the number of leisure boats was 219,475²⁶, meeting a severe decrease in comparison with previous years that recorded a fall on the number of registered boats of 6.1% less than the previous year. Nonetheless, the national market share contraction is minor if compared with leisure boats' imports, this is imports diminished 5 points vs 3 points of the national production. At this regard it is important to mention that motorboats, the principal product of the sector in terms of sales, have registered a decrease of 8.8%, although their share in the market is still in 58%. This means that the demand of

²² CGT: Compensated Gross Tons

²³ The high number of public jobs in the shipbuilding sector is due to the characteristic of the major shipbuilding enterprise, NAVANTIA. The company is publicly owned and employed around 5.000 employees in 2009. NAVANTIA is specialised in military shipbuilding. Since 2005 it is the only public enterprise as a result of the privatisation process affecting formerly state-owned shipbuilding companies. See also: www.navantia.es.

²⁴ Minetur, May 2013 : <http://www.minetur.gob.es/es->

ES/IndicadoresyEstadisticas/Presentaciones%20sectoriales/Construcci%C3%B3n%20naval.pdf

²⁵ El sector Náutico en España 2010, Asociación de Náuticas de Recreo de España.

²⁶ INNOVAMAR.

national boats is still confident on the quality of national products.

Construction of water projects²⁷

Spain has a total of 1,200 reservoir lakes spread all over the territory with a total capacity of 55,326 hm³.

Since 2000, the number of new reservoir lake constructions has been 43, which constitutes 2.94% of the total reservoir lakes of the country. This figure represents a drastic shift from the previous decenny, where water construction projects mounted to 181: this is 4 times more than the previous period. In contrast, rehabilitation and maintenance works are increasing, with 45 lakes under revision. As far as in 2010, this subsector had a GVA of 944.5 millions of euros and employed over 19,800 people.²⁸

According to recent figures (2011), € 469 m have been invested in infrastructure and port capacity. The A Coruña Port has concentrated the largest amount invested (21%), followed by the ports of Balearic Islands (9,6%), Barcelona and Valencia (9% each).

Maritime transport

²⁷ http://www.magrama.gob.es/es/agua/temas/delimitacion-y-restauracion-del-dominio-publico-hidraulico/Obras_de_nuevas_presas_en_Espa%C3%B1a_en_ejecuci%C3%B3n_-_Viernes_15_de_junio_tcm7-212129.pdf

²⁸ No data is available regarding the share of the NACE code related to the sea. The source: Statistics Ministerio de Fomento: does not provide any information on Maritime water project construction. The Information available from regional ports is also limited: - Puertos del Estado Annual Report 2011- Investment expenditure of Works, type of Works, etc. (Pág 115). Information regarding employment is not available from this source, though.

Deep sea and Short Sea shipping Spain has 22 major ports, which are included or adjacent to any of the corridors that will be interconnected through the European transport networks. The total network traffic of these ports exceeded 375 million tons in 2010. 75% of these goods, more than 283 million tons, were shipped to ports located in the Mediterranean and South Atlantic, while the remaining 25%, about 94 million tons, were registered at ports in the front of Biscay and North Atlantic.²⁹

Picture 1: Ports of Spain



Source: Puertos del Estado (www.puertosdeestado.es)

At this regard, the Maritime Motorway (Marco Polo Programme) linking Gijón to Nantes-St. Nazaire, was inaugurated in 2010, aiming to switch to greener transport modes including among others, the creation of Sea-Routes. In 2013, investment will be put in place to extend the Atlantic Maritime Motorway to Vigo City, in Galicia. On the Mediterranean coastline, the Algeciras Port Hub has intensive activity and is considered by the UNCTAD as the Mediterranean Port Hub due to its reliable and sustainable hinterland connections, but also its capacity and openness to Mediterranean countries by sea. On the other hand, the port hub of Las Palmas, at the centre of the main maritime routes merging Europe, Africa and South America has enormous potentials in terms of cargo transport. The Project Las Palmas Bunkering Hub, taking the example of the Panama Channel Bunkering, aims to become the petrol station in the Atlantic merging the 3 continents.³⁰ Finally, the Puerto Seco de Madrid is a Maritime Intermodal Terminal created in 2000 relating Madrid's Logistic Centre with the main Ports of Spain (Algeciras, Bilbao, Barcelona y Valencia).

To better link rail corridors with shipping services, ports ended the year with another novelty with regard to intermodal freight transport in large state-owned docks. At this regard, agreements were signed in late October 2010 between ADIF and eleven Spanish ports regulating railway connections, aiming to improve the integration and coordination of the rail network with the State Ports infrastructure and boost both the rail freight and the competitiveness of Spanish ports.

²⁹ Study by the Ministry of Public Works and Puertos del Estado: Port System in Spain 2011-2012

³⁰ Memoria Anual Puerto de Las Palmas 2011. <http://www.proyectogesport.com/descargas/bunkering.pdf>

Moreover, the direct, indirect and induced activity of the port system represents around 20% of GDP of the transport sector, which represents 1.1% of national GDP. It also generates direct employment for about 19.000 jobs.³¹ The ports of Valencia, Algeciras Bay, Barcelona and Las Palmas moved 10.2 million TEUs in 2010, with an average growth rate of around 7% in comparison to 2009. With this handling capacity, Spanish ports rank among the top ports in the world and the twenty most important in Europe. E.g. Valencia was ranked as 26th in the world and 5th in Europe, Algeciras Bay 42nd and 8th, Barcelona 63rd and 12th, and Las Palmas 95th and 18th, respectively, in the ranking of the first hundred ports around the world in this kind of traffic³²

Passenger ferry³³

Passenger ferry transport is increasing in significance for the economy, with a total volume in the whole country of 27,147,000 passengers during 2011. It is strongly focussed on the Mediterranean and Islands Coastline, notably in the ports of Andalucía (25% of the total), Canary Islands (24% of the total), Balearic Islands (21% of the total), and Catalonia (14% of the total)³⁴. The rather high number of ferry passengers observed in Andalucía (around 6.8 million during 2011), is mainly due to the Estrecho Cross- sea Operation, intensifying the transport from the ports of Algeciras, Almería, Málaga, Motril and Tarifa to North African Countries during the summer period. As an example, in July 2013, a total of 48,223 vehicles and 187,880 passengers embarked from the Southern Spanish ports to the North African cities of Ceuta, Tánger, Melilla and Nador. Main routes are Algeciras-Tánger, Algeciras-Ceuta and Almería- Nador with more 5.000 vehicles although during the summer 2013 the figures have slightly decrease. Estimations of the sector GVA account for € 353 m, employing 5,582 people.

Inland waterway transport³⁵

Sevilla Port is an inland waterway port located at the river Guadalquivir. It is the only inland commercial port in Spain. The Guadalquivir river navigation is performed in the navigation channel, called Euroway Guadalquivir E-6002 within the European Network of Waterways. In the facilities of the Sevilla Port the loading and unloading of goods is performed. They are afterwards exported to other countries or transported to other areas of the Spanish territory. Goods are also imported from abroad and then are distributed by road or rail. Potentially navigable up to Mértola, the Project Guadiana, cofinanced by the FEDER, aims to improve the navigation characteristics of the Guadiana river, both in the Spanish and Portuguese stretch to enhance sustainable tourism, sports and recreational use.

Food, nutrition, health and eco-system services

Catching fish for human and animal consumption^{36 37}

Fishing provides employment to 41,500 people³⁸ (5.7% of the total occupied in the whole sector and 0.24% of the total employed in Spain). This value is 4.5% higher than in the first quarter of 2012 and

³¹ Study by the Ministry of Public Works and Puertos del Estado: Port System in Spain 2011-2012

³² Press Note – Puertos del Estado - <http://www.fomento.gob.es/NR/rdonlyres/daf706e5-ec27-4857-a59f-9a490433d30b/107126/11103102.pdf>

³³ <http://www.proteccioncivil.org/documents/11803/0/Informe+OPE+02+julio+2013>

³⁴ Source : National Statistics Institute (passenger transport data for 2011)

³⁵ http://portal.apsevilla.com/wps/portal/puerto_es/datosTecnicos_es

³⁶ Sources; Agricultura y pesca, informe sectorial 2013, Barcelona Activa; Estadísticas Pesqueras Ministerio de Agricultura, Alimentación y Medio Ambiente

³⁷ Please note that the paragraph refers to catching fish for human consumption. No information was available on the percentage of fish caught for fish feed in Spain.

27.7% higher than the second quarter of 2012. However, since 2008 fishing employment has decreased by 13.5% (equal to approximately 6,500 fewer jobs). The number of people unemployed in fishing in Spain, in the second quarter of 2012, is 3,200, representing an unemployment rate of 7.2%, well below the average of the Spanish economy (24, 63% in the second quarter of 2012).³⁹

Marine fisheries accounted for Gross Value Added (GVA) of € 901,52⁴⁰ million (in 2011). Compared to 2010, this means a 8.2% higher GVA. The operating income for fisheries amounted to € 2,087.6 million, a 9.2% compared to 2010. Nonetheless, the fisheries subsector obtained a negative balance in July 2012 (€ -156 million), although there is an improvement with the amount obtained in the same month in 2011. Between August 2011 and July 2012, the balance of the fishing sector was also negative (€ -1.767 million), although the pattern showed a positive trend in comparison with the same period last year (between August 2010 and July 2011). In 2012, fish Exports (including aquaculture and processing fish industry) amounted to € 2,7M although imports were €4,5M which constituted a negative commercial balance of €1,7M.⁴¹

The Spanish Canning industry is acquiring increased relevance, leader in the EU market and third in the international market, thus meeting an increase from 1996 to 2006 of 42% in gross terms and 81% in terms of income. Tuna and anchovies are the main products.⁴² The Canning Industry is mainly concentrated in Galicia, where are established 58 out of the 144 spanish canning companies. Only the 5 main companies have a turnover of € 75M.

In 2011, Spain had a total of 10,505 fishing boats, with Galicia (48% of total), Andalusia (16% of total) and Catalonia (9.09% of total) having the highest numbers. The Spanish vessel catches had an economic value of € 1,965 million in 2011, representing 7.8% more than in 2010. A 66.8% of the economic value comes from fresh fish for human consumption, 33.1% from frozen fish and 0.1% from fish unfit for human consumption.

Regarding the regional distribution, it is observed that the fishery activity is more important in the Atlantic region, in particular Galicia, than in the Mediterranean region (in terms of tones of fish caught, VAB, employment and number of vessels)⁴³.

Marine aquatic products⁴⁴

The increased consumption of fish and the increasingly scarce marine resources became a reason for the evolution of the Spanish extractive and traditional fishing industry towards a more sustainable and environmentally friendly alternative, known as aquaculture. Thus, aquaculture includes techniques such as induced breeding fish, shellfish farms in land or/and in floating cages, with the aim of increasing the production of aquatic organisms by exercising control over these and on their environment in order to ensure the supply of these products to humans. Spain has constructed an important aquaculture sector, highly diversified, producing different species of freshwater and marine fish, molluscs, crustaceans, and algae with different levels of relevance in terms of quantities and values. All these farming activities can be found spread all over the country.

³⁸ Data referred to fishing (not including fishing processing industry).

³⁹ figures for the second quarter of 2012, according to the EPA, Active Population Survey.

⁴⁰ Data referred to fishing (not including fishing processing industry).

⁴¹ MAGRAMA, Estadísticas Pesqueras 2011.

⁴² Plan estratégico de la Industria Conservera Gallega 2007-2013, Centro Tecnológico del Mar-CETMAR, Octubre 2006.

⁴³ Economic Maritime Fishing Survey and Aquaculture Economic Survey. Source: Ministry of Agriculture and Environment

⁴⁴ Sources; Agricultura y pesca, informe sectorial 2013, Barcelona Activa; Estadísticas Pesqueras Ministerio de Agricultura, Alimentación y Medio Ambiente, Encuesta: The Economic Performance of the EU Aquaculture Sector – 2012 exercise (STECF-13-03), Joint Research Group.

In 2010, Aquaculture contributed a GVA of € 130 million and the annual turnover of the sector met an increase of 11,9% during the year 2010-2011⁴⁵. The edible aquaculture production reached 253,800 tonnes in 2010, dominated by far by mussels production, mostly concentrated in the North Western region of Galicia. It is estimated that around 75% of aquaculture production comes from shellfish although the value of this big production is just 23% of the total production. Finfish represents 24% of aquaculture production but represents 71% in sales value.⁴⁶). As stated above (see description on fishing for human and animal consumption) fish exports including aquaculture and processing of fish amounted to € 2.7m (2012). Imports amounted to €4.5m which constituted a negative trade balance of €1.7m.⁴⁷

Structurally, the sector is composed of 4,985 farm owners;(data for 2010) most of the firms belonging to individuals rather than legal entities, especially in the extensive and semi-extensive aquaculture like mussel in rafts, or clams in inter tidal areas. Hence, the number of small companies and independents is rather high, with the number of companies employing more than 10 staff is increasing due to a trend of consolidation, albeit at a low level of employees.

Spain has an important role in the transformation of traditional fisheries to aquaculture. In this sense, it is one of the territories of the European Union where higher investments have been made for the development and expansion of this activity. Also, the technical and biological advances have improved the sector instruments, both in the field of agriculture and in the field of fisheries and aquaculture, which has resulted in an increased efficiency and reduced costs production. In addition, technological developments applied to the sector have helped to reduce the physical effort required to develop related occupations, and increase the possibilities of access to natural resources.

The Atlantic Arc has also a more relevant role in aquaculture than the Mediterranean region, both in terms of production (57% to Atlantic and 43.20% to Mediterranean) and employment (88% to Atlantic region and 11% to Mediterranean)⁴⁸.

Blue biotechnology

Spain plays a significant role in the Marine Biotechnology sector in Europe, with many relevant companies and R & D projects (public and private) in this field. Some significant public bodies responsible for the development of this science are the Center of Marine Biotechnology of the University of Las Palmas de Gran Canaria, located in Telde (which also hosts the National Bank of Algae), the University of Huelva, the Institute of Marine Research, the Spanish Institute of Oceanography and the Marine Science Institute of Andalusia.

Besides, marine biotechnology represents an attractive sector for investment in Spain, due to the great marine biodiversity found in its coasts and seas, including the Mediterranean sea, the Atlantic coast of Galicia and the Cantabrian Sea. Spain, through its local companies has already begun to create economic value for marine biotechnology and the country is open to develop new innovative projects with external investments. Spain, being a country surrounded by sea, has a long experience in marine biology, and

⁴⁵ « La Acuicultura marina en España 2012 », Asociación empresarial de productores de cultivos marinos de España.

⁴⁶ The Economic Performance of the EU Aquaculture Sector – 2012 exercise (STECF-13-03), Joint Research Group.

⁴⁷ MAGRAMA, Estadísticas Pesqueras 2011.

⁴⁸ Economic Maritime Fishing Survey and Aquaculture Economic Survey. Source: Ministry of Agriculture and Environment

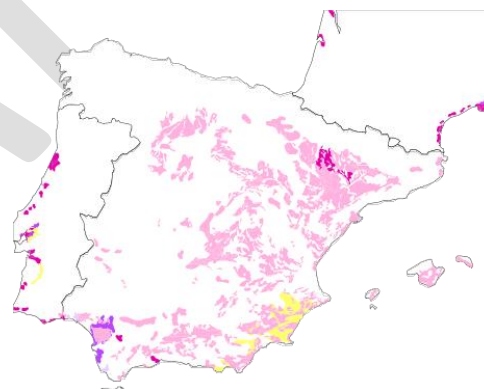
knowledge of their Biodiversity is a great attraction for the R & D sector.

The algology (the science of algae) is used by Marine Biotechnology not only to improve the species but to obtain algae using technological processes for the development of new food ingredients, cosmetics, drug development, bioremediation, biofuels (especially biodiesel) but also to develop new strategies to produce more clean energy. The sector is currently in an early development phase but this new discipline of Biotechnology has a long future ahead. Companies such as Pharmamar and other like Bioalgal Marine, Marine, CEAMSA, CEAMSA, BioFuel Systems and Seaweed BioFuel Seaweed Systems Canary are some clear examples of the different application of Marine Biotechnology to the industrial sector. BIOMAR has launched an innovative research project in the area of bioenergy: the project consists on the evaluation of 4,000 strains of microalgae based on their potential for biodiesel production. Biomar then selected several candidates to start their industrial development.⁴⁹ However, concrete information on ongoing projects in Spain as well as economic data could not be derived from our literature research.

The application of biotechnology in the design of transgenic plants, capable of growing in unfavorable environmental conditions or the creation of plant and pest-resistant seeds are examples of the increasing development of biotechnological applications. Marine Biotechnology employs new sources from marine organisms for industrial application and to develop new medical therapies. In Spain, its main user is the pharmaceutical industry, given its demonstrated positive results: the first antitumor drug developed in Spain comes from a marine organism, a tunicate, and has been developed by a pharmaceutical company called Pharmamar. Besides drug treatments, the obtention of new bioactive substances such as adhesives, biocompatible colloids, nanostructures and porous materials to produce new products or food ingredients, cosmetics, etc. are other products that are developed by the sector in Spain.

Agriculture in saline soils⁵⁰

According to JRC, saline soils are found at various places along the Mediterranean coast of Spain. With regard to coastal areas, most activities (according to the map) are located in Andalusia, Valencia, and Catalonia, with considerable activities also inland, albeit out of the scope of the study⁵¹). Some other areas of the South East of Spain are identified as potentially salt affected. Furthermore, only in the irrigated zones of the whole territory, about 3% of the area is heavily affected by salinity problems. Saline soils occupy a much larger extension in Spain compared with the rest of Europe but they present alower salt concentration, with some exceptions (Ebro valley).



Special attention should be given to the Delta del Ebro, where around 65% of its soils are used for rice cropping.⁵² Nonetheless, given the saline characteristic of its soil, irrigation techniques are performed introduce floods of fresh water during the period of maximum plant growth (April to September).

Energy and raw materials

⁴⁹ Information from the Ministry of Economy and Competitiveness

⁵⁰ <http://blog.agrologica.es/correcion-de-suelos-salinos/>

⁵¹ <http://eusoiils.jrc.ec.europa.eu/library/themes/Salinization/Resources/salinisation.pdf>

⁵²

http://www20.gencat.cat/portal/site/parcsnaturals/menuitem.1942a21487b35eb0e6789a10b0c0e1a0/?vgnextoid=4861728d53b32210VgnVCM1000008d0c1e0aRCRD&vgnnextchannel=4861728d53b32210VgnVCM1000008d0c1e0aRCRD&vgnnextfmt=default&newLang=es_ES and also the PLAN INTEGRAL DE PROTECCIÓN DEL DELTA DEL EBRO (Documento base- Julio de 2006).

Offshore oil and gas

The first extraction survey was conducted in the Mediterranean sea in 1968. Two years later, Amposta was discovered, thus being the first Spanish navy oil field. Later on, in 1975, Casablanca, currently still in operation, was discovered. Up to date, it has produced over 150 million barrels⁵³. Since then, a total of 11 commercial discoveries have been made in the country, mainly in the Mediterranean Sea (near the coast of Tarragona and in the Gulf of Valencia) but also in the Atlantic arc (Gulf of Cadiz and Gulf of Biscaia). Moreover, as of March 2013, there are 25 offshore research permits in force, 8 offshore exploitation concessions, 2 underground Storage gas and 12 research permits are still pending.

Despite the extraction works performed so far, the Spanish territory is considered as very little explored, with high potential for petroleum and gas discoveries. Current GVA of the sector of oil and gas extraction is estimated at € 16 m, and generated by a total of 133 enterprises. At this respect, the estimated prospective resources following the assesment of the ACIEP⁵⁴ are:

- Oil potential resources in Spain are 2,000 MMBO (90% offshore) which is the equivalent of 20% of total oil consumption in Spain for 20 years.
- Gas Potential resources (conventional and unconventional) in Spain are 2,500 BCM (15% offshore) which is the equivalent of 70 years of consumption in Spain.

Thus, Spain has in the Energy & Petroleum sector an opportunity to boost the economy and develop a domestic industry with high added value, generating investment, skilled labor and technological development⁵⁵.

Offshore wind⁵⁶

Even though there are around 30 offshore wind projects in the Spanish coast, some of them situated in Cadiz, Huelva, Castellón, Tarragona, La Coruña, Canary Islands, in Spain, there is currently no offshore wind farm in service. The depth of the Coastal waters in Spain explains why there are no offshore wind parks, until the floating technology achieves sufficient maturity.

Although there is a vast availability of public domain sea-land, the Spanish coastal conditions hinder the development of this technology, because of the real lack of suitable and shallow offshore locations near the coast. The following map shows in green the areas identified by the Ministry of Environment as suitable for offshore wind activities. Spain does not have offshore wind facilities and construction is not expected any time soon: due to its depth, the Spanish coast is not favorable to this type of facility due to the difficulties to realise foundations anchoring and power offtake works in deep water. . In addition, the investment costs are still a drag in this type of infrastructure where financial contribution required for putting in place an offshore wind farm is three times that of a terrestrial park, and operating costs are five to six times higher.

⁵³ Source : ACIEP, ASOCIACIÓN ESPAÑOLA DE COMPAÑÍAS DE INVESTIGACIÓN, EXPLORACIÓN Y PRODUCCIÓN DE HIDROCARBUROS Y ALMACENAMIENTO SUBTERRÁNEO.

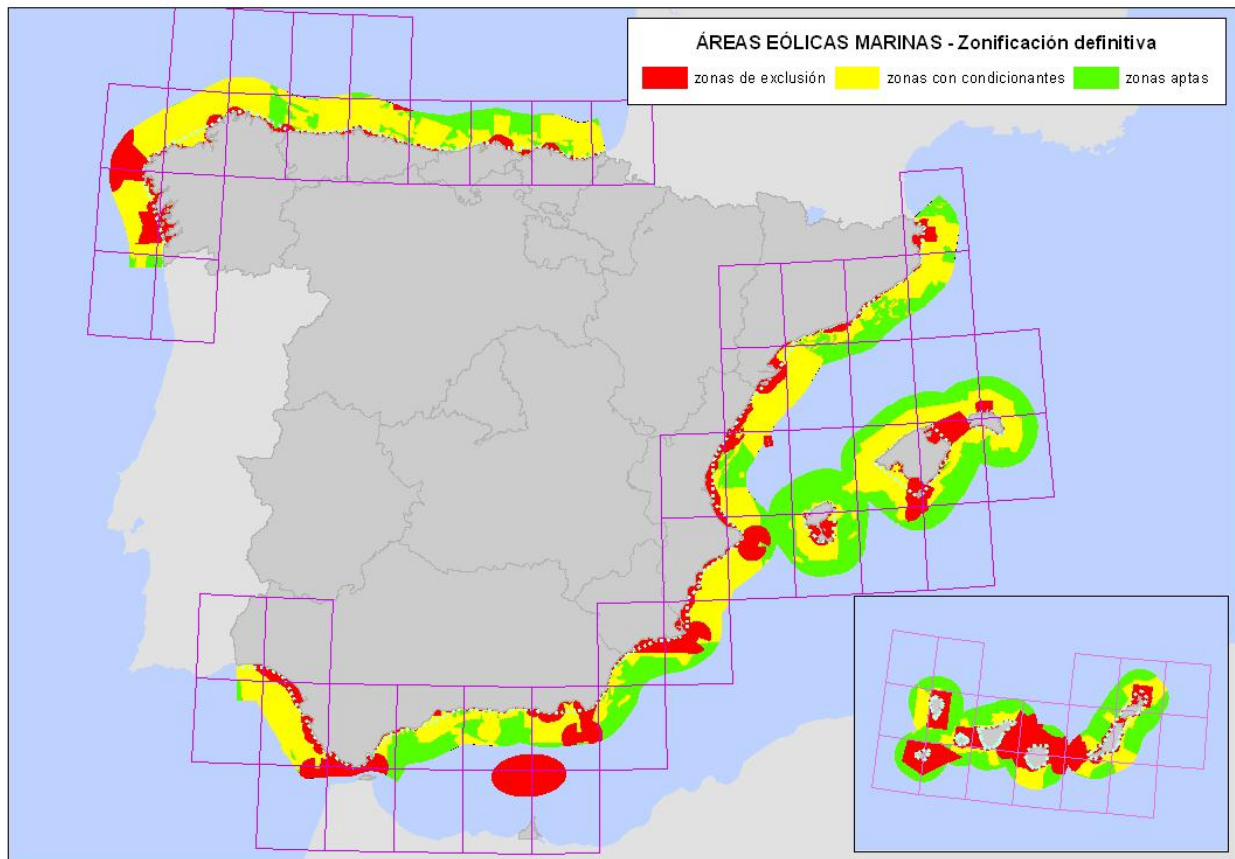
⁵⁴ The association that brings together energy companies engaged in the Exploration, Production and Underground storage of Hydrocarbons

⁵⁵ Source : Exploración y Producción de Hidrocarburos. Panorama de la industria offshore en España, ASOCIACIÓN ESPAÑOLA DE COMPAÑÍAS DE INVESTIGACIÓN, EXPLORACIÓN Y PRODUCCIÓN DE HIDROCARBUROS Y ALMACENAMIENTO SUBTERRÁNEO

⁵⁶ Sources : Estudio del Impacto Macroeconómico de las Energías Renovables, Asociación de Productores de Energías Renovables | APPA

PERSPECTIVAS DE LA ENERGÍA EÓLICA MARINA EN ESPAÑA, INFORME BREVE PARA LA FEDERACIÓN DE INDUSTRIA DE CC.OO., Febrero 2012

Evaluación del potencial de las diversas fuentes de energía renovable y de las tecnologías para su aprovechamiento: oportunidades y retos para el sector de la energía, Universidad Pontificia Comillas, Instituto de Investigación Tecnológica Plan de Energías Renovables (PER) 2011-2020



Source: Ministry of Agriculture, Food and Environment⁵⁷

Furthermore, changes in the regulatory framework implemented in 2009 and 2010 along with the lack of definition on the remuneration of the wind in Spain⁵⁸, have led to a climate of uncertainty in the sector. This has affected the activities of both offshore wind investors and energy providers, as well as equipment and component manufacturers. Ultimately, this hampered the development and investment in the wind sector. ☒

At this regard, the offshore wind technology would benefit from the development of specific concepts in the design, logistics, transport and assembly, etc. allowing the reduction of investment ratios and operating costs for maximum competitiveness. In particular, the implementation of experimental offshore R & D foundation substructures for midwater and deepwater floating designs is considered an asset to fuel the sector although, no commercially run test park is existing.

Although, there are currently no offshore wind powers installed, recent improvements have been made in pilot-testing with the launch of the Zéfir Test Station project, an experimental offshore wind platform developed in waters adjacent to the port of Tarragona. This demonstration project is expected to produce up to 20 MW in the following years, becoming the first offshore wind power in Spain.

Complementarily, the Spanish Maritime Cluster believes that the domestic industry should leverage its competitive advantages, most especially the large international experience in the shipping industry and enormous prestige in the wind sector (terrestrial), for position it-self in this activity. According to their forecasts this subsector could employ up to 10,000 workers in the next eight years,

⁵⁷ <http://www.magrama.gob.es/notas/documentos/Mapa%20e%C3%B3lico.pdf>

⁵⁸ The new regulatory framework has been introduced by the Royal Decree Law 1/2012. The Royal Decree put an end to the price set at € 173.5 euros which was more than double the minimum guaranteed price for onshore wind energy.

The R&D effort is reflected in the wide participation of Spanish wind companies on European research and development projects such as MARINET (2011-2015), focused on the study of offshore renewable energy conversion systems, including offshore wind. The project involves more than twenty European companies and universities, including Spanish entities.

Ocean renewable energy⁵⁹

Spain has significant marine energy potential, where wave energy resource has great quality for viability and development given the characteristics of our coast, in contrast with Marine energy, along with solar thermal, experienced a higher growth rate during the last years. Marine energy is in a research phase, focusing mainly in demonstration projects in order to determine the most efficient prototypes to be marketed.

Some of them are the project Ibermar in Cantabria⁶⁰ currently in a demonstration stage delivering first results⁶¹, BIMEP (The Biscay Marine Energy Platform)⁶² in the port of Biscay in the Basque Country to be inaugurated next year and the MutrikuWave Energy Plant⁶³ is already in operation and connected to the grid since July 2011. With regard to technology, the industry has focused mainly on wave technology (waves) and currents, although most of them still in a development stage. The current technology progress implies high generation costs that makes ocean renewable energy not competitive if compared to other non-fossil energy sources.

At the national level, a considerable commercial and industrial fabric is arising, reinforced by the significant commitment of business and technology sector, and the support of various regional administrations. In short, the national development of different technological demonstrations suggests a major industrial growth in the energy area of the sea.

At this regard, the Renewable Energy Plan 2011-2020, that makes a rigorous analysis of the sector and identifies the barriers that have prevented the development of marine energy, estimates a marine energy production of 220 GWh in 2020. It also establishes a series of Specific Priority Actions to save these barriers and to promote the implementation of 100 MW of ocean energy and 750 MW of offshore wind by 2020. For all this and for having the adequate natural conditions (level of appeal, continental shelf and level climatological, etc.) Spain has significant potential to lead global development in marine energy.

Carbon Capture and storage⁶⁴

Although carbon capture and storage is an emerging technology, there are currently no projects in the maritime areas. However, one initiative has been launched in Castilla-León, an in-land Spanish region. CIUDEN,⁶⁵ the Energy City Foundation, in Castile and León and under the authority of the Ministry of Industry, Energy and Tourism, has developed the technology that has permitted to successfully complete CO₂ capture in oxycombustion in Spain. Although the project is still in a developing stage, this means the starting point of a new public-private partnership phase that will foster economic sectors, with high level of CO₂ emitting and promote the creation of new economic industries through the transfer and

⁵⁹ Plan de Energías Renovables (PER) 2011-2020

Estudio del Impacto Macroeconómico de las Energías Renovables, Asociación de Productores de Energías Renovables | APPA

⁶⁰ The Ibermar project is a floating platform prototype. See also:

http://www.medioambientecantabria.es/documentos_contenidos/22822_3.Parte1.pdf

⁶¹ Wave Energy Centre (www.wavec.org), Principais Players Mundiais

⁶² The The Biscay Marine Energy Platform (bimep) is an open sea test infrastructure for research and demonstration of offshore Wave Energy Converters (WEC). The facility will offer the opportunity for testing full-scale prototype devices as single devices or arrays in order to assess and monitor performance. See also: <http://www.fp7-marinet.eu/EVE-biscay-marine-energy-platform-bimep.html>

⁶³ See also : <http://www.eve.es/Promocion-de-inversiones/Proyectos-en-desarrollo/Mutriku.aspx>

⁶⁴ Source : CIUDEN, Ciudad de la Energía

⁶⁵ The project is still in a developing stage. For more information please refer to: <http://www.ciuden.es/index.php/es/comunicacion/noticia/es/29-comunicacion/noticias-tecnologias/711-ciuden-comienza-la-construccion-de-los-pozos-de-observacion-e-inyeccion-de-co2-de-su-planta-de-desarrollo-tecnologico-en-hontomin-prueba>

technological dissemination to the productive sector.

Aggregates mining⁶⁶

The Spanish Coastal Law⁶⁷, article 90, specifically forbids the extraction of arid aggregates, considered a serious misconduct and punished with a fine of €20 per m².

Marine Minerals mining

The Geological and Mining Institute of Spain (IGME) is tasked to research the marine minerals stocks in Spain and make the knowledge available to the private sector, with the main objective of promoting business for the exploitation of marine mineral resources.

Among the recent discoveries made by this institute, it is important to mention the fields of iron and manganese nodules rich in nickel and cobalt found in the Gulf of Cadiz and in the Alboran Sea. In Galicia, the IGME has discovered a variety of iron nodules, polymetallic manganese and phosphorite crusts. Also in Galicia and in the Bay of Biscay some nodules and gas discoveries have been made. The exploration phase is starting in the Canary Islands and it is expected to prove the existence of this kind of materials.

Securing fresh water supply / desalination⁶⁸

Spain is one of the world's leading countries in water desalination activities and desalination plants building, with main construction companies operating in the field: Spanish construction groups such as Acciona, Ferrovial, FCC and Sacyr operate large projects in the business of water desalination not only at the national level but also in the world. These construction groups have proven capability in the design, construction and facilities management, as well as experience in structuring project finance and national engineering quality.

At this regard, Spain is the fourth country in the world in installed desalination capacity, with around three million cubic meters per day and 700 desalination plants installed all over the country.

In 2010, those regions with higher volumes of desalinated water in terms of their capacity were the Canary Islands (737,374 m³/day), Catalonia (579,998 m³/day) and Andalucía (541,044 m³/day), followed by Murcia (423,148 m³/day) and Comunidad Valenciana (353,1120 m³/day). With the exception of the Canary Islands, desalination plants are concentrated in the Mediterranean Arc, where traditionally the level of water reservoir levels is low.

Leisure and tourism

In 2012⁶⁹, a total of 57.7 million international tourists visited Spain, ie 2.7% more than in 2011. Overall, this presents the third best number of international tourists ever recorded, behind figures of 58.7 (2007) and 58

66 Source : Los Fondos Marinos: lanueva frontera, IGME

67 Law 2/2013, de 29 de mayo, for the Protection and sustainable use of the Litoral, that modifies the Law 22/1888, for the Regulation of Spanish Coasts.

68 Source : La desalinización en España, Cuadernos sectoriales. Enero de 2007

http://www.spaintechnology.com/icex/cda/controller/pageGen/0,3346,1559872_6406659_6410324_4648052,00.html, España, Technology for life, ICEX

(2006) million arrivals, respectively. In the January-November 2012 period, international tourists spent about € 53 billion, representing an increase of 6% over the same period in 2011.

With these figures, Spain is now the world's fourth destination in international tourist arrivals behind France, the U.S. and China, and the second in international tourism receipts after the United States, (UNWTO World Tourism Barometer). According to estimates of the World Tourism Organization (WTO), global tourism will grow annually by 3.3% on average until 2030, with increases of around 40 and 42 million passengers a year. Europe is the most visited continent, and receives 500 million international visitors each year.

Coastal tourism⁷⁰

Tourism in Spain is mainly focused on the so-called "sun and beach" ("sol y playa"), i.e. on coastal and maritime tourism. The number of bedrooms and bed-places in coastal regions represents 75.6% of the total lodging capacity of the country.⁷¹ The prime accommodation establishments are concentrated in the coastal regions of Balearic Islands, Las Palmas, and Barcelona, followed by the capital city of Madrid. Figures for the period 2007-2009 also show that the regions where the number of nights spent in touristic accommodation is the highest are the capital city of Madrid, and the coastal regions of Catalonia, Andalucía and Comunidad Valenciana, thus stating the relevance of coastal tourism for the country.

The model has developed since the beginning of the sector's expansion in the 50's. It is based on an extensive standardized supply and competence in price, resulting in the product turning into a commodity. The emergence of new tourism destinations that offer the same product at a smaller price (African Mediterranean countries, Turkey etc) has implied a dramatic loss in the sector competitiveness. Although the "sun and beach" tourism, the classic choice for the Spanish industry, concentrates 48 million international tourists in the country each year, the fact that 50% of trips made across the globe annually are motivated by other tourist segments, the need to turn the sun and beach tourism model into a more sustainable activity is recognized and shared. Nonetheless, there is not yet a strategy to achieve it, even if some local initiatives have taken place.

There are environmental problems in some parts of the coast, due to high pressure over the limited resources. They derive from the increase of the coastal visitors' number and the increase of accommodation supply. This implies environmental conflicts and problems and a reduction of the overall coast tourism product quality, thus reducing the competitive advantage over the potential competitors. Hence, the current challenge in Spain to advance towards a more sustainable tourism model in the coast to respond to a more experienced tourism demanding an overall higher quality product. There is currently a too standardized tourism supply in Spain that fails to cope with an increasingly complex tourism demand. The coastal tourism supply in Spain is too standardized and does not respond to the new increasing demand for specific tailor made and more "authentic" products. There is a need for supply diversification: new products based on recreational or sports boating, wellness tourism and to enhance the cultural attractive and heritage.

Coastal tourism experiences have too seasonal demand ("seasonalization") with several consequences: Coastal and maritime tourism demand in Spain is too concentrated in the summer season. This has

⁶⁹ Source: PwC study: tourism hot topics 2013

⁷⁰ References: National Integral Tourism Plan (2012-2015),

Article "Coast tourism: lines of action for achieving sustainable development" by Dr. Silvia Sanz Blas, published by the Institute of Tourism Studies Report on tourism perspectives for 2013 (Exceltur) Report "Impacts over the environment, economy and employment of the different tourism development models in the Spanish Mediterranean Coast, Balearic Islands and Canary Islands".

Exceltur September 2005. / Article "Coast tourism: lines of action for achieving sustainable development" by Dr. Silvia Sanz Blas, published by the Institute of Tourism Studies Article "Coast tourism: lines of action for achieving sustainable development" by Dr. Silvia Sanz Blas, published by the Institute of Tourism Studies

National Integral Tourism Plan (2012-2015).

⁷¹ For a definition of coastal regions, please see above (0.2 coastal regions) and here: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:Coastal_region.

implied an increase in the supply necessary to cope with the high demand during the summer, resulting in pressure on the infrastructures and excess of waste production. The rest of the year, there is an excess of supply and tourism infrastructure under-use. Another consequence is the high sensitivity to the economic cycle and the low access to durable and qualified jobs, as the job careers are short and discontinuous (difficulties in promotion and training).

Yachting and marinas

In 2011, a total of 126,950⁷² berthing places were under concession in Spain, that spread over the 355 marinas located along the 7,900 kilometers of Spanish coastline. Out of those, 30,170 are located in Catalonia, followed by the Valencia Region and Balearic Islands. This is an increase of more than 40% if compared with the number of berths recorded in 2003.⁷³ In the first two cases there is a great demand for berthing places, which gradually meet the demand with new marinas build in the Catalan Community, but not so in the Balearics, where the offer remains short is due to the high demand generated largely by foreign shipowners who wish to have their boat in the islands. In fourth position in the list is the Andalusian Community with 17,670 berths and with future increases ahead, as the community is by far the one with more miles of coastline.

Cruise tourism⁷⁴

Although the Spanish economy entered a second recession in 2012, the economic contribution of the cruise industry in Spain was € 1,255 million this is the fourth european market in terms of revenue. In addition, Spanish ports welcomed € 5.2 million European cruisers (adding scales and shipments) and ranks second at the European level. This means that 1 in 5 passengers who boarded in Europe did it from a Spanish port. Also, 576,000 spanish citizens enjoyed a cruise ride in 2012.

Despite all this, the maritime cruises sector in Spain has a small market share in the total tourism sector. It is a market with extremely high entry barriers (high fixed costs, demand for technology and capacity to build the cruise ships). These have made it difficult for Spanish companies to have a significant presence in the national market. The situation has changed in the last 15 years, though there is still a need to diversify the supply in order to adapt it to a more mature demand (the product is at the moment too standardized into cruises leaving from Barcelona Port offering a Mediterranean cruise including 7 nights on board).

The market is experiencing strong growth rates and the market share of Spanish companies has increased in the last years as Iberojet Cruises has become an important market player. Since the 2008 crisis, us the cruise industry has continued to generate more and more jobs despite the recession, from 22,397 in 2008 to 26,389 new jobs generated in 2012⁷⁵ both at sea and land, this is an increase of around 18%. On the other hand the disbursement of the industry has also increased from 1,078 million in 2008 to 1,255 Million Euros in 2012, ie increased by 16%.

⁷² Source: http://www.fondear.com/Todo_Empresa/Puertos_Links/Puertos-Deportivos.htm

⁷³ The increase in the number of berths from 130.555 (2011) in comparison to the baseline year 2003 with 92.694 berths represents an increase of 41%. Please see also: http://www.feapdt.es/wp-content/uploads/2010/11/art138_2.pdf

⁷⁴ Sources :Informe Anual de Contribución Económica 2013, CLIA, Cruise Lines International Association, Europe

Article "The maritime cruises market in Spain: a historical perspective" (1994-2004)" by Arturo Paniagua Mazorra, published by the Institute of Tourism Studies. Point V "Conclusion"
http://www.tendencias21.net/Barcelona-afianza-su-liderazgo-internacional-en-el-turismo-de-cruceros_a19891.html

⁷⁵ THE CRUISE INDUSTRY: Contribution of Cruise Tourism to the Economies of Europe 2013, European Cruise Council- CLIA.

In relation to domestic ports, the Port of Valencia has experienced a considerable increase in the volume of cruise scales, from 253,743 passengers received in 2010 to 480,233 in 2012. This represented an increase of 89%. Meanwhile, Barcelona remains to be the first European port in term of cruise passenger's traffic, with a total of 2.4 million passengers visiting the port of Barcelona in 2012; this is 2.4% more than in 2010. The Barcelona Tourist Office has estimated that during the year 2012 cruise segment caused an economic impact equivalent to 232 Million Euros in the area.

On the other hand, in September 2014, Barcelona will host the Seatrade Med, an event regarded as the second world's fair cruise sector, bringing together the industry's leading specialists. The occasion will also bring to the Catalan city the Oasis of the Seas, the largest passenger ship in the world. With both events, Barcelona will strengthen its leadership in cruise tourism segment at continental and global level. In the same line, the administration of the port of Barcelona expects to reach 2.6 million visitors through cruises in 2013, thus approaching the record set in 2011, when it reached 2.65 million cruise passengers. The increased activity has been notable in recent months, since last January to April was an increase of 30 percent compared to the same months of 2012.

Spain excels a target market for cruise tourism, and hosts many cruise lines and companies and their offices in the Spanish territory. In addition to this fact, growth in other related categories, such as shipbuilding and cruise purchases is also significant. The latter markets rose sharply in 2011, and reached 6% . As for the other parameters, growth slowed down in 2012, but experts are optimistic about its recovery during 2013 and 2014.

Coastal protection

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

In may 2010, Spain represented over 6% of the total marine High Importance Area of the EU⁷⁶. As of 31st of December 2010, the number of sites of Community importance declared by de country rose up to 1,446 with a total area of 12,622,994.2 ha (11,592,488.6 ha land and 1,030,505.6 ha marine), which represents 22.9% of the total terrestrial area. For the same period, Spain had 1,034 km² of marine Special Bird Protection Area, thus included in the Natura Network 2000, which places the country in the rank 12 out of 27.⁷⁷

The General State Budget for 2012 assigned to the "Program 456d.Acting on the Coast" managed by the Department of Sustainability of the Coast and the Sea, the sum of € 78,716,680 financing investments for coastal protection activities.⁷⁸

Maritime monitoring and surveillance

Maritime monitoring and surveillance

Spanish coastal border protection competences are commissioned to the Central Administration,

⁷⁶ MAGRAMA, 2010. Informe Calidad y Medio Ambiente

⁷⁷ MAGRAMA, 2010. Informe Calidad y Medio Ambiente

⁷⁸ MAGRAMA, 2013. Memoria de Actividades del MAGRAMA durante 2012.

although are attributed as follows:

- Spanish Guardia Civil; Responsible for the protection of the coast but only for criminal acts that may threaten rights, the environment and public safety, as well as illegal movements of goods and people. During the last years, it has created specialised professional teams dedicated to maritime monitoring and surveillance such as the Maritime Service of the Guardia Civil and the Sub aquatic activities Special Group. Their activities have been increasingly important, and these groups have intensified their presence through innovative and collaborative actions such as the use of sea lions for rescue operations.
- Puertos del Estado; Responsible for the planning, standardisation, coordination, inspection and control of the country's marine aids to navigation system as well as training, research and technological development and innovation. The ATON coastal network encompasses 3,800 entities, including State Port Authorities, Regional port, Fish Farms, Pipes, Ados and other organisations.
- Dirección General de la Marina Mercante, within the Ministry of Fomento; Responsible for maritime surveillance and pollution. SASEMAR (Salvamento y Seguridad Marítima) is the public enterprise in charge of maritime safety. SASEMAR has a fleet of 4 polyvalent maritime safety vessels, and 10 tugboats, 4 patrol boats and 55 vessels for rapid safety interventions and a total of 1,562 workers⁷⁹.
- Instituto Hidrográfico de la Marina; Responsible for Nautical documentation and charting.
- Ministry of Agriculture, Food and Environment; Responsible for coastal border protection (shoreline and beaches) as well as responsible for the environmental protection of the marine environment through the Division for the Protection of the Sea (implementation MSFD). There is a national system for the protection of the sea (Sistema nacional de Protección de la Ribera del Mar), regulated by the Marine Environment Protection Act.⁸⁰ At this regard, the environmental monitoring is mainly done by the Instituto Español de Oceanografía, the Centro de Estudios de Puertos y Costas del (CEDEX), and Puertos del Estado.

Furthermore, in the last years a high number of Spanish firms have proliferated in the sector of marine security and defence, thus facilitating high technological and management services, including equipment systems for the interception and assistance of illegal migration, prevention and detection of criminal activities, and assistance to marine casualties. As an example, in 2011 the Spanish space industry continued expanding, the trade industry group representing more than 20 space companies operating in the country. A large share of exports on overall sales is in part responsible for Spain's space sector resilience in the current economic situation.⁸¹ On the other hand, Spanish shipyards have extensive experience in the production of auxiliary vessels to support the activities of naval forces (surveying ships, hospital vessels, oil tankers, etc.) and non-military vessels whose features could be of interest in certain military or police operations. These include oceanographic research and seabed survey vessels, salvage tugs, fast rescue craft and technologically advanced special offshore vessels, which include support ships for ultra-deep diving, for ROV⁸² operation, etc.

After the major pollution maritime catastrophe suffered in the north of the country, the Prestige sinking in 2001 which represents a public investment of €1,000 in cleaning and recovery activities⁸³, limited efforts have been put in place in order to safeguard the integrity of natural and economic resources in

⁷⁹ Sociedad de Salvamento y Seguridad Marítima, 2011. Informe Anual 2011.

⁸⁰ Ley 41/2010 de Protección del Medio Marino, <http://www.magrama.gob.es/notas/documentos/Mapa%20e%20C3%B3lico.pdf>

⁸¹ INFODEFENSA Junio 2013.

⁸² INFO DEFENSA
Junio 2013.

the coastal area established by international regulations, consistent in developing new emergency and assistance protocols to ship accidents aiming to ensure adequate, prompt and effective compensation for damage to persons and property, costs of clean up and reinstatement measures and economic losses resulting from the maritime transport of hazardous and noxious substances. At this regard, Spain does not have any specialised equipment for the monitoring of marine spills of Hazardous and Noxious Substances (HNS). However, it has aerial and vessel surveillance available. On the other hand, Spain's capability for responding to marine incidents involving HNS at sea is rather limited and mainly relies on the same resources as for oil pollution response and on special occasions on resources from private companies.⁸⁴

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⁸⁴ EMSA 2013. Inventory of EU Member States' Policies and Operational Response Capacities for HNS Marine Pollution 2013

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

This section allocates the data from table 1 to maritime regions in 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)
Spain	Noroeste	Galicia	Atlantic Arc
		Asturias	Atlantic Arc
		Cantabria	Atlantic Arc
	Noreste	Basque Community	Atlantic Arc
	Este	Catalonia	Mediterranean Sea
		Valencian Community	Mediterranean Sea
		Balearic Islands	Mediterranean Sea
	Sur	Andalusia	Mediterranean Sea
		Region of Murcia	Mediterranean Sea
		Ceuta	Mediterranean Sea
		Melilla	Mediterranean Sea
	Canarias	Canary Islands⁸⁵	Atlantic

Table 3 presents the percentage share of each region in the 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.

⁸⁵ The Canary Islands (NUTS 2) will be assessed separately from the other NUTS 2 regions in Spain, due to the specific nature of the maritime economic activities and indicators.

Table 3 - Overview of employment and GVA percentages per maritime economic activity per region in Spain⁸⁶

Sea-basin		Atlantic Arc					Mediterranean Sea							OTHER (non-maritime regions in your country)	Qualitative description of the split
NUTS I		Noroeste				Canarias	Este			Sur					
Regional percentages to apply on GVA and employment		Galicia	Asturias	Cantabria	Basque Country	Canary Islands	Catalonia	Valencian Community	Balearic Islands	Andalusia	Region of Murcia	Ceuta	Melilla		
0.	Shipbuilding														
0.1	Shipbuilding (excl. leisure boats) and ship repair ⁸⁷	28%	17%	6%	22%	6%	6%	6%	6%	6%	0%	0%	0%	0%	
0.2	Construction of water projects ⁸⁸	25%	3.3%	0.7%	7.7%	3.7%	17.5%	9.7%	9.6%	12.5%	3%	0.4%	0%	0%	Source: Management report of the state-owned port system 2011
1.	Maritime transport and shipbuilding														
1.1	Deep-sea shipping	7%	5%	1%	7%	8%	17%	18%	3%	28%	5%	0%	0%		
1.2	Short-sea shipping (incl. Ro-Ro) ⁸⁹														
1.3	Passenger ferry services ⁹⁰	1%	0%	1%	1%	24%	14%	4%	21%	25%	0%	7%	2%		
1.4	Inland waterway transport	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	The only inland waterway port is Sevilla Port that concentrates all the inland waterway transport.
2.	Food, nutrition, health and eco-system services														
2.1	Catching fish for human consumption	46%					16%							38%	
2.2	Catching Fish for animal feeding ⁹¹														
2.3	Marine aquatic products ⁹²	86%	0%	1%	0%	1%	4%	2%	0%	3%	2%	n/a	n/a	1%	
2.4	Blue biotechnology	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		No data available
2.5	Agriculture on saline soils	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		According to JRC, saline soils are concentrated mainly in the mediterranean

⁸⁶ Under 'Others' those regions (and the respective breakdown) in a given EU Member State are listed which are not sea-adjacent.

⁸⁷ Main shipbuilding companies per turnover- Number of companies per region. Source: ICEX

⁸⁸ Investment in infrastructure and port capacity, 2011

⁸⁹ Tones of freight. Source: National Statistics Institute (data for 2011)

⁹⁰ Number of maritime passengers carried. Source: National Statistics Institute (data for 2011)

⁹¹ Direct data from the Economic Maritime Fishing Survey. Source: Ministry of Agriculture and Environment

⁹² Direct data from the Economic Maritime Fishing Survey and Aquaculture Economic Survey. Source: Ministry of Agriculture and Environment

																	basin, the west of Spain (south atlantic) and in the non-maritime regions. There are no saline soils in the north atlantic arc (bay of Biscay)	
3.	Energy and raw materials																	
3.1	Offshore oil and gas					27%										73%	0%	Among 11 commercial discoveries in Spain, 8 are located in the Mediterranean Sea (Valencian Gulf and near the coast of Tarragona) and 3 are placed in the Atlantic Arc (Gulf of Biscaya (2) and Gulf of Cadiz (1))
3.2	Offshore wind	27%	55%	0%	0%	33%	5%	5%								22%		No offshore wind parks in Spain. Among 72 potential offshore wind areas identified by the Ministry of Agriculture and Environment, 9 of them have been ratified by promoters (Galicia, Asturias, Andalucia, Valencia, Catalonia, Canary Islands). The first offshore wind park is being built in Tarragona (Catalonia)
3.3	Ocean renewable energy	12%	12%	12%		37%	12%											R&D projects in Catalonia, Basque Country, Cantabria, Canary Islands (3 projects), Galicia and Asturias
3.4	Carbon capture and storage	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	There is a project that has successfully captured CO2 capture in oxycombustion in El Bierzo (Castilla y León)
3.5	Aggregates mining (sand, gravel, etc.)																	
3.6	Marine minerals mining					100%										0%		Recent discoveries mainly made in the Atlantic Arc (Galicia and Bay of Biscay).
3.7	Securing fresh water supply (desalination) ⁹³	0%	0%	0%	0%	25%	20%	12%	7%	18%	14%	1%	1%			2%		

⁹³ Installed desalination capacity operational in 2010, source: Environmental profile of Spain 2010, Ministry of Agriculture and Environment

4. Leisure, working and living															
4.1	Coastal tourism ⁹⁴	4 %	2 %	1 %	2 %	16%	16%	8%	13 %	17 %	1%	negligible	negligible	19%	
4.2	Yachting and marinas ⁹⁵	8 %	1 %	3 %	3 %	6%	26%	17 %	15 %	15 %	5%	1%	0%		
4.3	Cruise tourism ⁹⁶	6 %	0 %	0 %	0 %	36%	25%	6%	9%	14 %	1%	0%	0%	0%	
5. Coastal protection															
5.1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats ⁹⁷	8% of maritime zone protection spread among the different sea basins out of total 12.622.994,2 ha protected (both land and maritime)											92% of total protected area		
6. Maritime monitoring and surveillance															
6.1, 6.2, 6.3	Traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods and environmental monitoring	20 %	5 %	3 %	3%	18%	8%	7 %	15 %	13 %	3%	0.34 %	0.15 %	0%	Regional data has been estimated evenly base don the lenght of the coastline. However, it is important to take into account that the protection against illegal movement of people is particularly important in the Canary Islands and in the Gibraltar Strait (Andalucia). Also the Strait and also Galicia have important activity in terms of protection against illicit trafficking of godos.

⁹⁴ Number of nights spent in touristic accommodation establishments by each NUTS 2 region in the country (National Statistics Institute)

⁹⁵ Number of berths. Source: www.buscoamarre.com (data for year 2012)

⁹⁶ Total cruise passangers in the different ports (year 2011). Source: Puertos del Estado

⁹⁷ Quality and environment report from the Ministry of Agriculture and Environment (2010)

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 (million EUR)	Employment	Score
1.	Coastal tourism	6,921.00	216,568	142.9
2.	Catching fish for human consumption	3,720.00	129,230	83.2
3.	Shipbuilding (incl. leisure boats) and ship repair	1,391.50	24,122	19.0
4.	Construction of water projects	944.50	19,813	14.6
5.	Short-sea shipping (incl. Ro-Ro)	649.10	9,262	7.9
6.	Deep-sea shipping	621.10	8,864	7.5
7.	Passenger ferry services	353.00	5,582	4.6

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

This subchapter identifies and selects the 7 fastest growing maritime economic activities as emerged **over the past 3 years** (see also Annex II). 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 level

Rank	Maritime economic activities	GVA (CAGR)	Employment (CAGR)	Score
1.	Inland waterway transport	31.79%	10.28%	0.21
2.	Short-sea shipping (incl. Ro-Ro)	6.80%	4.42%	0.06
3.	Catching fish for animal feeding	20.24%	-11.56%	0.04
4.	Deep-sea shipping	1.80%	-0.48%	0.01
5.	Catching fish for human consumption	2.03%	-10.16%	-0.04
6.	Shipbuilding (incl. leisure boats) and ship repair	-4.33%	-8.48%	-0.06
	Coastal tourism	-7.12%	-4.54%	
7.	Cruise tourism	-2.95%	-13.53%	-0.08

The fastest growing MAEs are activities that are also relatively important in terms of their size of GVA and employment, with the exception of Inland waterway transport. They tend to be more “traditional” mature activities in comparison to the most innovative ones, that are usually at a developing or even research stage, enjoying a high future growing potential but with low growth rates at present.

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 deep sea shipping, being this last activity also included in the list of the 7 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 6 presents the scoring of all maritime economic activities (at NUTS 1 or 0 level) alongside the indicators identified in the initial Blue Growth study.⁹⁸
- Table 7 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 future⁹⁹.

⁹⁸ 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 (incl. leisure boats) and ship repair	0	-	+	0	+	-	0
	0.2 Construction of water project	+	+	0	0	+	-	2
1. Maritime transport	1.1 Deep-sea shipping	0	+	0	+	+	+	4
	1.2 Short-sea shipping (incl. RoRo)							
	1.3 Passenger ferry services	0	-	0	0	0	+	0
	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	-	+	+	0	2
	2.2 Catching fish for animal feeding							
	2.3 Marine aquatic products	+	0	+	+	0	+	4
	2.4 Blue Biotechnology	+	+	+	+	0	+	5
	2.5 Agriculture on saline soils	?	?	?	?	?	?	?
3. Energy and raw materials	3.1 Offshore oil and gas	+	+	0	+	+	-	3
	3.2 Offshore wind	0	-	-	+	+	+	1
	3.3 Ocean renewable energy (wave, tidal, OTEC, thermal, biofuels, etc.)	+	+	0	+	+	+	5
	3.4 Carbon capture and storage	+	0	0	+	0	+	3
	3.5 Aggregates mining (sand, gravel, etc.)	+	?	0	+	0	+	3
	3.6 Marine minerals mining							
	3.7 Securing fresh water supply (desalination)	+	+	0	+	+	+	5
4. Leisure, working and living	4.1 Coastal tourism	-	-	+	+	+	0	1
	4.2 Yachting and marinas							
	4.3 Cruise tourism	0	+	+	0	+	+	4
5. Coastal protection	5.1 Protection against flooding and erosion	+	?	?	+	?	+	3
	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	+	?	?	+	?	+	3
	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 (applying formula)
1.	3.3 Ocean renewable energy (wave, tidal, OTEC, thermal, biofuels, etc.)	5
2.	2.4 Blue Biotechnology	5
3.	3.7 Securing fresh water supply (desalination)	5
4.	3 Cruise tourism	4
5.	1.1 Deep-sea shipping 1.2 Short-sea shipping (incl. RoRo)	4
6.	2.3 Marine aquatic products	4
7.	3.1 Offshore oil and gas	4

The set of the most promising maritime activities in Spain corresponds, on one hand, to the emerging sectors intensive in innovation and R&D, such as ocean renewable energy, blue Biotechnology, Marine aquatic products and offshore oil and gas and, on the other hand, to more traditional and mature sectors in the country like desalination, tourism and maritime shipping.

Renewable energy is a key sector for the Spanish economy which counts with an important number of internationally recognized companies. For this reason, it is not surprising that the **ocean renewable energy** activities, although being still in a research stage, is a promising activity with a high growth potential. It is also worth to mention its policy relevance as well as its importance in terms of sustainability.

Blue Biotechnology is another leading sector within the maritime economy as evidence by the existence of R&D companies and projects that have had positive results, such as the antitumor drug developed from a marine organism (Pharmamar). This sector has an important potential growth within the country due to the importance of the pharmaceutical industry in Spain, one of its main users.

Although **desalination** is a mature sector in Spain with more than 700 desalination plants built since 1965, the experience gained in the national market is now being used by Spanish construction groups such as Acciona, Ferrovial, FCC and Sacyr, to build desalination plants in the world. The commitment to desalination process in terms of securing fresh water will increase in the following years the number of desalination plants all over the world, providing the opportunity for Spanish companies to growth in the international market.

Tourism is an economic driver for the Spanish economy, even in the current economic crisis. However, the model, that has focused in the so-called "sun and beach" tourism so far, shows signs of obsolescence, worsen by the emergence of new tourism destinations that offer the same product at a smaller price (African Mediterranean countries, Turkey etc). Therefore, there is a current challenge in Spain to advance towards a more sustainable and tailor made tourism model in the coast. In this context, the **cruise tourism**, with Spanish ports being among the most important in Europe, represents a relevant example of the potentialities of the sector

The **maritime transport** also represents the experience of a traditional and mature sector that has adapted to the new challenges of the economy. With four Spanish ports placed among the most important in Europe and being part of the European Transport Network, maritime transport is a promising sector with a high potential of growth due to the general commitment to boost maritime transport in detriment of other means of transport more harmful to the environment.

Due to the increase of fishing demand and the scarcity of fishing stocks, **aquaculture** is a promising sector, with a high potential of job creation.

Finally, although the **offshore oil and gas** commercial discoveries made since the seventies, the Spanish territory is considered as very little explored, with high potential for petroleum and gas discoveries. Thus the potential of growth is high, both in the national market and in the international market since there are an important number of Spanish companies operating in this field in other countries.

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 included¹⁰⁰:

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

¹⁰⁰ Dependent on data availability

3.2. Assessment of innovation reports compiled at national level

In addition to the above indicators two national studies have been identified that contain information on innovation potential per sector/maritime economic activity. A qualitative assessment of these reports is provided beneath.

Table 9 – List of pre-identified national maritime sector analysis

Source	Qualitative assessment regarding innovation potential per maritime economic activity/sector
<p>“Agricultura y pesca”, Informe sectorial 2013 - Barcelona Activa (<i>“Agriculture and Fishery”, Sectoral Report 2013- Barcelona Activa</i>)</p>	<p>Marine aquatic products</p> <p>Spain pioneers the transformation of traditional fisheries sector to the current aquaculture. In this sense, it is one of the territories of the European Union where there is a strongest support for the development and expansion of this activity. The technical and biological advances have improved sector instruments, both in the field of agriculture and in the field of fisheries and aquaculture, which has resulted in increased efficiency and reduced costs production. In addition, technological developments applied to the sector have helped to reduce the physical effort required to develop related occupations, and increase the possibilities of access to natural resources.</p>
<p>“Estudio del Impacto Macroeconómico de las Energías Renovables en España, Asociación de Productores de Energías Renovables” (APPA)</p> <p>“PERSPECTIVAS DE LA ENERGÍA EÓLICA MARINA EN ESPAÑA”, CCOO</p>	<p>Offshore wind</p> <p>This sector is at a research phase at the moment in Spain. The strong effort made in terms of research and development has a reflection on the wide participation of Spanish wind enterprises in European research and development projects, such as:</p> <ul style="list-style-type: none"> • MARINET(2011-2015): project focused on the study of systems of offshore renewable energy conversion with the participation of more than 25 companies and European Universities. • Project Zéfir Test Station: experimental offshore wind and R & D platform that the Catalonia Institute for Energy Research (IREC) will develop in waters adjacent to the Port of Tarragona. • AZIMUT: 11 companies and 22 research centers work together in order to generate the knowledge needed to develop a large offshore wind turbine. • OCOA: project to optimize the concrete foundations of the wind turbines <p>There are also other significant projects carried out by universities and institutions in Cantabria, Asturias and the Basque Country.</p> <p>Renewable offshore energy (marine energy)</p> <p>A level of technology and innovation, in Spain there are a lot of stakeholders involved in sea energies, who are conducting a major research and demonstration effort, as this sector is still in a research phase. There are up to nearly thirty projects (technological and regulatory-methodological) in development in the Spanish coast, with an estimated investment of over 230 million euros.</p> <p>Demonstration Technology Centers are to have a key role in providing installing prototypes and plants for demonstrative projects that will likely turn into commercial in the future. To reach the technological sector’s maturity and the development, the Public Administration support will be essential.</p>

	<p>Some projects developing at the moment are:</p> <p>Basque Country: BIMEP (Biscay Marine Energy Platform), research infrastructure, demonstration and operation of systems for capturing wave energy offshore.</p> <p>Canary Islands: PLOCAN Project, infrastructure of scientific and technological uniqueness which will house a testbed for harnessing ocean energy (offshore wind, wave, ocean currents, etc..).</p> <p>Cantabria: development of an energy node wave power of 2 MW and in Santoña and a test center for marine systems (wave and wind) in the Ubiarco area.</p> <p>Asturias: infrastructure led by the University of Oviedo, that aims to create a Singular Technical Scientific Facility located in the Asturian coast for experimentation, demonstration and operation of marine-based energy, environmental research, marine aquaculture and biodiversity and climate change studies.</p>
<p>IME (Spanish Marine Institute) website Puertos del Estado (State Ports) website</p>	<p>Coastal protection</p> <p>New innovative project developed by the Spanish Marine Force to use sea lions in rescue and civil protection activities.</p> <p>Development of the “Portus” system by Puertos del Estado: a pioneer ocean-meteorological system easily manageable, that contains personalized information about each port, around the parameter of waves, wind (provided by AEMET), sea level, currents, water temperature and salinity.</p>
<p>Report “Hotspots for tourism in 2013: innovative solutions for ambitious challenges” by PwC (<i>« Temas candentes del turismo para 2013: Soluciones innovadoras para retos ambiciosos »</i>)</p>	<p>Coastal tourism</p> <p>If the Spanish tourism industry invests in innovation, internationalization of products, technological development and product segmentation, the country could reach 80 million receive tourists in 2015.</p> <p>Innovation and the development of new varieties of tourism supply is the key to avoid the seasonality of tourism in Spain. According to experts in charge of the study indicated, Spain could get additional revenue of 20% after the high season. For this purpose, it would be vital to enhance alternatives that exist in other seasons and maintain contact with international tourists would allow discovering new needs. No doubt, it will be vital to this end improve further technological development and optimization of digital tools used in communication. Highlighting the importance of a closer relationship between the efforts of the public and private sectors, the report positions the new technologies and social media as a vital point to achieve the paradigm shift that requires Spanish tourism. PwC concludes that this is the most appropriate way to capture the so-called " connected tourist ", which handles a lot of information and decides based on what he/she receives from digital media.</p>

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

Table 10 - Ranking order of the 7 most innovative maritime economic activities in a MS at NUTS-0 level

Rank	Maritime economic activities
1.	Ocean renewable energy (wave, tidal, OTEC, thermal, biofuels, etc.)
2.	Blue Biotechnology
3.	Marine aquatic products
4.	Securing fresh water supply (desalination)
5.	Offshore oil and gas
6.	Offshore wind
7.	Coastal Protection

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4. Identification and analysis of maritime clusters

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

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

In this study, clusters are defined as “a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities (external economies)¹⁰¹.”

4.1. Maritime clusters in Spain

Building on the clusters already identified in the Blue growth study¹⁰² and complemented with cluster identified in the EU Cluster Observatory¹⁰³, the following clusters have been identified for Spain. Clusters in Spain are located in multiple sea basins: the Atlantic and the Mediterranean.

Table 12 –Maritime clusters in Spain¹⁰⁴

Longlist of maritime clusters EU Cluster Observatory	Suggested clusters for in-depth analysis		
	Cluster	Location of the cluster	Maritime economic activities in the cluster
Galicia	Galicia	Atlantic Arc	Coastal tourism, Maritime transport (deep and short-sea shipping), Fisheries, Aquaculture, Offshore renewable energy, Shipbuilding
Andalucia		Mediterranean Sea basin / Atlantic Arc	
Cataluña		Mediterranean sea basin	
País Vasco	Basque Country	Atlantic Arc	Shipbuilding, Marine energy, Coastline tourism, Maritime transport (port of Bilbao).

¹⁰¹ Prof. Michael E. Porter, 20120213, MOC2012 (HBS course) Session 5 - final

¹⁰² In the previous Blue Growth study, these were: Bretagne, Brest, Marseilles, ES: Galician Coast, Barcelona;

¹⁰³ The EU Cluster Observatory denotes maritime clusters and tourism clusters.

¹⁰⁴ 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
Valencia		Mediterranean sea basin	
Madrid		-	
Cantabria		Atlantic Arc	
Asturias		Atlantic Arc	
Castilla y León		-	
Castilla-La Mancha		-	

Shortlist of maritime clusters in Spain for in-depth analysis¹⁰⁵

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±

- Basque Country: The Atlantic region has relevant role, comparing to the Mediterranean arc, in terms of fishing and aquaculture and offshore renewable energies. The maritime economy represents 2.5% of the Basque Country's GDP, with a total value of € 2,100 M and 17,000 employers. The region outstands for its shipbuilding industry, and auxiliary development activities thanks to the improvements and efforts realised in the field of I+D. The Port of Bilbao is ranked the fourth Port in term of traffic activity at the national scale at represents around 1% of the region's GDP.
- Galicia: Galicia, is characterised by its biological *richness*, intensive fishing and aquiculture activity, maritime transport traffic (Port of Vigo) and shipbuilding industry. The Galician Fleet capacity is the largest of Spain, and fishery traditionally represents an important source of income and employment for the region.

4.2. Cluster analysis

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

1. Identification of existing clusters/updating the list in the 2012 Blue Growth study;
2. 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);
3. 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):

¹⁰⁵ 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.

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

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Table 13 - List and strengths and weaknesses of clusters

	EU Member State	Maritime economic activities concerned	Status (mature, growing, early development)	Strengths	Weaknesses
Galicia	ES	Coastal tourism	Incipient phase (Early development)	<p><u>Spain</u></p> <ul style="list-style-type: none"> Spanish is an important touristic destination, mainly due to its great offer of sun & beach touristic facilities. <p><u>Galicia</u></p> <ul style="list-style-type: none"> Tourism oriented towards a nature & marine holistic approach (gastronomy, thalassotherapy¹⁰⁶, culture, nature, sports and marine traditional activities). At this regard the region has developed several Thematic Plans¹⁰⁷. 	<p><u>Spain</u></p> <ul style="list-style-type: none"> Coastal tourism mainly concentrated in the Mediterranean region, and meeting high foreign demand. <p><u>Galicia</u></p> <ul style="list-style-type: none"> Weather conditions of northern regions that do not fulfil the sun&beach requirements.
Galicia	ES	Maritime Transport	Growing	<p><u>Spain</u></p> <ul style="list-style-type: none"> Strategic emplacement at the verge of the African and European continent, Mediterranean sea and Atlantic ocean. <p><u>Galicia</u></p> <ul style="list-style-type: none"> Important investments in ports infrastructure: Galician ports will received a total of 141M€ in 2012/2013 and 106M€ in 2014 Port development works take into account a holistic territorial planning approach (biodiversity, urban planning..) The region is an important area for the Atlantic Area MOS. E.g. VIGO port, represents a strategic point in the ports infrastructure and is the first port of Spain in terms of fishing products 	<ul style="list-style-type: none"> Galician ports are not representative for the country both in terms of volume of cargo and income generation: Main ports in Galicia are Ferrol (Ranked 12th), A Coruña, Vigo, Pontevedra y Vilagarcía¹⁰⁸.
Galicia	ES	Fisheries	Mature. Development towards a more technological industry in the field of fish processing	<p><u>Galicia</u></p> <ul style="list-style-type: none"> The region is one of the main fishing regions of the country, characterised by its traditional fishing activities, craftwork processes and products (shellfish). Its fleet capacity represents 6% of the total fleet of the UE, and is the largest of Spain. Galicia represents 45.5 % of the total national employment in the field of extractive fishing. Galicia accounts for 87% of shellfish state affiliates 	<p><u>Spain</u></p> <ul style="list-style-type: none"> National fish supply does not meet the national demand. Although alternatives are being found in the Aquamarine sector. <p><u>Galicia</u></p> <ul style="list-style-type: none"> Increasing ageing of the occupied population and lack of generational replacement in the sector. Low innovation technologies applied to the field. Fish stock and ocean biodiversity conditions, damaged by

¹⁰⁶ Toja Isle.

¹⁰⁷ For more information on Thematic tourism plan in the Galicia Region: <http://turismo.xunta.es/index.php?id=25>

¹⁰⁸ Data has been extracted from the Ports of Spain Annual report 2011.

	EU Member State	Maritime economic activities concerned	Status (mature, growing, early development)	Strengths	Weaknesses
				<p>according to the Ministry of Agriculture, Fishery and Food (2006).</p> <ul style="list-style-type: none"> Strong development in the field of processing products: e.g. tuna canning industry leader in Europe. Canning industry cluster in Spain¹⁰⁹. 	<p>overexploitation and petroleum disasters (ie. Prestige)</p> <ul style="list-style-type: none"> PESCANOVA has traditionally been a leader in frozen fish processing, but the company is actually in arrangements with creditors
Galicia	ES	Offshore renewable energy (ocean and wind energy)	Early development	<p>Spain</p> <ul style="list-style-type: none"> Renewable energies, particularly wind energy, are a leading innovation sector in Spain, where the country holds high levels of I+D technology and experience. The country has a national strategy towards the development and support of Renewable energies, framed in the Renewable Energies Plan 2011-2020. <p><u>Galicia</u></p> <ul style="list-style-type: none"> Galicia is the Spanish region with the highest wind energy potential¹¹⁰. Galicia holds a strategic emplacement for the development of wave energy platforms, where intensities of ocean currents can reach 100kw/m. The region has developed a Wave energy Map, for the Galician region¹¹¹. The region hosts several projects in the field of wave offshore renewable energy and has several testing tanks, e.g. PSE-MAR project, and Galicia Mar Renovables project, Wave Cat and Sea Energy Several r+d institutes and associations in the field of energy and navy in the region, that are developing initiatives and merging their knowledge at the service of offshore wind energy, e.g. ENERXE, ENVITE and ENERMAS.¹¹² 	<ul style="list-style-type: none"> Depth of Atlantic Ocean coastal water renders difficult the creation of offshore wind parks. Need for floating technology to achieve sufficient maturity in order to become competitive in a large scale.
Galicia	ES	Aquaculture	Growing	<p>Spain</p> <ul style="list-style-type: none"> National fish supply does not meet the national demand. Aquaculture represents a leading sector for the Spanish economy. <p><u>Galicia</u></p>	<ul style="list-style-type: none"> Mussels farming is an aquaculture activity highly dependent on climate and other environmental conditions.

¹⁰⁹ For more information please refer to the ANFACO-CECOPESCA organisation website : www.anfaco.es

¹¹⁰ Desarrollo de las energías renovables marinas : condiciones de éxito en las regiones RTA del Arco Atlántico, Red Transnacional Atlántica, 2010.

¹¹¹ The project has been developed by METEOGALICIA.

¹¹² Desarrollo de las energías renovables marinas : condiciones de éxito en las regiones RTA del Arco Atlántico, Red Transnacional Atlántica, 2010.

	EU Member State	Maritime economic activities concerned	Status (mature, growing, early development)	Strengths	Weaknesses
				<ul style="list-style-type: none"> Galicia represents 65% of the total national employment in the field of aquaculture. Galician Mussels production on rafts, the main activity in the region, represents around 69% of the total national aquaculture production. Opportunity to move towards more sustainable exploitation while responding to market conditions. Specialised cluster that offers education and training in the field of aquaculture: Instituto gallego de formación en acuicultura. 	
Galicia	ES	Shipbuilding	Mature, need to develop I+D activities	<ul style="list-style-type: none"> The region has a long tradition in the sector and hosts 15.3% of the National Shipbuilding Companies. Navantia, situated in the port of Ferrol, is currently involved in the construction of several high-tech vessels and water turbines, also used for renewable energy. The Galician branch of Navantia is also specialised in ship repair services The sector is organised under different clusters and research institutes: <i>Asociación Cluster del sector naval Gallego- ACLUNAGA</i>¹¹³, <i>Centro tecnológico naval gallego (CETNAGA)</i>, research units of the Vigo, Santiago de Compostela and A Coruña Universities. 	<ul style="list-style-type: none"> High international competitiveness, specially from Asian countries (China and Korea) Highly dependent on Public and European financial aids. Navantia, public enterprise with 5.000 employees, highly dependent on State aid and is currently in a restructuring process that may severely affect the region.
Basque country	ES	Shipbuilding	Mature, development towards a more technological industry	<ul style="list-style-type: none"> Long experience in the construction of military vessels and r+d development applied to the sector. High investments and improvements in terms of r+d and technology. 	<ul style="list-style-type: none"> High international competitiveness, specially from Asian countries (China and Korea) Highly dependent on Public and European financial aids.
Basque country	ES	Marine renewable energy	Early development-Growing	<p><u>Spain</u></p> <ul style="list-style-type: none"> Renewable energies, particularly wind energy, are a leading innovation sector in Spain, where the country holds high levels of r+d technology and experience. The country has a national strategy towards the development and support of Renewable energies, framed in the Plan de energía renovables 2011-2020. 	<ul style="list-style-type: none"> Depth of Atlantic coastal water renders difficult the creation of offshore wind parks. Need for floating technology to achieve sufficient maturity in order to become competitive in a large scale.

¹¹³ For more information, refer to : www.aclunaga.es

	EU Member State	Maritime economic activities concerned	Status (mature, growing, early development)	Strengths	Weaknesses
				<p><u>Basque country</u></p> <ul style="list-style-type: none"> Basque country is leader in the development of renewable energy, strongly supported by the Basque government through the <i>Ente Vasco de la energía</i> and has elaborated an <i>Estrategia energetica de Euskadi 2020</i>. The government is actively involved in marine renewable energy initiatives and has created the CIC ENERGIGUNE research centre responsible for the BIMEP and Mutriku initiatives. The region has developed leading projects in the field of wave offshore renewable energy, e.g. Mutriku project, BIMEP project, Oceantec project and the Ocean Power Technology projects. The region has developed a Wave Energy Map that allows the analysis and statistical measure of wind and currents force for a more accurate installation of projects but also for environmental purposes. Several r+d institutes and companies from the field of energy are developing a cluster that aims to promote marine energy. Strong industry, atmosphere conducive to achieve marine energy development, which encloses energy operators, turbines manufacturers, major engineering companies, electronics, naval construction and auxiliary engineering that could easily diversify its activities towards marine energy. 	
Basque country	ES	Coastal tourism	Growing	<p><u>Spain</u></p> <ul style="list-style-type: none"> Spanish is an important touristic destination, mainly due to its great offer of sun & beach touristic facilities. <p><u>Basque country</u></p> <ul style="list-style-type: none"> Tourism strategy in the region is based in three strategic documents aiming to promote mainly the gastronomy, nature and culture of the region: <i>Plan de Competitividad del Turismo Vasco 2010-2013</i>, <i>Plan de Marketing del Turismo Vasco 2010-2013</i> and the <i>Plan de Turismo Cultural de Euskadi</i>. Increasing relevance of the region as a hosting place for cultural events (San Sebastian festival), sports competitions (surf, windsurf, etc.) 	<p><u>Basque country</u></p> <ul style="list-style-type: none"> The weather conditions of northern regions do not fulfil the sun& beach requirements.

	EU Member State	Maritime economic activities concerned	Status (mature, growing, early development)	Strengths	Weaknesses
Basque country	ES	Maritime transport	Growing	<ul style="list-style-type: none"> The Port of Bilbao is the 4th port of Spain in terms of traffic (33,415 million tons in 2013 so far) and growing. New lines have been opened linking Bilbao with major ports in USA, China, and India among others, reaffirming Bilbao's position as the EU entrance gate in Spain, in connection with UK, Netherlands and Belgium markets that has met an increase of 8% in 2011¹¹⁴. Investments during 2012/2013 in the port were 40M€ and forecast for 2014 is 19M€. The port of Bilbao presents a strong hinterland and intermodal transport connectivity (rail and roads) thus in line with the TEN-T European maritime transport strategy. The port has elaborated the first Sustainability Guide, stating its environmental compromise and its commitment under an Integrated Management System. In 2011 the port has been accredited with the quality certification- ISO 14001. A mobile application (APP platform) has been created to inform about the services, routes and other relevant information of the port. 	<ul style="list-style-type: none"> Decrease in oil and gas traffic from the Spanish Oil refinery company PETRONOR and the scrap imports of ARCELOR MITTAL SESTAO, one of the largest steel manufacturer company in the country (both located in Biscay).

Table 14 – In-depth analysis of clusters

	EU Member State	Maritime economic activities concerned	Education policy		Unemployment rate at cluster level ¹¹⁵ (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		

¹¹⁴ Balance 2011, Puerto de Bilbao.

¹¹⁵ 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.

				employment in blue economy		
Galicia	ES	<ul style="list-style-type: none"> • Coastal tourism • Deep and short-sea shipping • Fisheries, • Aquaculture • Offshore renewable energy 	The total number of students in higher education in the region is of 20,729 students ¹¹⁶	The total number of students following courses for marine employment are 3,063. In 2012. ¹¹⁷	Unemployment rate in the region is 22.4%, this is 270,515 people. Please note that this is the figure for all sectors. Breakdown figures do not follow a marine approach.	<i>Instituto tecnoloxico para o control do medio mariño de Galicia</i> ¹¹⁸ <i>Instituto de Investigaciones marinas</i> <i>Centro tecnológico del mar (CETMAR)</i> <i>CIS - GALICIA - Centro de Innovación y Servicios de Galicia</i> <i>Plataforma Tecnológica Galega de Loxística</i> ¹¹⁹ <i>Universidad de A Coruña</i> <i>Universidad de Santiago de Compostela</i> <i>Universidad de Vigo</i> <i>PESCANOVA</i> <i>Hijos de Carlos Albo Conservera</i> <i>Luis Escuris Batalla Conservera</i>
Basque country	ES	<ul style="list-style-type: none"> • Shipbuilding • Marine energy • Coastal tourism • Maritime transport 	The total number of students in higher education in the region is of 51,816 students.	<p>Only information has been found regarding vocational training.¹²⁰</p> <p>This gives us data both for Basque country and Galicia. Figures state that:</p> <p>Energy and Water Vocational</p>	Unemployment rate in the region is 15.46%, this is 100,772 people. Please note that this is the figure for all sectors. Breakdown figures do not follow a marine approach.	<i>Foro Marítimo Vasco</i> <i>Agrupación de industrias marítimas de Euskadi</i> <i>Escuela Técnica Superior de Náutica y Máquinas Navales- Universidad del País Vasco</i> <i>Escuela Universitaria de Ingeniería de Bilbao –Universidad del País Vasco</i> <i>Consejo económico y social vasco</i> <i>AZTI-Tecnalia</i> <i>Museo marítimo ría de Bilbao</i> <i>Astilleros Zamakona</i>

¹¹⁶ [http://www.ige.eu/igebdt/esqv.jsp?paxina=001&c=0501&ruta=verPpalesResultados.jsp?OP=1&B=1&M=&COD=525&R=2\[all\]&C=T\[6:0\]&F=1:0;3:26&S=998:12&TI=1#](http://www.ige.eu/igebdt/esqv.jsp?paxina=001&c=0501&ruta=verPpalesResultados.jsp?OP=1&B=1&M=&COD=525&R=2[all]&C=T[6:0]&F=1:0;3:26&S=998:12&TI=1#)

¹¹⁷ This includes 1st and 2nd grade students (Matriculados and Titulados). Data has been extracted realising a selection of the different degrees offered by the Regional Universities related to maritime activities. Data is provided for enrolled students (matriculados) and graduate students (titulados)
<http://www.ige.eu/igebdt/selector.jsp?COD=525&paxina=001&c=0501>

¹¹⁸ For more information: www.intecmar.org

¹¹⁹ For more information: www.loxisga.org

¹²⁰ <http://www.todofp.es/dctm/todofp/20111018-mapafp.pdf?documentId=0901e72b80fea542>

				training (page 38 of the report): Basque country - 29, Galicia- 13 Fishing- Maritime Vocational training (page 39 of the report): Basque Country -54, Galicia - 15		<i>Construcciones navales Altair</i>
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Other clusters, research institutions, foundations with relevance in the field of maritime activities have been identified at National level, thus having important direct and indirect impact to the regional clusters of Galicia and Basque Country ¹²¹:

- *Cluster Marítimo Español* : www.clustermaritimo.es
- *Pescaplus- Oficina para la promoción y dinamización de proyectos de innovación tecnológica*: www.pescaplus.es
- *Plataforma tecnológica española de la pesca y la acuicultura (PTEPA)*: www.ptepa.es
- *Plataforma Tecnológica para la Protección de la Costa y del Medio Marino (PROTECMA)* : www.ptprotecma.es
- *Confederación española de pesca (CEPESCA)* : www.cepesca.es
- *Fundación Innovamar*: www.innovamar.es
- *Fundación Aulamar* : www.aulamar.org
- *Fundación Ecomar* : www.fundacionecomar.org
- *Federación española de empresarios del mar (Identidades, Valores y Estrategias Alternativas para los Empresarios Marítimos y Pesqueros- IVEAEMPA)* : www.iveaempa.org
- *Instituto Español de Oceanografía (IEO)* : www.ieo.es
- *Instituto Marítimo Español (IME)* : www.ime.es
- *Real Academia de la Mar* : www.hispamar.es
- *AEPTMCD - Asociación Española de Promoción del Transporte Marítimo de Corta Distancia* : www.shortsea.es
- *AITEMIN - Asociación Instituto de Investigación y Desarrollo Industrial de Recursos Naturales* : www.aitemin.es
- *ANAVE - Asociación de Navieros Españoles*: www.anave.es
- *ANEN - Asociación Nacional de Empresas Náuticas*: www.anen.es
- *Asociación de Ingenieros Navales del Estado (AINAVAL)* : www.ainaval.es

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

¹²¹ For more information on maritime organisations and associations, please refer to the following websites : www.kimeraa.eu/mapa/index.php , www.ptmaritima.com/desar/miembros.asp?apt=63

Table 15 – Regional or national cluster strategy

Regional or national cluster strategy	Brief description of main objectives and features
<p><i>Cluster Marítimo Español</i> (Spanish Maritime Cluster)</p>	<p><u>Mission and Objectives</u></p> <p>The cluster is oriented towards the promotion of a Bluegrowth strategy in Spain, completely aligned with the European Maritime Policy and for the increased relevance of the maritime sector in the Spanish economy. The principal objectives are:</p> <ul style="list-style-type: none"> -To encourage the development and competitiveness of the Spanish maritime industry by achieving business excellence; encourage innovation and high tech product development; - To improve efficiency of Spanish industrial and commercial management companies, and internationalisation of their products in order to increase competition of Spanish companies in the global market. -To contribute to the wealth generation and economic prosperity of Spain by promoting professional development of employees of the different maritime sectors and generating high quality jobs of the different maritime sectors; -To maintain and strengthen the leadership, growth, competitiveness and sustainability of European maritime activities. <p><u>Areas</u></p> <p>The strategic plan identifies several thematic action lines, in relation with Blue growth to be principally coordinated with the naval industry and other Spanish maritime organisations. These are:</p> <ul style="list-style-type: none"> - Maritime transport - Ports - Shipbuilding and ship repair - Fishery - Aquaculture - Leisure boats - Marine research - Education and training
<p><i>Foro Marítimo Vasco</i> (Basque Maritime Forum)</p>	<p><u>Mission- Objectives:</u></p> <p>The cluster encloses outstanding regional firms, associations and institutions of the different maritime sectors and the Basque country Government, and has the mission to defend, consolidate, promote and improve the competitiveness of the Basque maritime enterprises in the global market. The cluster has elaborated a Strategic Action Plan 2009-2012¹²² that identifies the following objectives:</p> <ul style="list-style-type: none"> - To promote and support regional firms to achieve excellence in management and competitiveness while taking in hand socio-economic and environment conditions - To support regional firms to attain leadership position in international markets, through innovation strategies, capacity

¹²² Plan de acción Foro Marítimo Vasco 2009-2012.

	<p>building and training activities</p> <ul style="list-style-type: none"> - Advocacy actions for the full support of the sector in the different decision-making forums and levels. - Information delivery on the sector's situation, evolution and challenges in the region and the global market, and be a communication and information vehicle to all companies of the sector. <p><u>Areas:</u></p> <p>The above mentioned plan has constructed the overall strategy of the cluster through the identification of the following strategic areas:</p> <ul style="list-style-type: none"> - Internationalisation - Technology - Business Management Excellence - Finance-auditing - Education and capacity building - Communication - Information - Interest representation <p>The cluster offers a series of services and activities to its partners related to these strategic objectives such as participation in conferences and representation in decision-making forums, thematic workshops, revitalisation of technological projects, recycling initiatives, sectoral agreements and alliances, advice for quality management systems implementation, etc. At this regard, 2 ambitious projects have been developed by the Forum:</p> <ul style="list-style-type: none"> - A Competitive Intelligence System, with the purpose to easily compile sector-related information and disseminate it to the companies and organisations within the cluster, in order to be used as a technological surveillance tool. - A diagnostic-study of the sector with the aim to assess the needs, challenges and modernisation requirements of maritime activities in the region and serve as a road-map for the sector's strategy. (e.g. education and training in the area of shipbuilding in order to make the sector more technologically intensive).
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5. Analysis of measures, policies and strategies to stimulate growth and good practices in the sea-basin

Law 41/2010 of 29th for December on the Protection of the Marine Environment is the transposition into Spanish regulatory system of Directive 2008/56/EC of June 17, 2008, that establishes a framework for a European Marine policy to achieve or maintain good environmental status of the marine environment by the year 2020. Subsequently, the Commission has adopted *Commission Decision 2010/477/EU on Criteria and methodological standards on good environmental status of marine waters*. This decision contains the criteria and associated indicators that allow assessing good environmental status in relation to the 11 descriptors listed in Annex I of the Directive.

To facilitate the planning work for the elaboration of the Spanish marine strategy, the Law 41/2010 realises a division of the country in five marine boundaries: North Atlantic, South Atlantic, and Alboran Strait, east-Balearic and Canary Islands, for each of which the government shall develop a marine strategy. Currently, the first three phases (initial assessment, good environmental status and environmental objectives) have been completed and the Ministry of Agriculture, Food and Environment is working on the implementation of the next phase of the marine strategies through the development of monitoring programs. These programs should make the most of existing programs, and be coordinated and consistent among countries that share marine subregions. They will also be subject to public consultation, and should be ready by July 2014¹²³.

A part from that, Spain does not have a specific document such as a Blue Book that integrates the whole of marine and maritime activities in accordance with Blue Growth Policy vision¹²⁴. Nonetheless, the following Strategic Plans and Programmes have been identified, in relation:

- National Strategic Plan for the European Fisheries Fund 2007-2013, and the Operational Programme for the Spanish fisheries sector;
- National Action Plans on Marine Aquaculture;
- River Basin Management plans;
- Guidelines for Integrated Coastal Area Management ;
- Strategic Infrastructure and Transports Plan 2005-2020;
- National Action Plan for Adaptation to Climate Change;
- National Action Plan for renewable energy 2011-2020;
- Spanish Strategy for the conservation and sustainable use of the biological biodiversity.

¹²³ MAGRAMA website : www.magrama.es

¹²⁴ Executive summary : Blue Growth in the Mediterranean region: Spain perspective, May 2013.

Table 16 – Assessment of maritime and generic policies

Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding
<p>National Strategic Plan for the European Fisheries Fund 2007-2013 + OP for the Spanish Fisheries sector</p> <p><i>(Plan Estratégico Nacional del Fondo Europeo de La Pesca 2007-2013 + Programa Operativo para el sector pesquero español).</i></p>	<p>The strategy pursues the adaptation of the fishing fleet, in order to ensure the future exploitation of living aquatic resources that provides sustainable environmental and social conditions, while ensuring a long-term economic sustainability.</p>	<ul style="list-style-type: none"> • Management and adaptation of the fishing fleet; • Sustainable development of aquaculture activities; • Sustainable development, and processing and marketing of fishery products; • Sustainability of fishing areas; • Improving competitiveness in fisheries; • Preservation of human resources in the fisheries sector; • Protection and improvement of the aquatic environment related to the fisheries sector; • Inspection and control of fishing activities, through data collection and information systems and procedures on the common fisheries policy and sanctions regime; • Market supply and maintenance of fishing by Spanish vessels outside Community waters. 	<ul style="list-style-type: none"> • Fishing effort adjustment actions: cessations (shipbreaking) and conversion to other uses (recreational); • Promote investment to improve safety and working conditions of workers and energy efficiency; • Support to traditional coastal fishing; • Promote of R & D by improving energy efficiency, improving seaworthiness of vessels and use of more selective techniques. 	<ul style="list-style-type: none"> • Reduction of the fishing effort in order to restore fisheries; • Reinforcement of employment in the fishery sector; • Reduction of operating costs to increase the benefit of fishermen and fisheries sustainability improvement. 	<p>The total amount forecasted is €946M, as its breakdown is described in the Operational Programme.</p> <p>Financial sources are: FEDER, FSE, Innovation plans, Spanish Central Administration (Fisheries Directorate General), and Autonomous Regions, etc.</p>
<p>National Action Plans on Marine Aquaculture</p> <p><i>(Planes Nacionales de Cultivos Marinos).</i></p>	<p>The purpose of these plans is to promote and develop marine aquaculture in an harmonised way in the whole country. They are oriented towards the achievement of specific and concrete objectives to eliminate ambiguities and generalities and to be of interest to a significant portion of the country.</p> <p>The plans are elaborated by the Government and the Autonomous regions, but coordinately executed by the Autonomous Regions under a specific plan for each marine species. The evaluation of those plans is commissioned to the Junta Nacional Asesora de Cultivos</p>	<p>Efforts focus on research, development and innovation, as well as any complementarity activity related to marine aquaculture whose achievement is considered important for the harmonious development of the sector.</p>	<ul style="list-style-type: none"> • Develop a solid aquaculture sector in the Spanish marine sector; • Increase maritime revenue and new income sources through the development of the sector; • Create employment opportunities; • Promote sustainable fishing; • Protect marine environment and biodiversity. 		<p>Each plan elaborates a breakdown on the cost and activities to be realised. No data on the total amount invested on marine aquaculture is provided by the Ministry of Agriculture, Food and Environment.</p>

Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding
	<p>Marinos.</p> <p>From 2011-2012 a total of 38 plans have been elaborated and executed.</p>				
<p>River Basin Management Plans</p> <p><i>(Planes Hidrológicos de Cuenca¹²⁵)</i>.</p>	<p>The plans are elaborated to ensure the good condition and adequate protection of public water and wastewater, meeting water demands in balance with regional and sectoral development. The different actions aim to safeguard the availability of the resource, while protecting its quality, saving water dependent related jobs and streamlining their uses in harmony with the environment and other natural resources protection, through holistic and long-term initiatives. Water planning should contribute to mitigate the effects of floods and droughts, guided by the sustainability criteria in the use of water.</p>	<ul style="list-style-type: none"> • Drainage and water treatment initiatives; • Ensure water provision; • Modernisation of Irrigation methodologies and practices; • Flood management; • Restoration of water bodies in humid areas; • Energy and water regulation; • Planning and administrative control of water. 	<ul style="list-style-type: none"> • Develop measures concerning Water Stations Treatment, deposits and pumping tools through the improvement of supply networks; works in dams and weirs; improved catchments and pipeline; • Realise drainage and water treatment works through improvements in wastewater treatment plants, manifolds and sanitation networks; • Support the modernization of irrigation activities and practices through the investment in lower water consumption systems, improvements in canals and ditches and implementation of regulatory measures and concessions; • Develop flood management actions through the design of an Early Warning System including prevention plans; improvement works in dams, channels and defense flecks restoration. • Support actions for the Restoration of rivers, waterfront redevelopment, restoration Wetlands, etc • Develop administrative Measures to complement Water management and prevention mechanisms. • Develop Networks for water control (AHIS-SAICA) and cost recovery rate update, rules and regulations of uses, development of good practice codes, awareness campaigns and environmental education. 	<p>Each plan elaborates a breakdown on costs and activities to be realised. Financial support is safeguarded through recuperation costs instruments, such as water surcharge and water supply tariffs.</p>	
<p>Guidelines for Integrated Coastal Area Management</p> <p><i>(Plan estratégico Directrices Gestión Integrada de Costas¹²⁶)</i>.</p>	<p>These guidelines serve to identify and promote measures to halt and reverse the erosion of environmental resources, deterioration of socio-economic and cultural resources in coastal areas, and to improve their overall situation. They intend to provide guidance on what should be the content,</p>	<ul style="list-style-type: none"> • Preservation and restoration of the values and functions of the natural and scenic coastal strip ; • Natural recovery in degraded coastal areas or excessively urbanized zones . • Protection of the beach as a natural area with high environmental values ; • Recovery of natural spaces of the waterfront ; • Protection and defense of the integrity of public land and maritime areas and access for general use ; 	<ul style="list-style-type: none"> • Attend the incessant growth of the coast demand exceeding in many cases the capacity load of the beaches and fall of the environmental quality of these urban coastal areas . The recovery of the coastal edge quality of these cities and urban areas is closely linked to the pressure relief on edificatoria on seashore ; • Transform urban waterfronts to protect and preserve the coast, and to "recover naturally" the degraded coastal and urbanized areas ensuring the environmental quality and the general interest of the coast; • Support routes works and nature trails on non-urban coastal areas that allow exploring the coastline walk and enjoy the scenery and natural value of Spanish Coast ; • Develop actions for free access, transit and public use of the shoreline by integrating trails and itineraries in harmony with the environment, reducing their impact as much 	<p>The Coasts Directorate General has a specific financial item for urban coast areas' protection and regeneration. The amount is included in the General State Budget.</p>	

¹²⁵ A total of 18 plans approved. <http://www.magrama.gob.es/es/agua/temas/planificacion-hidrologica/planificacion-hidrologica/planes-cuenca/default.aspx>.

¹²⁶ <http://www.magrama.gob.es/es/costas/temas/proteccion-del-medio-marino/la-union-europea-y-la-proteccion-del-medio-marino-y-costero/gizc.aspx>

Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding
	approach and objectives of coastal works projects, among which are those that pursue the integrity protection of the coast as well as its free public access and use.	<ul style="list-style-type: none"> Ensuring the public use of the seashore and the rest of the public domain seascapes ; Improvement of open access, transit and public use of the coast in those stretches where there is some privatization of the coastline. 	as possible, both physically and visually.		
Strategic Infrastructure and transport plan 2005-2020. <i>(Plan estratégico de Infraestructuras y Transporte 2005-2020¹²⁷).</i>	The plan ensures the effective integration of Spanish transport system to European transport policies, by the increase in the relative weight of the different transports involved in intermodal transport (air, road, rail and maritime) both in long distance movements of passengers and goods.	Particular attention will be given to maritime (and air links connections), in order to better integrate these networks in non-mainland areas of Spain.	Increase by 2020 national operators presence in the maritime transport market, to attain an economic share proportionate to the country's weight in the EU/International level; and support intermodal operator (with participation in rail, sea and road) activities to the average levels of the European Union.		A total of investment effort of € 250,000 M; through direct investment (State and Central Government Administration), Indirect investment (Autonomous Community, Municipality, Public Corporation or Holding Company), EU funds, Public Private Partnership agreements and deferred mechanisms (i.e. Automobile charge, special levies, etc). The amount for Sea transport and ports is 23,460 M and, in the frame of intermodal transport , a total of 1,220 M is foreseen for "Land access to ports projects".
National Action Plan for Adaptation to Climate Change. <i>(Plan Nacional de Adaptación al Cambio climático¹²⁸).</i>	The plan seeks the integration along all sectors and/or systems of climate change adaptation measures in order to implement and develop state-level commitments that the country has gained in the international context of the United Nations Framework Convention on Climate Change (UNFCCC) and the European Union. The plan is conceived as a continuous and cumulative	<ul style="list-style-type: none"> Adaptation of R&D and innovation scheme to the needs identified in the field of climate change; Development of a permanent process of information activities and communication of projects evolution ; Promotion of participation of relevant actors through their involvement in the different sectors / systems ; Elaboration of specific reports taking in hand the results of the evaluations and projects ; Preparation of periodic reports for the monitoring and evaluation of the joint projects and the National Adaptation Plan. 	<ul style="list-style-type: none"> Biodiversity: protect inland aquatic ecosystems, realise evaluation studies of protected natural areas, create a biological indicator system, etc. Fisheries and marine ecosystems: climate change supposes a reduction of Spanish waters productivity given its characteristics of warm temperate seas, that may infer a change in the distribution of many species. Also, unsubsidized mariculture with food may be affected by the reduced marine productivity. Increases in the presence of toxic phytoplankton species or cultivated species parasites, are favoured by the temperature increase of coastal waters. The plans supports the evaluation of marine protected area networks to mitigate these impacts. Coastal areas: a rise in the level of the sea may have an impact on deltas and coastal wetland areas for agricultural use or built in the vicinity of estuaries or coastal floodplains. At this regard the plan includes the evaluation of potential actions to enhance stabilization of beaches and dunes, construction works to protect transport capacity of the incident wave and artificial sediments. 	n/a	

127 http://www.fomento.gob.es/MFOM/LANG_CASTELLANO/ESPECIALES/PEIT/

128 http://www.magrama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/pna_v3_tcm7-12445_tcm7-197092.pdf

Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding
	process of knowledge generation and capacity building, as well as a tool for decision makers related to climate change adaptation policies.		<ul style="list-style-type: none"> • Transportation: a rise in sea level, changes in the regime rainfall, winds, waves, etc., could have numerous impacts on ports and maritime transport; • Tourism: Areas most vulnerable to climate change are located in the coastal area (with a high degree of artificiality), which supposes a threat to the Spanish main tourism product, tourism of sun and beach. On the other hand, the sea level rise threatens the current location of certain tourist settlements and their infrastructure. 		
National Action Plan for renewable energy 2011-2020. <i>(Plan de acción nacional de energías renovables 2011-2020¹²⁹).</i>	The plan promotes the use of energy from renewable sources, with the objective that renewable sources account for at least 20% of final energy consumption in 2020, with a contribution of 10 % of renewable energy in the transport sector t in that year.	<ul style="list-style-type: none"> • Liberalization and the promotion of transparency in energy market as well as the development of international interconnections in the electricity and gas sector; • Development of energy infrastructure to improve security and diversification of energy supply sources through the modernization of networks, the development of LNG regasification plants, underground natural gas storages and strategic reserves of petroleum products; • Promotion of the use and consumption of renewable energy and energy efficiency and savings, by increasing the investing effort in technology, advances in the management of the system, the use of storage techniques such as pumping, or the development of renewable energy facilities with a storage capacity. 	<ul style="list-style-type: none"> • Develop a specific regulatory framework for the development of the Sea Energy projects ; • Develop scientific research and innovation lines, to promote technological development of renewable energy prototypes at sea; • Develop specific marine technologies, designed for the deployment of deepwater projects. 		The financial support is assured through the determination of specific compensation values for each renewable-energy aiming to contribute to the investment efforts realised in this field. These compensation values for the remuneration of the renewable energy production are established by royal decree, RD 485/2009.
Spanish Strategy for the conservation and sustainable use of the biological biodiversity, <i>(Estrategia española de conservación y uso sostenible de la biodiversidad¹³⁰).</i>	Increase the knowledge and conservation of biodiversity as a whole, protecting the variety of life forms, species and communities, and the maintenance of ecological processes.	<ul style="list-style-type: none"> • Promotion of active cooperation between all parties involved, both from the different public and private institutions and the various social and economic groups, to achieve a company-wide commitment to the ration and sustainable conservation of biological diversity ; • Incorporation of the principles of restoration, conservation and sustainable use of biodiversity in planning processes and sectoral and intersectoral policies ; • Establishment of planning management mechanisms for the conservation of natural resources in the medium and long term ; • Promotion of research, knowledge generation activities and training on biological diversity ; 	<ul style="list-style-type: none"> • Identify the areas likely to be part of the list of Specially Protected Areas for its importance in the Mediterranean (ZEPIM) according to the Fourth Protocol of the Barcelona Convention, as well as marine areas appropriate to the process of implementation of Annex V of the Convention on the Prevention of Marine Pollution (OSPAR), as and create a technical-administrative database for these areas ; • Develop restoration plans for natural habitats, terrestrial, marine and freshwater gradients, necessary for the prior development of the necessary guidelines for their development and implementation ; • Elaborate a Planning for the use of land and the maritime space, that ensures the conservation of biological diversity ; • Develop specific protective measures on the landscape as a way of preserving habitats and species that do not fall on the Special Areas of Conservation in the marine environment ; • Establish animal reserves or marine sanctuaries, and as well as a Center for Marine Biodiversity. 		n/a

¹²⁹ <http://www.minetur.gob.es/energia/desarrollo/EnergiaRenovable/Paginas/paner.aspx>

¹³⁰ http://www.magrama.gob.es/es/biodiversidad/servicios/banco-datos-naturaleza/informacion-disponible/descargas_es.aspx

Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding
		<ul style="list-style-type: none"> • Incrementation of education, outreach and information efforts to raise awareness on citizenship and achieve social involvement in the conservation and sustainable use of biological diversity ; • Articulation of policy instruments and financial resources, through the adaptation of existing instruments or through the possible establishment of new ones ; • Involvement of bilateral and multilateral programs and active participation in all initiatives arising between countries towards the better conservation of natural heritage, in line with the gaining momentum of international cooperation in this area. 			

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The following evidence indicators to identify successful good practices will be analysed depending on the specific context of the individual good practice identified.¹³¹ The assessment presents an expert opinion as to how far the targets and the objectives of the particular good practice have been met and in how far those have been met.

Table 17 Assessment of good practices derived

Good practice	Assessment
Spanish Maritime Cluster	<p>The Spanish Maritime Cluster was created with the mission to encourage the development and competitiveness of the Spanish maritime industry. In addition, the Cluster aims to contribute to the European Maritime Policy, to maintain and strengthen the leadership, growth, competitiveness and sustainability of European maritime activities. Its actions are coordinated with the naval industry sector and Spanish maritime organisations in order to:</p> <ul style="list-style-type: none"> • Contribute to the wealth generation and economic prosperity of Spain. • Achieve business excellence in the maritime Spanish sector. • Increase competition of Spanish companies in the global market. • Improve the efficiency of Spanish industrial and commercial management companies. • Promote the professional development of employees of the different maritime sectors. <p>The cluster is oriented towards the promotion of a Bluegrowth strategy in Spain, completely aligned with the European Maritime Policy and for the increased relevance of the maritime sector in the Spanish economy.</p>
Odyssea Al- Andalus Project	<p>The project aims to promote nautical tourism between Andalusie and Morocco, related to the culture and patrimoine heritage, gastronomy, art, life tradition, leisure and environment in the Mediterranean sea. The project has produced several important deliverables such as Good practice guidelines on Nautical tourism and an Environmental Impact assesment of Nautical Tourism Activities. The project has contributed to the following achievements:</p> <ul style="list-style-type: none"> • Development of sustainable nautical tourism in Spain and transnationnal cooperation in the Mediterranean Sea. • Development and implementation of new technologies to nautical tourism. • Development and implementation of an evaluation system of environmental quality indicators and services provided in port facilities.
International Nautical Exhibition Online Permanent Platform	<p>This online platform aids to the development of a nautical market through the continuous offer of nautical products and nautical tourism services. The Project has significant importance in the development and promotion of the Nautical sector, both at the national and international level, through the promotion of nautical products, recreational shipping, water sport activities, etc.</p>

¹³¹ Provided that data is available to identify indicators of success of the good practice (evidence for impact).

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

		Eurostat			Official National Statistical Sources			Alternative sources (outside official statistics)			Other indicators			
Maritime economic activity		GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	GVA (EUR, million)	Employment	Source & Reference year	Enterprises	SMEs	Further indicators	Source & reference year + notes
0. Shipbuilding														
0.1	Shipbuilding (excl. leisure boats) and ship repair	1,391.5	24,122	Eurostat, data for 2010	936.8	23,238	National Statistical data 2010, where not possible Eurostat, data for 2010	844	39,000	Innovamar, 2011: Cuantificación económica del Sector Marítimo y su desagregación sectorial, Fundación Innovamar. Feb. 2011	1018	1,014		Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations
0.2	Construction of water projects	944,5	19,813	Eurostat, data for 2010	944,5	19.813,0	National Statistical data 2010, where not possible Eurostat, data for 2010				135	134		Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations
1. Maritime transport														
1.1	Deep-sea shipping	621.1	8,864	Eurostat, data for 2010. No data on NACE 77.34 and 52.22 available in Eurostat	621.9	8,857	National Statistical data 2010, where not possible Eurostat, data for 2010	1,129*	13,000*	Innovamar, 2011: Cuantificación económica del Sector Marítimo y su desagregación sectorial, Fundación Innovamar.	1,093	1,086		Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations

1.2	Short-sea shipping (incl. Ro-Ro)	649.1	9,262	Eurostat, data for 2010. No data on NACE 77.34 and 52.22 available in Eurostat	649.9	9,255			Feb. 2011	1,142	1,135		Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations	
1.3	Passenger ferry services	353	5,582	Eurostat, data for 2010. No data on NACE 77.34 and 52.22 available in Eurostat	353.4	5,578	National Statistical data 2010, where not possible Eurostat, data for 2010			622	617		Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations	
1.4	Inland waterway transport	4.5	94	Eurostat, data for 2010. No data on NACE 77.34 and 52.22 available in Eurostat	6.4	115	National Statistical data 2010, where not possible Eurostat, data for 2010	Included in *	Innovamar, 2011: Cuantificación económica del Sector Marítimo y su desagregación sectorial, Fundación Innovamar. Feb. 2011	39	38		Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations	
2. Food, nutrition, health and eco-system services														
2.1	Catching fish for human consumption	3,720	129,230	JRC (fishing), Eurostat (fish processing, wholesale & retail), PRODCOM (share of human/animal), data for 2010	3,819.9	131,440	National Statistical Data 2010, JRC (fishing), Eurostat (fish processing, wholesale & retail), PRODCOM (% human/animal, 2010	901.52 (2011)	33,210.0	2011, Marine Fishing Economic Survey	6,377	6,365	Operating income 2.087,6 million Euros 2011	Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data as for Eurostat calculations
								1693*	45,000*	Innovamar, 2011: Cuantificación económica del Sector Marítimo y su desagregación				

2.2	Catching fish for animal feeding	11.5	454	JRC (fishing), PRODCOM (share of human/animal), data for 2010	0.6	24	National Statistical Data 2010, where not possible JRC (fishing), PRODCOM (% human/animal 2010			n sectorial, Fundación Innovamar. Feb. 2011	16	16		Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data
2.3	Marine aquatic products	130	22,882	JRC, data for 2010	130	22,882	JRC, data for 2010	137,237.89	27,072	Marine aquaculture, 2010 - Aquaculture economic survey	4,985		Marine aquaculture, Operating income - 611,95 million Euros 2011	2010, Encuesta de establecimientos de acuicultura Agricultura y pesca Informe sectorial 2013 - Barcelona Activa
2.4	Blue biotechnology	n/a	n/a	Not available in Eurostat. No alternative data on Spain found centrally	n/a	n/a	Sector not visible in Eurostat or National Statistical Office							
2.5	Agriculture on saline soils	4,573.4	406,946	Eurostat, data for 2010 (agriculture in coastal NUTS-2 and percentage saline soils. Figure ridiculously high, country expert to verify	25,873.1	272,087	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	n/a	Eurostat, GVA data 2008 (only NACE 09.10). No employment data in Eurostat on NACE 06.10, 06.20,09.10	0	n/a					113	111		Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data
3.2	Offshore wind	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a	Sector not visible in Eurostat or National Statistical Office							Spain is no longer considered a major offshore wind market
3.3	Ocean renewable energy	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a	Sector not visible in Eurostat or National Statistical Office						Contribution to GDP - Direct 5,8 million Euros, 2009	Deloitte,
													Direct Contribution to GDP: 9,3 (2011), 7,7 (2010), million Euros	Estudio del Impacto Macroeconómico de las Energías Renovables en España Asociación de Productores de Energías Renovables APPA
3.4	Carbon capture and storage	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a	Sector not visible in Eurostat or National Statistical Office							
3.5	Aggregates mining (sand, gravel, etc.)	0	0	No offshore aggregates mining in Spain according to UEPG	0	0	Sector not visible in Eurostat or National Statistical Office				1,152	1,151		Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data

3.6	Marine minerals mining	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a	Sector not visible in Eurostat or National Statistical Office						
3.7	Securing fresh water supply (desalination)	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a	Sector not visible in Eurostat or National Statistical Office	382.3					
4. Leisure, working and living													
4.1	Coastal tourism	6,921	216,568	<i>Eurostat, data for 2010 (data for NACE 55.10, 55.20, 55.30, 55.90)</i>	7,102.5	252,265	National Statistical Data 2010 completed by Eurostat, data for 2009 (data for NACE 55.10, 55.20, 55.30, 55.90)			11,737	11,654		Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data
4.2	Yachting and marinas	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a	Sector not visible in Eurostat or National Statistical Office	3,303	62,107	Innovamar, 2011: Cuantificación económica del Sector Marítimo y su desagregación sectorial, Fundación Innovamar. Feb. 2011		2,359	ICOMIA Statistics 2011 (2012) Statistics concerning July 2011 to June 2012
4.3	Cruise tourism	232.1	3,670	<i>(low estimate) Eurostat, data for 2010. No data on NACE 77.34 and 52.22 available in Eurostat</i>	232.4	3,667	<i>(low estimate) National Statistical Data 2010</i>	1,120	24,200	<i>(high estimate) European Cruise Council, data for 2010</i>	409	408	Number of enterprises per relevant NACE code counted in AMADEUS 2010, same support data
5. Coastal protection													

5.1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a	Sector not visible in Eurostat or National Statistical Office	49.8	498	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,	n/a	n/a	Sector visible in Eurostat.	n/a	n/a	Sector not visible in Eurostat or National Statistical Office	n/a	n/a	No data found centrally. Problem of different definitions applied across sources & countries.				n/a
6.3	environmental monitoring	n/a	n/a	Sector visible in Eurostat.	n/a	n/a	Sector not visible in Eurostat or National Statistical Office	24.2	unknown	EMODNET, see below table for details	at least 7			n/a
Total														

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

Table 12 provides a detailed overview of the Compound Annual Growth Rate (CAGR) of the maritime economic activities. This is based on the last three years (2008, 2009, 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 19 – Table of CAGR of Eurostat and Alternative Sources

		Eurostat			Alternative sources (outside official statistics)		
Maritime economic activity		CAGR (%) GVA	CAGR (%) Employment	Source & Reference year	CAGR (%) GVA	CAGR (%) Employment	Source & Reference year
0. Shipbuilding							
0.1	Shipbuilding (excl. leisure boats) and ship repair	-4,33%	-8,48%	CAGR based on Eurostat 2008 - 2010			
0.2	Construction of water projects	-12,37%	-15,05%	CAGR based on Eurostat 2008 - 2010			
1. Maritime transport							
1.1	Deep-sea shipping	1,80%	-0,48%	CAGR based on Eurostat 2008			
1.2	Short-sea shipping (incl. Ro-Ro)	6,80%	4,42%	CAGR based on Eurostat 2008			
1.3	Passenger ferry services	-4,89%	-15,26%	CAGR based on Eurostat 2008			
1.4	Inland waterway transport	31,79%	10,28%	CAGR based on Eurostat 2008			
2. Food, nutrition, health and eco-system services							
2.1	Catching fish for human consumption	2,03%	-10,16%	CAGR based on Eurostat 2008			
2.2	Catching fish for animal feeding	20,24%	-11,56%	CAGR based on Eurostat 2008			
2.3	Marine aquatic products	n/a	n/a	CAGR based on Eurostat 2008			
2.4	Blue biotechnology	n/a	n/a	CAGR based on Eurostat 2008			
2.5	Agriculture on saline soils	n/a	5,32%	CAGR based on Eurostat 2008			
3. Energy and raw materials							
3.1	Offshore oil and gas	n/a	n/a	CAGR based on Eurostat 2008			
3.2	Offshore wind	n/a	n/a	CAGR based on Eurostat 2008			
3.3	Ocean renewable energy	n/a	n/a	CAGR based on Eurostat 2008			
3.4	Carbon capture and storage	n/a	n/a	CAGR based on Eurostat 2008			

Maritime economic activity		Eurostat			Alternative sources (outside official statistics)		
		CAGR (%) GVA	CAGR (%) Employment	Source & Reference year	CAGR (%) GVA	CAGR (%) Employment	Source & Reference year
3.5	Aggregates mining (sand, gravel, etc.)	-26,88%	-13,41%	CAGR based on Eurostat 2008			
3.6	Marine minerals mining	n/a	n/a	CAGR based on Eurostat 2008			
3.7	Securing fresh water supply (desalination)	n/a	n/a	CAGR based on Eurostat 2008			
4. Leisure, working and living							
4.1	Coastal tourism	-7,12%	-4,54%	CAGR based on Eurostat 2008			
4.2	Yachting and marinas	n/a	n/a	CAGR based on Eurostat 2008			
4.3	Cruise tourism	-2,95%	-13,53%	CAGR based on Eurostat 2008			
5. Coastal protection							
5.1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats	n/a	n/a	CAGR based on Eurostat 2008 - 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	CAGR based on Eurostat 2008			
6.3	environmental monitoring	n/a	n/a	CAGR based on Eurostat 2008			

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