

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

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Preface

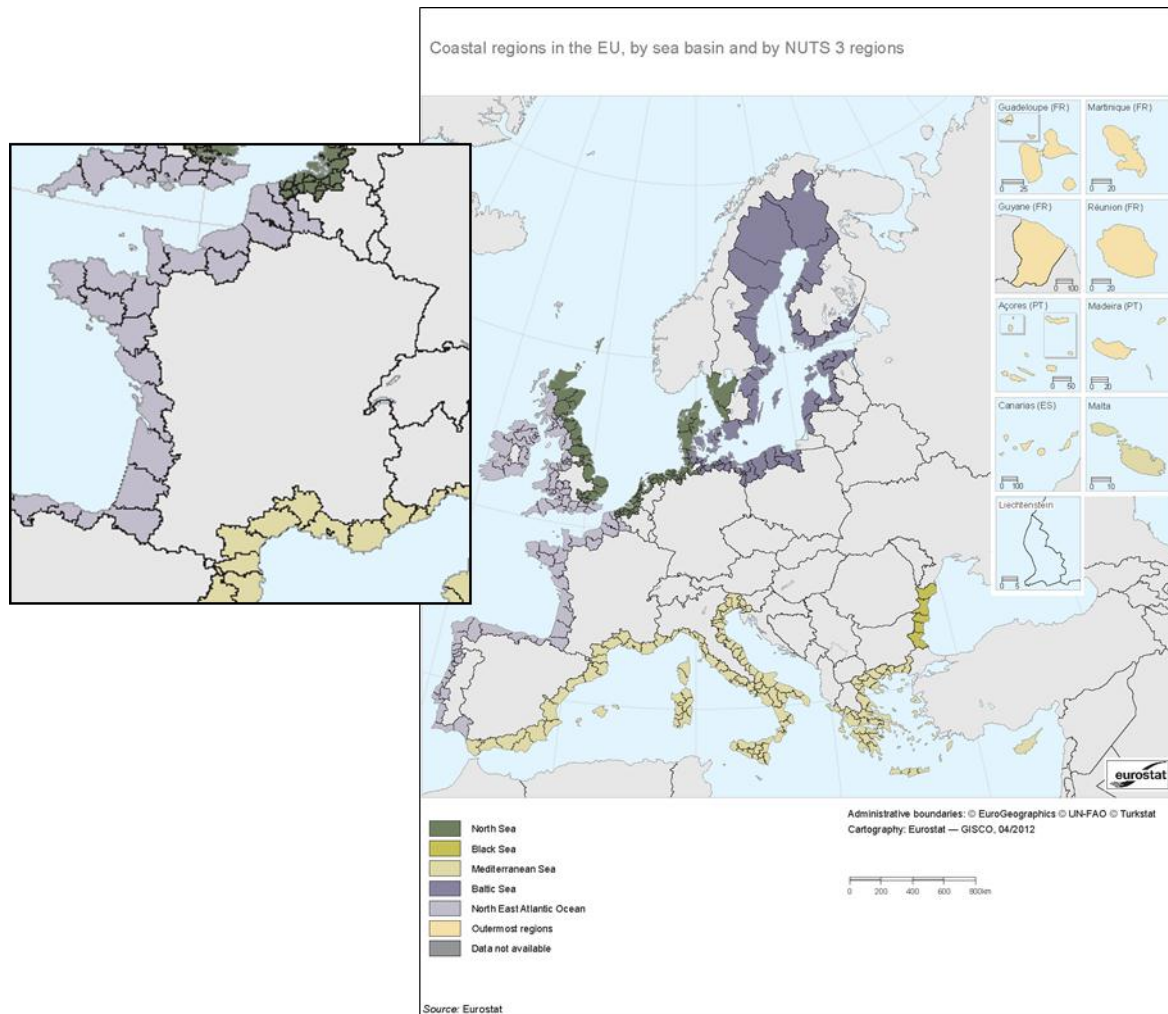
This country fiche forms part of the Atlantic Arc sea basin study. Parallel sea-basin studies are being carried out on the North-Sea and the English Channel and the Mediterranean, Adriatic and Ionian and Black Sea and the Baltic Sea. The data definitions and template are adapted in such a way that exchange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

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

Comments received up to 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.

0. General overview

France has a population of almost 63 million inhabitants and scored as the world's 5th and Europe's 2nd largest national economy by GDP (2010). GDP per capita is 26.000 Euros. France's economy entered a recession in the late 2000s and since then annual GDP growth has fluctuated considerably: -0.1 in 2009, -3.1 in 2009 and 1.7 in 2010. The unemployment rate increased from 7.4% in 2008 and has remained above 9% per year since then. Lower-than-expected growth and increased unemployment have strained France's public finances



Map 1: Coastal regions in the EU and in France, by sea basin and by NUTS 3 regions - Source: Eurostat

France has 8411 km of coastline¹. When the overseas territories are included its exclusive economic zone extends 11 million square kilometres, 400,000 square kilometres of which is continental shelf (3.6%)². Thanks to its overseas departments and territories, France has the second largest Exclusive Economic Zone in the world³.

¹ Coastline length and people living in coastal regions source: European Commission, DG Fisheries and Maritime Affairs, 'Studies aiming at improving national maritime and coastal statistics', Sogeti, Eurostat, 2008: Description of the coastal and sea areas in the European Union. Chapter 2. P. 98. In this study, the coastline length (km) is calculated from the Corine land cover database. Figures may vary from national statistics owing to the inclusion or exclusion of coastal features, such as estuaries, islands and spits. Sogeti study available here: <https://webgate.ec.europa.eu/maritimeforum/content/498>

² Le Cluster Maritime Français, 2009-2010, French Maritime Industries, p. 2. More information available here : http://www.cluster-maritime.fr/pdf/Brochure_CMF_EN_2009.pdf

³ Le Cluster Maritime Français. <http://www.cluster-maritime.fr/article.php?id=17&lang=Fr>

France is linked to three sea-basins. The major French socio-economic regions are presented at NUTS 1 level and linked to sea-basins: Nord Pas-de-Calais is allocated to the North Sea/English Channel, whereas the regions Bassin Parisien, Ouest and Sud-Ouest are located on the Atlantic Sea Basin coast. As for the NUTS-1 Region Méditerranée, it is allocated to the Mediterranean sea basin. Within these larger NUTS-1 regions, NUTS 2 level regions can be discerned which correspond to the French administrative regions (see section 1.2 for more detail). The regions in the overseas territories are excluded from this study. Finally, French administrative departments (*départements français*) correspond to NUTS 3 regions.

Over one third⁴ of the country's population is living in coastal regions⁵. Eurostat reports that, in 2005, 37% of France's population – 23.9 million people - lived in coastal regions⁶. The average population density was 108 inhab/square km⁷. In the same year, some 33% of the French gross added value was produced in these coastal regions⁸. National French data provide us with information on the population living in coastal communities, which are intended as towns bordering the ocean, lagoons or estuaries at the transverse limit of the sea⁹. Following this definition, France's statistical institute Insee reports that, in 2005, around 5.7 million people lived in coastal communities, with an average population density of 315 inhab/square km¹⁰.

Major economic activities are related to the proximity of the water, including fishing, shipbuilding, coastal tourism and port or shipping activities. A 2007 study indicated that, of these, coastal tourism was the most important, representing 40% of the maritime economy¹¹.

When characterizing the different coastal regions by sea basins the following picture can be sketched¹²:

The **Channel - North Sea** is important for jobs related to port activities (shipping, stevedoring, sea and river port services) focusing on the main port areas: Le Havre, Rouen, Dunkerque, Calais. The fish industry is also quite important.

The **Atlantic coast** is characterized by a strong presence of fishing, fish farming / aquaculture, construction of civilian ships and boats. These areas of shipbuilding focus respectively in Loire-Atlantique and Vendée. Obviously also coastal tourism is an important sector in these regions especially further to the south.

Finally, apart from its major position in tourism the **Mediterranean coast** focuses an important part of its employment in the production of salt (Camargue), the construction of naval ships, ship repair and marine and coastal transport.

⁴ The share of coastal population in national total is 38%. Source: Eurostat GISCO database, quoted in the 2010 Eurostat 'Statistics in Focus', available here: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-10-038/EN/KS-SF-10-038-EN.PDF.

⁵ When referring to coastal regions, we refer to the definition given by Eurostat, which describes coastal regions as regions with a sea border, regions with more than half of its population within 50 km of the sea. This definition is also used in the Sogeti study mentioned before. See Eurostat GISCO database and Appendix 1 of the Sogeti study.

⁶ European Commission, DG Fisheries and Maritime Affairs, 'Studies aiming at improving national maritime and coastal statistics', Sogeti, Eurostat, 2008: Description of the coastal and sea areas in the European Union. Chapter 2. P. 98. Available here: <https://webgate.ec.europa.eu/maritimeforum/content/498>.

⁷ *Ibid.*

⁸ *Ibid.*

⁹ Coastal communities are the geographical level chosen by the French national institute for statistics (INSEE) for providing data on coastal population. For a definition of coastal communities, INSEE refers to the French Coastal Act of 1986, in which coastal communities are defined as towns bordering the ocean, lagoons or estuaries at the transverse limit of the sea.

¹⁰ These figures do not include overseas territories nor Corse. Insee, Démographie et économie du littoral, available here: http://www.insee.fr/fr/insee_regions/aquitaine/themes/edossier/edos0901/3_populat.pdf

¹¹ Ifremer (2007) Study in the field of maritime policy, available here:

https://webgate.ec.europa.eu/maritimeforum/system/files/Eurostat_MP_Study_Final%20Report_R1_Volume_1_MainPart.pdf

¹² Based on http://www.onml.fr/onml_f/Emploi-salarie-dans-les-trois-principaux-secteurs-de-leconomie-maritime-hors-tourisme

1. Marine and maritime economic activities

1.1. Overview of relevant maritime economic activities in France

This section provides an overview of the main maritime activities and their related socio-economic impacts in **France**¹³. These economic activities are analysed, described and updated according to the NACE rev. 2 classifications.

The analysis is carried out in two steps:

- The first step focuses on the collection of **quantitative data** on the maritime economic activities. As far as possible data are based on Eurostat and official national statistics, where relevant (or necessary) complemented with alternative secondary sources. The aim is to use the same basic method for all countries. .
- The second step provides a **qualitative review** of the maritime activities and their status. The information presented builds on the data collected, supplemented with specific inputs and analysis by the country editors.

Quantitative overview of maritime economic activities

Table 1 provides an overview of the most reliable data for each of the maritime economic activities¹⁴. More detailed information from all relevant sources is provided in **Annex I**. A separate Methodology Annex provides further explanation on the methodological assumptions and the underlying definitions that have been used.

In total, maritime activities in France generate direct employment for at least 300,000 people, representing a gross value added of minimally € 14.5 billion.

Table 1 –Overview of relevant maritime economic activities - France

¹³ The geographical coverage of data retrieved from official national statistics (INSEE) reported in this section are limited to metropolitan France and hence exclude all French overseas territories. As for Eurostat data, the Eurostat Structural Business Statistics Methodology clarifies that, for France, all regions are covered, including the French Overseas Departments and Territories. For more information : http://ec.europa.eu/eurostat/ramon/nat_methods/SBS/SBS_Meth_FR.pdf

¹⁴ The maritime economic activities are consistent with the activities discerned in the Blue Growth Study. In deviation to this study Shipbuilding and the Construction of Water projects are added as separate economic activities.

Maritime economic activity		Private/ public driven ^a	GVA (€, million)	Employment	Source and Reference Year	Number of enterprises	Source & Reference year
0. Shipbuilding							
0.1	Shipbuilding (incl. leisure boats) and ship repair	Pr/pu (naval)	1,472	26,631	<i>Eurostat, 2010</i>	101 ¹⁵	<i>Amadeus database</i>
0.2	Construction of water projects	Pu	687	4,980	<i>Eurostat, 2010</i>	292	<i>Insee.fr, 2010</i>
1. Maritime transport							
1.1	Deep-sea shipping	Pr	1,460	14,641	<i>Eurostat, 2010</i>	506	<i>National statistics NACE 2 data for 2010, supported by data Eurostat 2010</i>
1.2	Short-sea shipping (incl. Ro-Ro)	Pr	3,049	30,572	<i>Eurostat, 2010</i>	1,058	<i>National statistics NACE 2 data for 2010, supported by data Eurostat 2010</i>
1.3	Passenger ferry services	Pr	978	13,931	<i>Eurostat, 2010</i>	844	<i>National statistics NACE 2 data for 2010, supported by data Eurostat 2010</i>
1.4	Inland waterway transport	Pr	288	4,298	<i>Eurostat, 2010</i>	900	<i>National statistics NACE 2 data for 2010, supported by data Eurostat 2010</i>
2. Food, nutrition, health and eco-system services							
2.1	Catching fish for human consumption	Pr	2,759	56,156	<i>Eurostat, 2010</i>	3,532	<i>Le Cluster Maritime Français, 2010</i>
2.2	Catching fish for animal feeding	Pr	minimal	minimal	<i>JRC, PRODCOM, 2010</i>	n/a	
2.3	Marine aquatic products	Pr	258	15,536	<i>JRC, 2010</i>	3,757	<i>French Ministry of Sustainable Development, 2010</i>
2.4	Blue biotechnology	Pr	n/a	n/a		n/a	
2.5	Agriculture on saline soils	Pr	476	16,852	<i>Eurostat, 2010</i>	n/a	

¹⁵ This figure excludes the construction of leisure boats

Maritime economic activity		Private/ public driven ^a	GVA (€, million)	Employment	Source and Reference Year	Number of enterprises	Source & Reference year
3. Energy and raw materials							
3.1	Offshore oil and gas	Pr	Confidential	From 27,000 (a) to 30,000 (b) ¹⁶	(a) <i>Le Cluster Maritime Français, 2010</i> ; (b) <i>L'Institut Français de la Mer</i> ¹⁷	52	<i>Amadeus database</i> ¹⁸
3.2	Offshore wind	Pr	minimal	minimal	<i>www.windustry.fr</i>	n/a	
3.3	Ocean renewable energy	Pr	minimal ¹⁹	minimal		n/a	<i>Ecorys estimate</i>
3.4	Carbon capture and storage	Pr	n/a	n/a		n/a	
3.5	Aggregates mining (sand, gravel, etc.)	Pr	29	323	<i>Eurostat, 2010</i>	12	<i>Ifremer, 2009</i>
3.6	Marine minerals mining	Pr	n/a	n/a		n/a	
3.7	Securing fresh water supply (desalination)	Pu	Minimal	Minimal	<i>Actu-environnement, 2012</i>	3 marine water plants	<i>Actu-environnement, 2012</i>
4. Leisure, working and living							
4.1	Coastal tourism	Pr	3,401	65,569	<i>Eurostat, 2010</i>	13,920	<i>National statistics NACE 2 data for 2010 (data for NACE 55.10, 55.20, 55.30, 55.90), support data Eurostat 2010</i>
4.2	Yachting and marinas	Pr	818	33,180	<i>ICOMIA statistics, 2011</i>	2074	<i>ICOMIA statistics, 2011</i>
4.3	Cruise tourism	Pr	96	1,366	<i>Eurostat, 2010</i>	20	<i>Conseil National du Tourisme, 2010</i>

¹⁶ According to IFP Energies Nouvelles, around 90% of the sector's turnover comes from export activities. .

¹⁷ Statistical data in Eurostat and national statistics on this sector are treated as confidential

¹⁸ Total number of companies in oils and gas (NACE codes 6.10, 6.20, 9.10) times % of offshore oil and gas production in total (in kTOE)

¹⁹ Key GVA and employment are related to the La Rance tidal barrage, apart from employment in more experimental ocean energy pilots.

Maritime economic activity		Private/ public driven ^a	GVA (€, million)	Employment	Source and Reference Year	Number of enterprises	Source & Reference year
5. Coastal protection							
5.1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats	Pu	12	118	<i>Eurostat COFOG, 2010 and PRC, 2008</i>	157	<i>Insee, 2009</i>
6. Maritime monitoring and surveillance							
6.1/6.2	Traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods,	Pu	n/a	n/a		n/a	
6.3	environmental monitoring	Pu	n/a	n/a		n/a	

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

Qualitative description of the maritime economic activities

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

Overview of maritime economic activities in a MS at NUTS-0 level

Shipbuilding and water projects

Shipbuilding and ship repair

Commercial and naval shipbuilding

Notwithstanding the decline of European role in global shipbuilding France still has an active position in this sector, partly due to the presence of commercial and naval shipbuilding. International markets are source to 30% of the French naval shipbuilding turnover²⁰. The French naval shipbuilding industry is the third largest in the world and the first in Europe. According to the Cluster Maritime Français, French shipyards have developed specific expertise in the construction of more complex units, which are characterised by a higher added value: cruise liners and other passenger ships, frigates, support ships, submarines²¹. Such expertise is also progressively applied to offshore fields, particularly to marine renewables²².

Direct employment is registered at some 19,000 (the Cluster Maritime Français counts approximately 16,000 people); with significant additional employment among sub-contractors and suppliers (total employment including backward linkages is estimated at 40,000 according to the Cluster Maritime Français²³).

Leading French companies in the sector are: DCNS, STX Europe, CMN (Constructions Mécaniques de Normandie), Piriou, Arno Dunkerque, Cegelec, Damen Shiprepair Brest, GICAN.

Construction of leisure boats

The position of France in the construction of leisure boats (such as sailboats, inflatable boats and motor boats) is strong²⁴. It is the leading country in this activity in Europe with 63% markets outside France, notably Germany, UK, Spain, Italy and the US. Around 65% of production is sold on foreign markets, mainly Germany, UK, Spain, Italy and the US. The market shows a high level of concentration, with the industrial group Bénéteau representing more than half of the sector's employment and turnover²⁵.

Construction of water projects²⁶

According to Insee 2010 data, this sector employs an average of 4700 people²⁷. Since 2010, companies have increased their export shares following a decline of the market in the EU. French exports are mostly directed at Northern Africa, Asia and Sub-Saharan Africa²⁸.

²⁰ <http://www.lajauneetlarouge.com/article/la-construction-navale-de-defense-moderne-et-performante>

²¹ Le Cluster Maritime Français, 2011. For more information : <http://www.cluster-maritime.fr/article.php?id=14&lang=Fr>

²² *Ibid.*

²³ <http://www.cluster-maritime.fr/article.php?id=14&lang=Fr>

²⁴ See the analysis of the Cluster Maritime Français, <http://www.cluster-maritime.fr/article.php?lang=Uk&id=21>

²⁵ CESAAR, 2011, see above..

²⁶ Construction of water projects includes the construction of : waterways harbour and river work, pleasure ports, locks, dams and dykes. It also includes the dredging of waterways.

²⁷ Insee figures confirm data provided by Eurostat. For more information see :

http://www.insee.fr/fr/themes/detail.asp?reg_id=0&ref_id=esa-construction-2009&page=donnees-detaillees/esa/esa-construction/esa-construction-2009/fiche4291Z.html

²⁸ Ifremer, 2010. For more information : http://www.ifremer.fr/demf/tpmf_fre.html

The main French enterprises in the sector are: Acergy, Atlantique Dragage, Eiffage, Entreprise Tournaud and Saipem.

Maritime transport

Shipping

French maritime transport of goods has been hit, like most European countries, by the economic crisis. This has resulted in decreased trade flows and corresponding ship movements of goods.

In France, 322 million tonnes of seaborne goods were handled in ports in 2011 (Eurostat). This represents 8.6% of the EU27 total. The main French seaports are: Dunkerque, Le Havre, Rouen, Nantes / Saint-Nazaire, Bordeaux and Marseille. All together, they treat more than 80% of seaborne trade in France. In terms of goods handled, Marseille (85 m tonnes, #4), Le Havre (63 m tonnes, #7) and Dunkerque (41 m tonnes, #20) are among the 20 largest cargo ports in Europe. Le Havre and Marseille are also among the largest container ports of Europe with respectively 2.2 million containers (expressed in TEUs, #9) and 1.1 million containers handled in 2011 (Eurostat).

In 2012, French shipping companies operated some 900 vessels, of which 581 sail under the French flag. The French shipping industry has a relatively young fleet with an average vessel age of 8 years. French shipping companies operate in all sectors: transport of goods, passenger transport, oceanographic research, rolling stock transport, offshore activities and services, assistance and rescue²⁹.

Leading French companies in the sector are:

- Warehousing and storage: Logidis Comptoirs Modernes, Kuehne + Nagel, ND Logistics;
- Sea and coastal freight water transport: Bourbon, Compagnie Méridionale de navigation;
- Cargo handling : Manutention Terminal Nord, Dockers de Normandie.

Deep sea shipping³⁰

Deep sea shipping represents approximately one third of maritime transport (both in goods and economic activity). It directly employed almost 15000 people in 2010.

Short sea shipping³¹

Short sea shipping is important in France. Similar to the EU as a whole the share of short sea shipping is close to two thirds of seaborne goods transport. According to Eurostat data, 23 million tonnes of mobile self-propelled units and 2 million of mobile non self-propelled units were transported in 2011 through short sea shipping in France³². Some differences can be observed for individual ports with Marseille showing a relatively stronger share of short sea shipping in comparison with Le Havre and Dunkerque³³.

Passenger ferry

Traditionally, passenger ferry transport services in France cover three geographic areas: the English Channel, Corsica and the Mediterranean area. In addition ferry services can be found along the Atlantic coast although at a lower level.

²⁹ Le Cluster Maritime Français, 2012. More information available here : <http://www.cluster-maritime.fr/article.php?id=3&lang=Fr>.

³⁰ Deep-sea shipping is intended as international (freight) transport by sea with large vessels that often sail fixed routes (containers, major bulks) or tramp shipping. Source : https://webgate.ec.europa.eu/maritimeforum/system/files/Subfunction%201.2%20Short%20Sea%20Shipping_Final%20v120813.pdf

³¹ Short sea shipping is here defined as intra-European maritime shipping. Short sea fulfils several functions: it caters to the transport needs of European economies by providing maritime point-to-point transport of all kinds of commodities; it provides the maritime link that connects the European road network across the seas, in the form of Ro-Ro transport; it serves as feeder transport distributing container flows from the major intercontinental hubs to smaller ports, or vice versa. Source : https://webgate.ec.europa.eu/maritimeforum/system/files/Subfunction%201.2%20Short%20Sea%20Shipping_Final%20v120813.pdf

³² Eurostat, Short Sea Shipping - Country level - Gross weight of goods transported to/from main ports, by type of cargo, available <http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>

³³ Eurostat (2010) Data in focus – Short Sea Shipping of Goods - 2008

As for Europe, the French passenger ferry sector has been facing a decrease in demand in the last decade, partly due to the economic development but also to the increase of low cost airlines (and for the Channel traffic the construction of the Eurotunnel). For example, according to the French governmental Direction for Maritime Affairs, since 2007 cross-Channel ferries have lost 1.6 million passengers. In 2011, traffic fell by 1.8%, in line with the situation of British and Irish economies. More recent data seems to indicate that demand is still under pressure although it seems to have stabilised recently (see, e.g. DFDS 2012 Annual Report). Four major events have marked the French ferry market as of recent: the bankruptcy of SeaFrance in 2012 (followed by a possible resurgence of its activities under Eurotunnel), the merger between LD Lines and DFDS and the economic difficulties of Brittany Ferries³⁴

The decline of ferry transport has a direct impact on the labour market for French sailors as ferries under French flag are the first source of employment for this group.

The Mediterranean market has proved to be more resilient to the effects of the economic crisis than the Channel, although here an incidental cause, the Arab Spring, impacted passenger traffic between Europe and the Maghreb region. Despite the fact that the past year has been characterised by a decline in passenger traffic, within this market Corsica remains one of the few destinations in Mediterranean Europe to display positive results in terms of traffic. Corsica Ferries and SNCM-CMN are the two major companies dominating passenger ferry transport to Corsica³⁵.

As for the Atlantic, two French companies offer passenger transport services along the Atlantic coast to Spain: Brittany Ferries and LD Lines.

Inland waterway transport

The French Ministry for Sustainable Development presents inland waterway transport of goods as cheap, clean, reliable and safe. It is referred to as a valuable alternative to road transport on particularly congested corridors³⁶.

Some 68,400 tonnes of goods were transported by inland waterways in France, putting the country at the 4th place in Europe after Germany, Belgium and the Netherlands (Eurostat). The three most important IWT regions having direct sea access in France that can be discerned in France are: the Rhone/Saone basin, the Nord Pas de Calais basin and the Seine/Oise basin. Of these, the Seine basin (linking Paris to le Havre) is the waterway with the heaviest traffic, followed by Nord Pas de Calais and the Rhone³⁷. Inland waterway passenger transport plays a relatively limited role in IWT.

Inland waterway freight transport in France has undergone significant decline since when, in the early 1970s, it accounted for 110 million tonnes and 14 billion tonne-kilometres³⁸. This decline can be explained by at least two structural changes: the decline of traditional heavy industries the growing importance of faster means of transport. The sector lost competitiveness because of an ageing network of vessels, the rigidity of professional practices, an obsolete legislative and regulatory framework and, in general terms, the poor technical integration into modern supply chains.

The modernization of the sector brought recovery since the middle 1990s, with the activity reaching up to 5.8 to 7.9 billion tonne-kilometres in 2005. Such positive development is the result of a number of specific measures within the sector: reduction of overcapacity, a modernised legislative and regulatory framework, a significant effort from the French *Voies Navigables de France*³⁹ in the maintenance and restoration of the

³⁴ Ministère du développement durable, 2012. http://www.developpement-durable.gouv.fr/IMG/pdf/Publi_DGITM_Analyse_conjoncture_1_sem_2012_av_couverture.pdf

³⁵ Ministère du développement durable, 2012, see above.

³⁶ Ministère du développement durable, 2011. More information available here : <http://www.developpement-durable.gouv.fr/Le-transport-fluvial-de.html>

³⁷ See VNF www.vnf.fr

³⁸ Ministère du développement durable, 2011, see above.

³⁹ Voies Navigables de France is the French navigation authority responsible for the management of the majority of France's inland waterways network.

network⁴⁰. The main actors in the sector are: CCES Contargo Container Escaut, CIE Fluviale Transport de Gaz, Coalis, Compagnie Fluviale de Transport, Compagnie Française de navigation Rhénane.

Food, nutrition, health and eco-system services

Catching fish for human consumption

The fishery sector consists of fishing, fish processing, as well as wholesale and retail. Overall some 56,000 people are employed in fishery. The fishing activity primarily focuses on catching fish for human consumption. According to JRC fishing for animal consumption is negligible in France.

In total 443,000 tonnes of fish was being caught by the French fleet in 2010 (Eurostat). This represents a share of 9% of the EU27 total. According to the French Ministry of Sustainable Development, in 2010 the French fishing fleet was made of 7305 vessels, 4,857 registered in metropolitan France and 2448 in the departments and overseas territories. In the same year, the French fisheries sector employed 22,639 sailors, of which 585 were extra-EU citizens.

According to France Agrimer, the small-scale coastal fisheries⁴¹ employ 45% of the available fishing workforce, followed by small-scale shellfish fisheries (22%), high sea fisheries (15%) and coastal fisheries (12%). Large-scale fisheries employ only 5% of the available workforce. Small-scale fishing can be mainly found in the in the Mediterranean (73%) and in the overseas territories (87%)⁴².

The largest number of jobs in the fish catching sector is to be found in the Bretagne region (28%), followed by Aquitaine Poitou-Charentes (19%), the northern part of Normandy (17%), the Mediterranean (14%) and the overseas departments (11%)⁴³.

The fish processing industry in France employs 15,590 people working in 311 companies (JRC 2012). Over the past period this sector has remained relatively stable. The fish processing industry is highly concentrated with the 10 largest companies producing 45% of all turnovers.

Marine aquatic products

According to FAO data, France is the largest aquaculture producer in Europe, with 21% of the value of the total EU aquaculture⁴⁴. France aquaculture focuses on bivalve shellfish farming (oysters, clams, scallops, mussels and cockles), which is mainly concentrated in Bretagne, Normandie and Poitou-Charentes. France is the first and almost the only oyster producer in the European Union.

Shellfish farming

According to the French department of Sustainable Development, in 2010 shellfish farming employed 16,800 people⁴⁵, with 50% seasonal jobs. Most of the shellfish farming takes place on the public maritime domain, which grants professionals the necessary concessions and licences to operate. According to JRC the number of shellfish farms is close to 3300 showing a decreasing trend over the past years.

Marine fish farming

As for marine fish farming alone, it is developed by 31 companies that provided a production of 5700 tons in 2010. The industry is highly concentrated: 8 companies make 80% of sales. After a steady growth until 1995, the French marine fish farming sector has stagnated since. Conditions for its development are hampered by

⁴⁰ Ministère du développement durable, 2011, see above.

⁴¹ Small scale fisheries include vessels which remain out of port for less than 24 hours ; vessels active in coastal fisheries are believed to be out of port between 24 and 96 hours ; offshore fisheries remain out of port for more than 96 hours ; high seas fisheries employ vessels of over 1 000 GRT (gross register tonnage) or vessels over 150 GRT and remain out of port for more than 20 days. Source : <http://www.franceagrimer.fr/content/download/3232/17747/file/fishing-booklet-complete.pdf>

⁴² France Agrimer, 2010. More information : <http://www.franceagrimer.fr/content/download/3232/17747/file/fishing-booklet-complete.pdf>

⁴³ France Agrimer, 2010, see above.

⁴⁴ JRC STECF (2013), The economic performance of the EU aquaculture sector, p25

⁴⁵ France Agrimer, 2013. More information :

<http://www.franceagrimer.fr/content/download/23162/191443/file/broch%20pêche%20A4%20enDEF.pdf>

the scarcity of available sites and the competition with other coastal activities to access these sites (including tourism). Marine fish farming, which is mainly concentrated around the production of royal seabreams and basses⁴⁶ employs 2,800 people (2,200 full-time equivalents) with 80% permanent jobs⁴⁷.

Algae

Algae production in France is limited. Although France can master both the skills and the techniques for the cultivation of several macro-algae species, only a few algae-farmers are active in Bretagne and Vendée, producing low volumes of algae for high added value markets (food, cosmetics, etc.). Out of the 50 000 tons of algae produced in France every year, only 0.1% come from algae culture. In 2010, there were six farms in Bretagne and Vendée and two hatcheries in Bretagne⁴⁸.

Blue biotechnology⁴⁹

Blue biotech is an economic activity that is very much in its development stages. Nevertheless, France can be seen as one of the frontrunners in this field in Europe. The use of marine bio resources is an established practice in the field of cosmetics. In France, a network of SMEs is active in the field. In particular, the Pôle Mer in the Bretagne region is supporting several public/private projects, by bringing together public research centres and private companies to develop innovative solutions in the blue biotech sector. For example, the Aquactifs project has brought together companies such as Biocean together with Agrimer, whereas the Ivoligo project involves BioEurope, the Roscoff Biological Station and the Centre for the Study and Promotion of Algae Pleubian⁵⁰.

France is also active in R&D activities for the production of biofuel from microalgae oil.

In food processing, the French company Roquette launched an ambitious 5 years programme (ALGOHUB⁵¹) of more than 28 million Euros to study the potential of microalgae for the production of new dietary supplements. The study started in 2009 and should come to an end in 2014. Preliminary studies conducted in animals and in humans have shown that Chlorella (a microalga rich in nutritional compounds) has a potential efficacy as dietetic supplement on immunomodulation and detoxification⁵².

Blue biotech is recognized in France as a breeding ground for innovative start-ups (affirmed in the report issued in mid-2009 after the organisation of the 'Grenelle de la Mer'), and ideas are being explored for the establishment of a national system for marine biotechnology start-ups to grow, rather than to have them being 'absorbed' by larger companies.

With several companies developing marine biotechnologies, the presence of three marine clusters (the Pôle Mer Bretagne, the Pôle Mer PACA and Aquimer) and the development of a specialised cluster in Nantes (the Blue Cluster); France has the potential to play a leading role in the blue biotechnologies sector.

Aquaculture in saline soils⁵³

Based on Eurostat data the number of people employed in agriculture on saline soils is estimated at 16,850. According to JRC saline soils are found at various places along the Atlantic and Mediterranean coast⁵⁴ (see map insert⁵⁵).



⁴⁶ No detailed information was found on fin fish. For more information :

http://www.developpement-durable.gouv.fr/IMG/pdf/Chiffres_cle_peche.pdf

⁴⁷ Ministère du développement durable, 2011.

⁴⁸ http://www.netalgae.eu/uploadedfiles/Rapport_WP1_FR_1.pdf

⁴⁹ We understand blue biotechnology as the use of wild and farmed aquatic living resources as precursors of bio-molecules used for high value products (health, cosmetics, etc.). It is about unravelling the potential of the biodiversity of a specific earth compartment for the benefit of the rest of the economy. Source :

<https://webgate.ec.europa.eu/maritimeforum/system/files/Blue%20Growth%20Final%20Report%2013092012.pdf>

⁵⁰ <http://www.cleantechrepublic.com/2009/08/26/biotechnologies-marines-de-belles-perspectives-pour-la-france/>

⁵¹ <http://www.algothub-roquette.com>

⁵² <http://www.algothub-roquette.com/>

⁵³ We have adopted the following definition: development of agriculture on saline soils, through improving existing crops or adapting salt tolerant plants. Source :

<https://webgate.ec.europa.eu/maritimeforum/system/files/Blue%20Growth%20Final%20Report%2013092012.pdf>. For more information, see the methodology section in Annex [xx]

Energy and raw materials

Offshore oil and gas

At present France has not yet started its oil exploitation in mainland offshore areas. However, exploratory projects are currently running in the Bay of Biscay and in the Mediterranean⁵⁶. Exploration should also be started in an area off the Bretagne region. These areas have a depth of around 100-200 m but can reach up to 1000 m in the Bay of Biscay and the Mediterranean.

According to the 'Institut Français de la Mer' around 27,000 individuals are currently employed in the offshore oil and gas sector⁵⁷. As 90% of the sector's turnover comes from export activities⁵⁸ and that the level of mainland activity is almost limited to one platform operated by Norwegians employing French support personnel⁵⁹, we can estimate that maximum 1,000 staff out of the 27,000 can be labelled as French mainland offshore activity related employment. The remaining share of French offshore oil and gas activities occur off the coasts of its overseas territories⁶⁰.

In the context of rising oil prices and the launch of new explorations, investments in the hydrocarbon sector are expected to continue. 90 French companies are active in the extraction of crude petroleum and natural gas and another 37 companies provide support activities for petroleum and natural gas extraction. France is the second largest exporter of support services to oil and gas extraction, with 18% of the world market share⁶¹.

Among France's major players, we can count Bourbon (third place in the top ten of offshore maritime services), Technip, CGGVeritas and Louis Dreyfus Armateurs.

Offshore wind

At present, no offshore wind energy has been developed in France. However, the development plan for renewable energy from the 'Grenelle de la Mer'⁶² aimed at ensuring that 3% of all energy consumed will be generated from marine energy by the year 2020, most of which would be made possible by the installation of 6,000 MW of mostly offshore wind turbines (around 1200) off the French coast. At least two opportunities arise for France. On the one side, such project relates to the 'climate and energy package' commitments. On the other side, offshore wind is also seen as an opportunity to create a leading industrial sector with tens of thousands of sustainable jobs.

The potential for offshore production in France is estimated at 1500 MW by 2030⁶³, according to a roadmap designed by the association of renewable energies SER. The roadmap takes into account the marine potential to be exploited, the industrial capacity of operators and the cooperation among the different parties involved. This objective is expected to enable the creation of 30,000 jobs in total⁶⁴. However, France must cope with its relative deep water level, which reduces the extent of areas where wind turbines can be installed. In 2011, France launched the first public tender on offshore wind energy. The results have been announced in April 2012: 5 sites were chosen to for the installation of about 3000 MW. EDF EN consortium

⁵⁴ Due to limitations in data availability, it is not possible to provide a sector's performance.

⁵⁵ <http://eusoils.jrc.ec.europa.eu/library/themes/Salinization/Resources/salinisation.pdf>

⁵⁶ http://www.ifmer.org/assets/documents/files/documents_ifm/3--Offshore-en-Mediterranee.pdf

⁵⁷ http://www.ifmer.org/assets/documents/files/lu_presse/9997JRVallat42009.PDF

⁵⁸ https://wwz.ifremer.fr/dcsmm/content/download/53111/753382/version/1/file/AES_Activites_parapetrolieries_GDG_V2bis.pdf

⁵⁹ <http://www.agr.com/case%20studies/well/09-WE-028%20rev1sm.pdf>

⁶⁰ IFP Energies Nouvelles points out to the great potential of France's oversea territory French Guyana for deep offshore activities.

For more information : IFP Energies Nouvelles, 2012, 'Offshore Hydrocarbons' in 'Panorama 2012'

⁶¹ Le Cluster Maritime Français, 2010. <http://www.cluster-maritime.fr/article.php?id=13&lang=Fr>

⁶² Officially launched on 27 February 2009 and following the 2007 'Grenelle de l'Environnement', the 'Grenelle de la Mer' has brought together members of the Government, local authorities, environmental groups and private companies to push forward a sustainable marine national strategy.

⁶³ <http://renewables.seenews.com/news/french-association-sees-offshore-wind-power-potential-at-15-000-mw-by-2030-362303>

⁶⁴ <http://renewables.seenews.com/news/french-association-sees-offshore-wind-power-potential-at-15-000-mw-by-2030-362303>

has won 3 out of the 4 attributed sites. The fifth one (the so-called Tréport project) has finally been cancelled⁶⁵.

- EDF EN and Dong Energy, in a consortium with Eolien Maritime France, were awarded three of the four sites:
- Courseulles-sur-Mer (Calvados, a power project of 450 MW);
- Fécamp (Seine Maritime, power 498 MW);
- Saint-Nazaire (Loire-Atlantique, capacity of 480 MW).

Alstom will supply these different sites of wind turbines with a unit capacity of 6 MW. The group will build two plants in Saint-Nazaire (generators and carriers).

Marines SAS, involving mainly the Spanish group Iberdrola and Eole-RES wings, is the recipient of the Saint-Brieuc (Côtes d'Armor, 500 MW). Their turbines will be supplied by Areva.

In total, more than twenty projects have been planned on French coastlines. In January 2013, the Ministry in charge of Energy has launched a second call for tenders including an extra 1000 MW.

Ocean renewable energy

Ocean renewable energy is a relatively new form of renewable energy, possibly with the exception of tidal range installations. France has developed the first and so far only tidal barrage in Europe⁶⁶: built in 1966, the 'La Rance barrage' is a 240 MW tidal range plant situated at an estuary into the Gulf of St. Malo in the Ile-et-Vilaine department⁶⁷ 24 turbines were installed with a capacity of 240 MW. Its annual output is about 600 GWh⁶⁸. Several other initiatives are currently in their R&D stages.

According to the French government, and taking into consideration the characteristics of French territory as well as the development potential of the different technologies, France has a strong growth potential for ocean renewable energy, most of which is to be found in the overseas department and territories⁶⁹:

- ocean thermal energy: a potential of 200 MW. Martinique currently owns the first production site with a total installed capacity of 10 MW.
- tidal (notably in the North-West French coast): 400 MW; a prototype should be installed in French Polynesia for a total capacity of 30 Kw
- tidal barrage: 500 MW;
- waves: 200 MW. A first project is being developed in Polynesia and La Réunion.

The main actions foreseen in the 'Grenelle de la Mer', the French national strategy for sustainable marine development⁷⁰ to achieve these goals are to increase funding for research, support for testing and sea trials. In parallel, the creation of a marine regional cluster that combines the Atlantic and Mediterranean coasts helps structuring the sector by bringing together researchers, industrial and educational centres. A partnership (the so-called IPANEMA initiative) has also been concluded with stakeholders to promote the development of the marine scientific and industrial, create a network of French actors, develop sea trials sites and facilitate the development of demonstrators⁷¹.

⁶⁵ Area Tréport (Somme) has not been assigned to the consortium led by GDF Suez, the only bidder. The proposed project purchase price of electricity was considered too high. In this area, the "price of a wind power project" (study cost, implementation, operation and decommissioning of the plant) was estimated in the specifications between 115 € and 175 € / MWh.

⁶⁶ For more information, see the 2013 'Study in Support of Impact Assessment Work for Ocean Energy' commissioned by DG MARE to a consortium led by Ecorys.

⁶⁷ <http://www.wyretidalenergy.com/tidal-barrage/la-rance-barrage>

⁶⁸ Study in Support of Impact Assessment Work for Ocean Energy (2013).

⁶⁹ In 2007-2008, IFREMER explored the share that each ocean renewable energy could have in the total energy production in France. Further information can be found here :

<http://www.ifremer.fr/dtmsi/colloques/seatech04/mp/article/1.contexte/1.1.ECRIN-OPECST.pdf>

⁷⁰ Officially launched on 27 February 2009 and following the 2007 'Grenelle de l'Environnement', the 'Grenelle de la Mer' has brought together members of the Government, local authorities, environmental groups and private companies to push forward a sustainable marine national strategy. For more information: <http://www.developpement-durable.gouv.fr/-Le-Grenelle-de-la-mer-de-2009-a,6309-.html>

⁷¹ <http://www.developpement-durable.gouv.fr/-Le-Grenelle-de-la-mer-de-2009-a,6309-.html>

Carbon Capture and storage

Although most of France's electricity is low-carbon (due to nuclear and hydro), France has showed interest for this emerging technology. Gaz de France has estimated France's storage potential up to several billions of tons: 320-10000 Gt in saline aquifer, 500-2000 Gt in depleted gas and oil fields and some Gt in coal seams.

The French Environment Agency and Energy Management (ADEME) has recently announced plans of up to € 45 million to co-finance three experiments. Led by EDF, the C2A2 project aims to test on one of the boilers in the coal plant in Le Havre, a system for capturing carbon dioxide. Using amines (supplied by Dow Chemical) as solvents, this device can retrieve, from 2013, a ton of CO₂ per hour (and not more than 5.000t/year) from gaseous effluents from the plant. Total cost of these four tests: € 22 million, 25% funded by ADEME⁷².

A second project in saline aquifer is led by a consortium of six companies (Air Liquide, EDF, GDF Suez, Lafarge, Total and Vallourec), although the appropriate site still has to be determined. For two years, the subsoils of the Centre, Upper Normandy, Bourgogne, Champagne-Ardenne, Picardie and the Ile-de-France will be explored before a storage site is proposed. In a second step, researchers will find the appropriate industrial sites. Project Cost: € 54 million, 40% paid by ADEME⁷³.

Aggregates mining

The marine aggregates mining is attracting special attraction in France, notably because of the ever growing difficulties to access onshore fields, in particular alluvial granulates. For this reasons, applications for aggregates mining licenses are becoming numerous especially in the Channel region.

In the aggregate mining sector, direct employment is estimated, according to Ifremer, to about 200 sailors and 100 people on the ground (administrative, commercial and technical). There are a dozen companies using 16 different sand dredgers of different sizes. Some of these companies use the collected materials for their concrete-related operations or for public works⁷⁴.

Marine minerals mining

France has been a pioneer in marine minerals mining since the 1970s. It possesses a set of scientific expertise and technological skills on marine subsoils and mineral exploitation: Ifremer, BRGM, CNRS and universities, for public institutions; Technip, Areva and Eramet for the private sector. France seems thus to have the potential to carry out scientific research and develop innovative technologies for the future access to mineral resources. Another important advantage is that France has the world's second most extended Exclusive Economic Zone.

In 2009, Ifremer launched a study to analyse the potential of the main deep sea mineral resources, the conditions necessary to their development and the ways to best build appropriate strategic partnerships and programs⁷⁵. The study gathered information on the different French actors involved, their work and business dynamics, and presented proposals for action in particular for the R&D development of four types of mineral resources: sulphides, cobalt & platinum, polymetallic nodules and natural sources of hydrogen⁷⁶.

In the context of the "Wallis and Futuna" program, France launched a first campaign which was held from August 3 to September 23, 2010, resulting from the agreement on an initial exploration of the French EEZ around the islands Wallis and Futuna to search for active and inactive hydrothermal sites and to study its

⁷² <http://www2.ademe.fr/servlet/getDoc?id=11433&m=3&cid=96>

⁷³ <http://www2.ademe.fr/servlet/getDoc?id=11433&m=3&cid=96>

⁷⁴ Ifremer, 2011. For more information : <http://www.ifremer.fr/drogm/Ressources-minerales/Materiaux-marins/Economie/Donnees-economiques>

⁷⁵ <http://www.ifremer.fr/content/download/60853/830810/file/fiche%20ressources%20min%C3%A9rales.pdf>

⁷⁶ *Ibid.*

biodiversity. This campaign was made possible through a public / private partnership involving the MEDDTL, AAMP, Ifremer and BRGM for public bodies and Technip, Eramet and Areva for private organizations. Other organizations from academia (CNRS-INSU, IPGP, CEA and UBO) have been associated. It revealed a large area of recent volcanism (new backbone, new volcanoes) and several hydrothermal deposits⁷⁷.

Securing fresh water supply/desalinisation

In France, three projects for the desalination of marine water are currently being developed, but are not yet functioning: they are located in Belle-Ile-en-Mer (Morbihan), Ile d'Yeu (Vendée) and around Les Sables d'Olonne (Vendée). However, they are progressing slowly⁷⁸.

With a total estimated amount of € 9 million Euros, the project of Ile d'Yeu is meant to securing the supply of drinking water to the island. However, the project seems on stand by, as the subsidy reserved by the Pays de la Loire region (1.8 million euros) has not been granted yet. In 2009, the Water department of Vendée stated that the project was not considered as an immediate priority.

The project Sables d'Olonne, carried out by the department of Vendée and the Energy and Equipment department of the Vendee region (SyDEV) is meant to fill a lack of 4 million m³ of water by 2025. It could lead to the construction of a plant with a capacity of 10 to 20,000 m³ of fresh water per day by 2020. Nevertheless, the choice has not yet been finalized and the end of 2011, a technical, legal, financial, environmental and energy feasibility study has been funded for some € 105,000 by the Pays-de-la-Loire and the Agency water Loire-Bretagne. Among the outstanding issues, the energy supply is crucial: the project envisages the use of renewable energy bringing the total bill to several dozens of millions of euros.

Leisure and tourism

Coastal tourism

France has a long coastline bordering three sea basins (North Sea / English Channel, Atlantic, Mediterranean) spread over 883 coastal municipalities, 26 departments and 11 regions. Figures on coastal tourism given in this section follow the geographic delineation - based on municipalities - used by the French Ministry of Tourism and Ifremer⁷⁹.

Coastal municipalities are the first tourist destination in terms of overnight stays with 270 million nights for French people and 92 million overnight stays for foreigners (2005 data)⁸⁰.

Compared with the various French tourist areas⁸¹, the coast remains the main destination for French tourists before the countryside, the mountains and the city. In 2007, coastal tourism accounted for 29% of the domestic tourism, equivalent to € 34 billion and to 32% of all tourist nights spent by residents in 2009⁸². This has remained rather stable over the years.

⁷⁷ Ifremer, 2011. For more information :

<http://wwz.ifremer.fr/content/download/60853/830810/file/fiche%20ressources%20min%C3%A9rales.pdf>

⁷⁸ <http://www.actu-environnement.com/ae/dossiers/nouvelles-ressources-eau/dessalement.php>

⁷⁹ This seems to be the geographical level chosen by French public authorities for providing data on coastal areas. As seen in the General Overview section, coastal municipalities are also referred to by the French national institute for statistics (INSEE) concerning the French coastal population. The institute makes reference to the French Coastal Act of 1986, in which coastal municipalities are defined as towns bordering the ocean, lagoons or estuaries at the transverse limit of the sea.

⁸⁰ French Ministry of Tourism, 2012, available here:

<http://www.dgcis.gouv.fr/files/files/archive/www.tourisme.gouv.fr/territoires/littoral/littoral.html>

⁸¹ French tourism professionals use a geographical breakdown of municipalities differentiating between countryside, city, mountains and coastal municipalities. According to the French Coastal Act of 1986, coastal municipalities are towns bordering the ocean, lagoons or estuaries at the transverse limit of the sea.

⁸² Ifremer, https://wwz.ifremer.fr/dcsmm/content/download/53191/754354/version/1/file/AES_Tourisme_littoral_MMDN_V2.pdf

Coastal tourism is characterized by a strong seasonality, with a peak of activity for the months of July-August-September, with consequences on both overnight stays and jobs. The stays are longer than in other tourist areas (7.7 nights on average for residents)⁸³.

Based on Eurostat data, the tourism sector in coastal regions employed around 65,569 people in 2010⁸⁴. This data do only include accommodation-related activities⁸⁵. 2008 data from the French institute Ifremer point to a total of 332.420 jobs in coastal tourism, which include both restaurant and accommodation sectors⁸⁶. Some twothirds of these jobs are in the restaurant and catering sector, followed by hotel and accommodation sector (21%)⁸⁷. This 21% (corresponding to around 69,800 people employed in the accommodation-related sector in French coastal communities) is in line with the data provided by Eurostat, since it could be assumed that the difference between the two is to be found in lower employment opportunities in the accommodation-related sector between 2008 and 2010, as well as in the inclusion or not of overseas territories⁸⁸. The coastline municipalities guarantee 39% of the overall French accommodation offer (excluding overseas regions and territories)⁸⁹.

Marinas⁹⁰

Marinas are well developed in France, notably in the Mediterranean coastline. The activity comprises all activities related to marinas, including rental of yachts, equipment supplies, maintenance and yachting related services.

According to the French government some 200 marinas can be found⁹¹ (excluding the outermost regions) offering a total of some 120,000 berthing spaces. The Mediterranean sea basin has the largest share of marinas (55%) followed by the Atlantic coast (44%) and Nord-Pas de Calais on the North Sea/Channel coast (1%)⁹². According to the same source these marinas offer directly some 1,380 permanent jobs and 570 seasonal jobs. ICOMIA⁹³ report higher figures of some 3000 people working in marinas. According to this same source major other activities can be found in trade & maintenance (13,800 jobs), equipment supply (3,200) and yachting related services (5000 jobs).

Cruise tourism

Despite a difficult economic situation, the French cruise tourism market is performing well. In 2011 478,000 cruise passengers started or ended their cruise journey in France, making putting it at the 6th place in Europe after Italy, Spain, UK, and Germany (Eurostat). This reflects the demand for cruise tourism coming from France where France holds a 5th place in Europe (European Cruise Council 2012). The number of passengers that are visiting French ports is larger as not all of them end or begin their journey in France. The major French ports-of-call had a passenger throughput in 2011 of some 1.7 million passengers in 2011, with the Mediterranean ports (Marseille and ports along the Côte d'Azur) clearly taking a dominant position representing some 85% of the cruise market⁹⁴. On the Atlantic coast Le Havre is the most important destination, creating an entry point to the city of Paris.

⁸³ Ifremer, see above.

⁸⁴ See methodology Annex for an explanation of the assumptions used in calculating this figures.

⁸⁵ Eurostat data include only accomodation-related activities. See chapter I and Annex I of this study.

⁸⁶ https://wwz.ifremer.fr/dcsmm/content/download/53191/754354/version/1/file/AES_Tourisme_littoral_MMDN_V2.pdf

⁸⁷ Ifremer, see above.

⁸⁸ Official French data only include metropolitan France, whereas Eurostat also include data on oversea territories and departements.

⁸⁹ Ifremer, see above.

⁹⁰ Building of leisure boats (including yachts) is presented under 'Shipbuilding'.

⁹¹ http://www.developpement-durable.gouv.fr/IMG/pdf/donnees_OPP_dec_2010_resultat_enquete.pdf

⁹² The French ministry for Sustainable Development records 67.215 marinas in the Mediterranean coastline, 51.652 along the Atlantic coast and 1.282 in the North region. More information available here : http://www.developpement-durable.gouv.fr/IMG/pdf/donnees_OPP_dec_2010_resultat_enquete.pdf

⁹³ ICOMIA (2011)m Recreational boating statistics

⁹⁴ Based on data from Eurostat, Cruise council Europe and Cruise Europe.

On the 20 cruise companies which are present on the European market, five of them welcome 80% of the total passengers: Costa, MSC, Louis Cruises, Cruises and Royal Caribbean France. The first two, Costa and MSC, own the two thirds of the cruise tourism market⁹⁵.

The main French companies involved in the cruise industry are: Bourbon Supply investments, Bretagne Angleterre Irlande, Club Med Marine, Compagnie du Ponant, Compagnie Océane and Corsica Ferries France.

Coastal protection

Coastal protection includes protection against flooding and erosion, preventing salt water intrusion, protection of habitats. Some overlap is expected to exist with the economic activity 0.2 “construction of water projects”.

The French Coastal Observatory is responsible for coastal protection on behalf of French cities, departments, regions and the French state. It acquires fragile or threatened land and, after protection and restoration works, it entrusts the land management to municipalities, local authorities, associations or public institutions. By 2012, the Observatory provided the management and protection of 152,000 hectares, representing more than 12% of French coastline⁹⁶. According to a recent study, in 2008 France spent 27.3 Million Euros in coastal protection and climate adaptation⁹⁷.

Maritime monitoring and surveillance

Maritime monitoring and surveillance includes the traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods, and environmental monitoring.

As this sector is not directly registered hard data are hard to find. In France two main public bodies play a central role maritime surveillance: the maritime Gendarmerie and the French Customs service. The maritime gendarmerie carries out general policing and criminal investigation functions, including protection of the maritime environment, coastal surveillance, policing of fisheries and shipping, port security, search and rescue, and the fight against, illegal trafficking of goods and people). It employs 1100 people. Also the French Customs service plays an important role focusing on the smuggling and illicit trafficking of goods and people. Among its total staff of 17.800 some 600 sea-going staff is reported⁹⁸. As for the French Navy, its main mission is to protect the French territory and national interests. In this context, it carries out missions of prevention of military, environmental, economic and also ‘societal’ (drug trafficking and weapons, immigration, terrorism, etc..) threats⁹⁹.

Regarding environmental monitoring (other than monitoring pollution) marine research institutes play an important role. A number of major maritime research institutes can be found in France including for example Ifremer, Centre d'Océanologie de Marseille, IUEM (Brest), Laboratoire d'Océanographie de Villefranche-sur-Mer, SHOM, and various marine research stations¹⁰⁰. In its 2010 study on marine data infrastructure, MRAG reports that France annually spends 145.9 Million Euros on collecting, processing and distributing marine data¹⁰¹.

⁹⁵ Conseil National du Tourisme, 2010, ‘Essor prometteur des croisières en France’.

⁹⁶ <http://www.conservatoire-du-littoral.fr/front/process/Rubriquee8e8.html?rub=4&rubec=4>

⁹⁷ Policy Research Corporation (in association with MRAG), ‘The economics of climate change adaptation in EU coastal areas’, p. 62. Study carried out for the European Commission Directorate General for Maritime Affairs and Fisheries.

⁹⁸ <http://www.cluster-maritime.fr/article.php?id=15&lang=Fr>

⁹⁹ <http://www.cluster-maritime.fr/article.php?id=15&lang=Fr>

¹⁰⁰ See http://en.wikipedia.org/wiki/List_of_oceanographic_institutions_and_programs#France for an overview of marine research institutes and organisations in France.

¹⁰¹ MRAG (2010), ‘Marine data infrastructure’, p. 8. Study carried out for the European Commission Directorate General for Maritime Affairs and Fisheries.

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 twofold:

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

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

Table 2 - Breakdown of maritime economic activities at regional level

EU Member State	NUTS 1	NUTS 2	Geographical allocation to Sea-basin (NUTS 2 regions)
France ¹⁰²	Nord - Pas-de-Calais	Nord - Pas-de-Calais	North Sea
	Bassin Parisien	Haute Normandie	Atlantic Arc
		Basse Normandie	Atlantic Arc
		Picardie	Atlantic Arc
	Ouest	Pays de la Loire	Atlantic Arc
		Bretagne	Atlantic Arc
		Poitou-Charentes	Atlantic Arc
	Sud-Ouest	Aquitaine	Atlantic Arc
	Méditerranée	Languedoc-Roussillon	Mediterranean Sea
		Provence-Alpes-Côte d'Azur	Mediterranean Sea
Corse		Mediterranean Sea	

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

¹⁰² Please note that the Départements d'Outre Mer (NUTS 1 level) with the NUTS 2 level regions Martinique, Guadeloupe and Guyane have not been considered. Whilst those are part of France, we understand those do not belong to the Atlantic Arc but rather to the Caribbean.

Table 3 - Overview of employment and GVA per maritime economic activity per region (%)

Sea-basin		Atlantic Arc							Mediterranean Sea-basin			North-Sea basin
Regional percentages (%) apply to Employment and GVA data		Haute Normandie	Basse Normandie	Picardie	Pays de la Loire	Bretagne	Poitou-Charentes	Aquitaine	Languedoc-Roussillon	Provence Alpes Cote d'Azur	Corse	Nord-Pas de Calais
0.	Shipbuilding											
0.1	Shipbuilding ¹⁰³		12.4		35.7	26	10			15.7		
1.	Maritime transport and shipbuilding											
1.1	Deep-sea shipping ¹⁰⁴				54					28		18
1.2	Short-sea shipping				47					38		16
1.3	Passenger ferry services ¹⁰⁵				19					30		51
1.4	Inland waterway transport ¹⁰⁶				5.7 (Seine/Oise basin)					2.1 (Rhône/Saône basin)		92.2 ¹⁰⁷
2.	Food, nutrition, health and eco-system services											
2.1	Catching fish for human consumption ¹⁰⁸	5.4	11	5.5 ¹⁰⁹	9	34.8	12.2	11.9	8.6	5.3	1.5	5.5 ¹¹⁰
2.3	Marine aquatic products ¹¹¹	14.9			9.5	26	37	5.7	6.9			
2.5	Agriculture on saline soils ¹¹²	3	4		27	7	21	5	18	8	6	

¹⁰³ Regional data on employment in the shipbuilding sector has been extracted from the French national database and aggregated at sea basin level.

¹⁰⁴ Based on Eurostat data on goods handled (tonnes) in France and per major port (2011 data). The ports of Nantes/Rouen/ and Bordeaux have been estimated to have handled 60 mln tonnes of goods in 2011. Based on Eurostat data a share short sea shipping of 70% of all goods has been used for the mediterranean and a share of 60% for the North Sea and Atlantic region.

¹⁰⁵ Based on Eurostat data of seaborne passengers embarked/disembarked per sea basin. North Sea has been assessed based on Eurostat data for the ports of Calais and Dunkerque.

¹⁰⁶ Based on percentage share in tonnekilometers transport per basin (2010). Source: VNF, Transport de marchandises, Activité 2010.

¹⁰⁷ Both IWT in Rhône/Moselle basin (90.9%) and Nord-Pas de Calais basin (1.3%) itself.

¹⁰⁸ Regional split of the number of sailors embarked on French vessels in 2010.. The data only includes fishing activities. Source: French Government, 2010. <http://www.franceagrimer.fr/content/download/15860/119148/file/Chiffres-cl%C3%A9s+p%C3%A0che+2012.pdf>

¹⁰⁹ Picardie and Nord-Pas-de-Calais.

¹¹⁰ Picardie and Nord-Pas-de-Calais.

¹¹¹ Percentages have been calculated by extracting the total number of people employed at the regional level in the shellfish sector (preponderant in France) in 2010. Includes both permanent and seasonal jobs. French Government, 2010, <http://agreste.agriculture.gouv.fr/IMG/pdf/gaf12p167-170.pdf>

Sea-basin		Atlantic Arc						Mediterranean Sea-basin			North-Sea basin	
Regional percentages (%) apply to Employment and GVA data		Haute Normandie	Basse Normandie	Picardie	Pays de la Loire	Bretagne	Poitou-Charentes	Aquitaine	Languedoc-Roussillon	Provence Alpes Cote d'Azur	Corse	Nord-Pas de Calais
3.		Energy and raw materials										
3.3	Ocean renewable energy ¹¹³					100						
3.5	Aggregates mining (sand, gravel, etc.) ¹¹⁴	100										
4.		Leisure, working and living										
4.1	Coastal tourism ¹¹⁵				49				43		8	
4.2	Marinas ¹¹⁶				51				37		12	
4.3	Cruise tourism ¹¹⁷				11				89			
Total												

¹¹² To assess the allocation of agriculture on saline soils according to sea basins we use the share of the agricultural area on saline soils as shown in <http://eusoils.jrc.ec.europa.eu/library/themes/salinization/data.html> . We calculate the total area for France by summing the available data. We then divide the agricultural area on saline soils (expressed hectares) for each NUTS 2 region by the total to assess their share.

¹¹³ The only functioning plant is the tidal barrage situated in Rance, Bretagne.

¹¹⁴ According to Ifremer, aggregates mining is concentrated on the western facade of the Channel. <http://wwz.ifremer.fr/manchemerdunord/Unite-Halieutique/Halieutique-Boulogne-sur-Mer/Axes-de-recherche/Autres-usages-energies-marines-granulats/Extraction-de-granulats-marins>

¹¹⁵ The number of nights spent in the specific NUTS 3 region is based on the same approach as used for the overall estimation of the size of the sector. It is a combination of the available beds in NUTS 3 regions and the number of nights spent in NUTS 3 regions (as available in Eurostat). For the specific approach please check the elaboration:

We collected the number of nights spent in a given NUTS-2 region;

We collected the number of bed-places available for all the NUTS-3 regions within the given NUTS 2 region;

We attribute a number of nights spent at NUTS-3 level to each NUTS-2 region, based on the respective share on beds available;

We aggregated resulting “nights spent at NUTS 3” only for maritime NUTS 3 according to their sea basin location.

¹¹⁶ Based on the regional split in jobs according to ICOMIA (North-East = North Sea; South Atlantic & Great West = Atlantic; Mediterranean = Mediterranean)

¹¹⁷ We have used the 2010 data on the number of passengers per cruise port and aggregated it by sea basin. Until 2010, the North sea basin, namely the port of Calais, was not welcoming any cruises. Source : Conseil National du Tourisme , 2010, Essor prometteur des croisières en France.

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 section 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)	Employment (*1000)	Score
1.	Coastal tourism	3,401	65,569	55.6
2.	Catching fish for human consumption	2,759	56,156	41.9
3.	Short-sea shipping (incl. Ro-Ro)	3,049	30,572	30.5
4.	Yachting and marinas	1,700	40,700	28.9
5.	Shipbuilding (excl. leisure boats) and ship repair	1,120	19,121	15.2
6.	Deep-sea shipping	1,460	14,641	14.6
7.	Passenger ferry services	978	13,931	11.9

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

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

Table 5 - Ranking order of the 7 fastest growing maritime economic activities in France¹¹⁸

Rank	Maritime economic activities	Growth 2008-2010 (CAGR)	Growth 2000-2012 (CAGR)	Score (based on 2008-2010)
1.	Cruise tourism	25.1%	10.9%	25.1
2.	Shipbuilding (incl. leisure boats) and ship repair	10.7%	-2.0%	10.7
3.	Aggregates mining	7.4%	n/a	7.4
4.	Catching fish for human consumption	2.3%	1.7%	2.3
5.	Catching fish for animal feeding	2.3%	1.7%	2.3
6.	Marine aquatic products	0.8%	n/a	0.8
7.	Passenger ferry services	0.4%	-1.0%	0.4

The above MAEs have been ranked according to their growth in the period 2008-2010. In most cases the recent growth shows a similar trend as the longer term development, although figures obviously differ for both periods. A clear exception to this is formed by shipbuilding where the longer term trend shows a decline, but the short term period shows a strong growth. In shipbuilding this may be influenced by the occurrence of a number of larger orders for new ships, hence it is not clear whether this really signifies a reversal of the trend.

The development in aggregates mining is remarkable as it is strongly linked to the development of the construction sector, which has not shown a similar development in that period. It should be noted that total volume of aggregate mining in France is small in a European perspective and that small changes in volumes might have a large impact on growth rates .

All in all the figures indicates that only the top 3 MAEs can be (possibly) characterised as fast growing although for shipbuilding and marine aggregates mining further confirmation needs to be sought, whether this is indeed the case.

Please note, that growth figures could not be established for all MAEs.

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

This section 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.¹¹⁹
- 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 future

¹¹⁸ In view of the incomplete data sets for employment for the years 2008,2009 and 2010 (Eurostat), the CAGR is mainly calculated on the basis of other relevant indicators (see Annex II). Please note that not for all MAEs growth rates could be established.

¹¹⁹ Ecorys, Deltares, Océanique Développement, 2012: Drivers and Scenarios for Sustainable Growth from the Oceans, Seas and Coasts. Blue Growth Final Report. Annex I. Maritime economic activities data. Available here: <https://webgate.ec.europa.eu/maritimeforum/content/2946>

Table 6 - Future potential of economic activities

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

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.	Ocean renewable energy	6
2.	Offshore wind	5
3.	Yachting and marinas	5
4.	Blue Biotechnology	5
5.	Maritime surveillance of goods and people	4
6.	Shipbuilding and ship repair	4
7.	Marine minerals mining	4

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 included¹²⁰:

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

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 identified national maritime sector analysis

Source	Qualitative assessment regarding innovation potential per maritime economic activity/sector
Invest in Blue, 2012 ¹²¹	In France, the 'Invest in Blue' initiative has brought together the most innovative SMEs in the maritime sector and the partners for their development. 30 SMEs

¹²⁰ Dependent on data availability

¹²¹ http://investinblue.org/uploads/event_member/86552/bookafteribautes.pdf

	<p>have been selected and presented to investors, coming from the following marine-related sectors:</p> <ul style="list-style-type: none"> • 27% shipbuilding • 7% Marine biotechnologies • 23% Marine renewable energy • 10% Yachting • 20% Environment/coastal protection
<p>The Maritime Clusters of Bretagne and Province-Alpes-Côte d’Azur (Pôles de Compétitivité Bretagne et PACA)</p>	<p>The Maritime Clusters of Brittany and Province-Alpes-Côte d’Azur are marine science and technology clusters located in Brittany and Provence, whose remit is to promote economic competitiveness at a global level. They have a combined membership of over 600 enterprises that includes major companies, SMEs, public and private laboratories, universities and selective institutions, all of which are involved in the maritime field.</p> <p>On the one side, the aim is to exploit innovation in order to meet the growing demands of security and sustainable development, which are believed to have the potential to generate economic activity and jobs. On the other side, the objective is to stimulate and support collaborative projects, involving both companies and research laboratories, in the development of innovative products and services. Five strategic axes have been developed:</p> <ul style="list-style-type: none"> • maritime safety and security • ships and leisure boats • marine energy resources • marine resources • environment and coastal management. <p>Since 2005, 350 projects have received the ‘Pôle Mer’ recognition, 224 projects have received funding more than 1 billion Euros worth of research has been undertaken¹²².</p>

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)¹²³.”

¹²² <http://www.pole-mer.fr/>

4.1. Maritime clusters in France

Building on the clusters already identified in the Blue growth study¹²⁴ and complemented with cluster identified in the EU Cluster Observatory¹²⁵, the following clusters have been identified for France. Clusters in France are located in multiple sea basins: the Atlantic, North Sea and the Mediterranean. Of the below clusters two clusters, Brest and Bordeaux, are further elaborated to show their specific characteristics.

Table 11 – Proposed clusters to be analysed in France

Longlist of maritime clusters EU Cluster Observatory	Suggested clusters for in-depth analysis		
	Cluster	Location of the cluster	Maritime economic activities in the cluster
Bretagne	Brest	Atlantic Arc	Defence, blue biotechnology, shipbuilding, fisheries, ocean renewable energy
Marseilles		Mediterranean Sea basin	
Pays de la Loire		Atlantic Arc	
Aquitaine	Bordeaux	Atlantic Arc	Shipbuilding, fishing, yachting and marinas, environmental monitoring
Poitou-Charentes		Atlantic Arc	
Nord - Pas-de-Calais		North Sea and English Channel	
Basse-Normandie		Atlantic Arc	

4.2. Cluster analysis

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).

The clusters are analysed according to the following aspects (table 12):

- 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);
- 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 are intended to be analysed according to the following indicators (table 13):

- Number of students in higher education;
- Number of students in higher education following courses specially designed for employment in the blue economy

¹²³ Prof. Michael E. Porter, 20120213, MOC2012 (HBS course) Session 5 - final

¹²⁴ In the previous Blue Growth study, these were: Bretagne, Brest, Marseilles, ES: Galician Coast, Barcelona;

¹²⁵ The EU Cluster Observatory denotes maritime clusters and tourism clusters.

- Unemployment rate in the cluster
- On-going research in a given cluster, i.e. number of on-going research programmes and projects in the cluster, regionalised patent & publications data (where available at cluster level), R&D test centres located in the cluster etc.

Table 12 - List and strengths and weaknesses of clusters

	EU Member State	Maritime economic activities concerned	Status (mature, growing, early development)	Strengths	Weaknesses
BREST					
<p>Brest has a long standing maritime tradition. Alongside distinctive maritime economic activities, economic development has also been favoured by the presence of three maritime clusters, which have also enabled a high concentration of research and development activities in maritime areas. The combination of maritime resources and innovation goes beyond the clusters active in Brest. The Bretagne region supports innovative maritime projects throughout its territory and is keen to involve a wide range of research centres, private companies and foreign investors. For instance, it finances projects focusing on marine and maritime technologies¹²⁶.</p>					
Technopôle Brest-Iroise (Brest) ¹²⁷¹²⁸	FR	<p>Maritime Science and Technology.</p> <p>The products developed within this cluster find application in different areas:</p>	Mature	<ul style="list-style-type: none"> •2100 researchers working on science and technology applied to the sea; •Brest is the 1st French harbour for ship repair 	

¹²⁶ For more information on these projects, see <http://www.invest-in-france.org/Medias/Publications/1105/Brittany-marine-cluster-france-en.pdf>

¹²⁷ Technopôle Brest-Iroise was established in 1988. It brings together a network of 200 entities (businesses, research centers, graduate schools and professional bodies) and works towards regional economic development through innovation. According to French literature, the notion of ‘technopôle’ has appeared in France in the 1970’s, following the Japanese and American examples. Among the most famous and developed French technopôles, we can mention Sophia-Antipolis, Rennes Atalante, the Technopole of Villeneuve d’Ascq, the Inovalée in Grenoble, the Toulouse aerospace technopôle.

¹²⁸ The French term of ‘technopôle’ corresponds to what is elsewhere known as ‘science park’. As a European Commission study on regional research intensive clusters and science parks points out, « there are a number of types of science parks in Europe and over the world (...). One of the reasons is that in different countries different forms of science parks have been developed. Each country has a different history of science parks and has its own terms. For instance, “Science Park” is used in the United Kingdom, “Technopole” or “Technopolis” is used in France, “Technology Centre” and/or “Technology Park” is used in Germany ». The study highlights the lowest common denominator of such parks as the fact that « such parks gather producers of hightechnology products and services, and provide the opportunity for a degree of institutional co-operation between university and industry ». In this sense, we could understand French technopôles as the ancestors of today’s competitiveness clusters. For more information, see http://ec.europa.eu/research/regions/documents/publications/sc_park.pdf

		<ul style="list-style-type: none"> • Coastal protection • Exploitation of maritime (i.e. fisheries and aquaculture)resources • Shipbuilding • Offshore oil and gas • Ocean renewable energy and offshore wind • Environmental monitoring • Maritime transport 		<ul style="list-style-type: none"> •Host of Pôle Mer Bretagne (Sea Competitiveness Cluster) •Host of France Energies Marines (French R&D National Institute for marine energies) 	
Pôle-Mer Bretagne ¹²⁹¹³⁰	FR	<ul style="list-style-type: none"> •Maritime safety and security •Shipbuilding and leisure boatbuilding •Marine energy resources •Marine biological resources •Coastal and environmental planning and management 	Growing	<ul style="list-style-type: none"> • Regional maritime dynamism of the Brittany region, with well developed marine infrastructure and wide-ranging marine resources • Strategic partnership with its 'twin' Pôle Mer PACA • Strong international network, including close collaboration with overseas territories 	<ul style="list-style-type: none"> • The local dimension is somewhat a source of complexity, notably for the relation between the central state and the local communities¹³¹ • Weak ex post evaluation of projects¹³² • Weak integration of the pôle's projects with overall national R&D strategies¹³³ • Financial support to projects is not always adapted to projects life-cycle¹³⁴

¹²⁹ The competitive cluster of Pôle Mer Bretagne was created in 2005 with the support of Technopôle Brest-Iroise and is located within its offices. A representative of the Technopôle sits in the board of management of the Pôle Mer Bretagne. At project level, dynamics between the two entities are fed through joint efforts - collaborative programs and anchor projects. An example is the participation to the Medarmor programme, piloted – among other actors - by the Technopôle Brest-Iroise. The programme aims at helping SMEs of the Pôle Mer Bretagne and Pôle Mer PACA to obtain financial support. A second example is the Merific (Marine Energy in Far Peripheral and Island Communities) programme, which sees both the Technopôle and the Pôle Mer Bretagne as partners.

¹³⁰ For an in depth description of France's strategy for competitive clusters, see Table 14.

¹³¹ C. Bernard, H. Ouzzine et al., *Un pôle de compétitivité en plein boom : le pôle-mer Bretagne*, Pôle Mer Bretagne and Université de Technologie de Compiègne.

¹³² *Ibid.*

¹³³ *Ibid.*

¹³⁴ *Ibid.*

Bretagne Pôle Naval ¹³⁵¹³⁶	FR	<ul style="list-style-type: none"> • Naval (shipbuilding, refit and repair, maintenance, yachts and leisure boats) • Marine renewable energy (tidal, offshore wind, floating offshore wind, wave energy, ocean thermal energy) • Offshore oil and gas 	Mature (shipbuilding and ship repair), growing (offshore oil and gas), early development (MREs)	<ul style="list-style-type: none"> • Available industrial and port infrastructure¹³⁷ • Shipbuilding is the 4th industrial sector in the region • Strong international reputation of Brest for ship repair (1st French port for ship repair) • Support and involvement of the region in structuring and federating the position of thousands SMEs active in the MRE sector¹³⁸ 	<ul style="list-style-type: none"> • The Pôle Naval’s website does not specifically mention any research and/or education institutions belonging to the pôle’s network. • Not part of the ‘centrally driven’ French policy on competitiveness clusters
<p style="text-align: center;">BORDEAUX</p> <p>Research has shown that, compared to Bretagne, the city of Bordeaux and its region - Aquitaine- have not yet developed a network of maritime clusters. As confirmed by our research and data collection, a large combination of maritime economic activities can be observed in the region, including – for instance – shipbuilding. However, interlinkages among these and between private and public actors seem to lack. This has been confirmed by the Aquitaine regional development agency, which argued that, despite the strong maritime dimension of the region, maritime economic activities are not organised around any cluster.</p> <p>Currently, the possibility to establish a yacht repair cluster (yacht ‘refit’) is being considered by the city of Bordeaux. Since 2010, the port of Bordeaux, together with local SMEs, has been promoting this project¹³⁹.</p> <p>Arguments in favour of the yacht ‘refit’ project include:</p>					

¹³⁵ All the information concerning the Bretagne Pôle naval has been retrieved from the following website : <http://bretagnepolenaval.org/?langue=en>. Where otherwise, alternative sources are reported.

¹³⁶ Please note that the Bretagne Pôle Naval network, despite receiving direct financial support from the Brittany region, does not include training and or research and education institutions. It was in fact created in 2007 with the primary objective to federate all the actors of the Breton shipbuilding and ship repair industry. However, connections and collaboration channels are believed to exist between the professional network and the research and education world. Moreover, the Pôle Naval is not a ‘centrally driven’ competitiveness cluster, but a regional cluster, which in recent years has successfully developed to include the offshore oil and gas as well as the marine renewable energy sectors.

¹³⁷ 12 dry docks, 5 mobile lifts from 70 to 650 tons, one fixed lift of 2000 tons, 4 slipways, workshops and covered shipyards, industrial deepwater quays with platforms for heavy loads and handling equipment.

¹³⁸ http://www.bretagne.fr/internet/upload/docs/application/pdf/2012-07/rapport_transversal_mer_bp_2012_relecture_finale.pdf

¹³⁹ <http://www.usinenouvelle.com/article/bordeaux-attend-les-super-yachts.N203583>

- The overcapacity of the already existing French 'refit' sites;
- Available infrastructure in the port of Bordeaux;
- The strength of the yachting sector in the region, with two major players.

However, the project is not likely to be finalised soon. Political cleavages, strict environmental constraints as well as the progressive development of a residential area nearby the potential 'refit' site are currently hampering its successful development¹⁴⁰.

A limited list of competitiveness clusters can be distinguished in the region, which do not however present a clear maritime dimension. Relevant for Blue Growth is the Aerospace Valley, a world Competitiveness Cluster established in both Aquitaine and Midi-Pyrénées regions specialised in aeronautics, space and embedded systems. In the city of Toulouse (Midi-Pyrénées region), the Aerospace Valley cluster also deals with open seas and coastal oceanography, territorial management, forecasts of atmospheric chemical content and natural risk management .

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¹⁴⁰ <http://www.sudouest.fr/2013/10/15/feltesse-mise-sur-les-yachts-1199510-2780.php>

Table 13 – In-depth analysis of clusters

	EU Member State	Maritime economic activities concerned	Education policy		Unemployment rate at cluster level ¹⁴¹ (NUTS III or II level)	Ongoing research: main research institutes / companies associated to the clusters
			Number of students in higher education	Number of students in higher education following courses for employment in blue economy		
Technopôle Brest-Iroise (Brest) ¹⁴²	FR	<p>Maritime Science and Technology applied to:</p> <ul style="list-style-type: none"> • Coastal protection • Exploitation of maritime (i.e. fisheries and aquaculture)resources • Ship building • Offshore oil and gas • Ocean renewable energy and offshore wind • Environmental monitoring 	25,578 students among the University, the 8 different graduate schools, Associate Degree (BTS) programs and preparatory classes, the Teachers College (IUFM), the Technical University Institute (IUT) and the Professionalized University Institute (IUP)	3 000 graduates per year in maritime-related education and training, one third of them in continuing professional development ¹⁴³	<p>6,300 people work in the area, whereas 2 600 people work in the 88 companies belonging to the network</p> <p>Unemployment:</p> <ul style="list-style-type: none"> • NUTS 3 (department of Finistère), end of 2012: 9.2¹⁴⁴ • NUTS 2 (region of Brittany), end of 2012: 9%¹⁴⁵ 	<ul style="list-style-type: none"> • Companies: Thales, Cabasse, Ixsea, CLS, Geensys • Research Institutes: Ifremer, Paul Emile Victor Institute • Universities: University of Western Brittany (UBO): European Institute of Marine Studies and the French Graduate Engineering School of Microbiology and Food Safety ; Télécom Bretagne (Graduate Engineering School of

¹⁴¹ 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.

¹⁴² Information provided concerning the Brest cluster has been retrieved from the Technopôle Brest-Iroise website (<http://www.tech-brest-iroise.fr/Homepage-625-0-0-0.html>). Where otherwise, alternative sources have been duly referenced.

¹⁴³ The Brest Technopôle Campus hosts 2100 students. In the campus, there are also 900 professors, researchers, engineers and technicians, and 700 administrative staff in research and training facilities.

¹⁴⁴ <http://www.bdm.insee.fr/bdm2/affichageSeries.action;jsessionid=07FD6DCDFD43F080D525FB7CBCF4E4D2?recherche=idbank&idbank=001515894&codeGroupe=713>

¹⁴⁵ http://www.insee.fr/fr/regions/bretagne/default.asp?page=conjoncture/taux_chomage.htm

		<ul style="list-style-type: none"> • Maritime transport 				Telecommunications) ; National Graduate Engineering School of Brest.
Pôle-Mer Bretagne	FR	<ul style="list-style-type: none"> • Maritime safety and security • Shipbuilding and leisure boatbuilding • Marine energy resources • Marine biological resources • Coastal and environmental planning and management 	25,578 students among the University, the 8 different graduate schools, Associate Degree (BTS) programs and preparatory classes, the Teachers College (IUFM), the Technical University Institute (IUT) and the Professionalized University Institute (IUP)	3 000 graduates per year in maritime-related education and training, one third of them in continuing professional development	<p>300 members, 50% of which are SMEs</p> <p>Unemployment:</p> <ul style="list-style-type: none"> • NUTS 3 (department of Finistère), end of 2012: 9.2¹⁴⁶ • NUTS 2 (region of Brittany), end of 2012: 9%¹⁴⁷ 	<ul style="list-style-type: none"> • Companies Thalès, Véolia, DCN • Research Institutes Le Cluster Maritime Français, Agence Nationale de Recherche, BRGM (Bureau de Recherche Géologique et Minières), ENTSE (Ecole Nationale Supérieure de Télécommunications de Bretagne), Ensieta (Ecole Nationale Supérieure de Techniques Avancées de Bretagne)
Bretagne Pôle Naval	FR	<ul style="list-style-type: none"> • Naval (shipbuilding, refit and repair, maintenance, yachts and leisure boats) • Marine renewable energy (tidal, offshore wind, floating offshore wind, wave energy, ocean thermal energy) 	25,578 students among the University, the 8 different graduate schools, Associate Degree (BTS) programs and preparatory classes, the	3 000 graduates per year in maritime-related education and training, one third of them in continuing professional development	<p>115 enterprises belong to the Pôle Naval's network, representing around 18.000 jobs</p> <p>Unemployment (region only):</p> <ul style="list-style-type: none"> • NUTS 2 (region of Brittany), end of 	DCNS (shipbuilding and ship repair), CTL (defence shipbuilding), Segula Technologies (Marine and industry engineering), Sofresid (Offshore & Onshore engineering), Piriou (Shipbuilding, repair and marine engineering),

¹⁴⁶ <http://www.bdm.insee.fr/bdm2/affichageSeries.action;jsessionid=07FD6DCDFD43F080D525FB7CBCF4E4D2?recherche=idbank&idbank=001515894&codeGroupe=713>

¹⁴⁷ http://www.insee.fr/fr/regions/bretagne/default.asp?page=conjoncture/taux_chomage.htm

		<ul style="list-style-type: none"> • Offshore oil and gas 	Teachers College (IUFM), the Technical University Institute (IUT) and the Professionalized University Institute (IUP)		2012: 9%	SNEF (electrical engineering) ¹⁴⁸
Bordeaux Superyacht Refit	FR	<ul style="list-style-type: none"> • Yacht repair ('refit') 	No information has been found on relevant links between the cluster and educational programmes in the city of Bordeaux or in the department of Aquitaine	Maritime education programmes are available in the University of Bordeaux, although they are not directly linked to the yacht repair sector but more to the study of oceans, marine and coastal protection.	It is foreseen that the cluster would create around 500 employment posts (both direct and indirect) ¹⁴⁹	As no boat has been 'refitted' yet, there aren't any on-going projects

¹⁴⁸ <http://bretagnepolenaval.org/modules/kameleon/upload/1annuaire-crn-bpn2012.pdf>

¹⁴⁹ <http://www.usinenouvelle.com/article/bordeaux-attend-les-super-yachts.N203583>

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

Table 14 – Regional or national cluster strategy

National cluster strategy
Les Pôles de Compétitivité ¹⁵⁰
Brief description of main objectives and features
<p>In order to boost French industrial competitiveness, the 2005 Finance Act creates the concept of ‘competitiveness clusters’. The main objective of such national cluster policy was to make the French economy more competitive, fight against relocations, create jobs, and create private-public synergies. After a specific public tender launched between 2004 and 2005, 66 out of 105 projects are retained. The funding comes in various forms including research and development grants and relief on specific tax and social charges.</p> <p>In 2010, one could count 71 clusters divided into three categories: 7 ‘global’ clusters, 11 ‘global vocation’ clusters, and 53 ‘national’ clusters. In total, 9,000 researchers work on around 1000 projects. Since 2005, 889 R&D projects have received €1.7 billion in public-sector financing, of which €1.1 billion was provided by the State. These projects, amounting to some €4.4 billion in R&D expenditure, involved nearly 15,000 researchers.</p> <p>The goal of competitiveness clusters is to build on synergies and innovative, collaborative projects in order to give partner firms the chance to become first in their fields, both in France and abroad.</p> <p>The role of competitiveness clusters is to boost the competitiveness of the French economy and to help develop growth and jobs in key markets, by :</p> <ul style="list-style-type: none"> • accelerating innovation efforts • providing support for high-tech and creative activities, primarily industrial, in the various regions of France • improving the attractiveness of France via greater international visibility <p>Cluster strategy: each cluster draws up a five-year strategic plan based on the shared vision of various participants. This allows the cluster to :</p> <ul style="list-style-type: none"> • establish partnerships between participants with recognized, complementary skills • set up collaborative R&D projects, as well as structuring projects such as innovation platforms that can benefit from public subsidies • promote an overall environment that fosters both innovation and growth among the cluster's members. This is done by providing leadership, exchange and support for members in areas such as private funding for firms, industrial property, forward-looking management of jobs and needs for new skills and qualifications, developing international technological partnerships, regional synergies, etc. <p>Resulting from local initiatives, competitiveness clusters are currently active in most activity sectors. These include emerging technologies (nanotechnology, biotechnology, eco-technology, etc.) as well as more mature sectors (automotive, aerospace, etc.).</p>

¹⁵⁰ http://competitivite.gouv.fr/documents/commun/Documentation_poles/brochures_poles/anglais/brochure-ang-internet.pdf

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

The policy evaluation below is carried out at national level - NUTS 0, 1 or regional level NUTS 2 (depending on the individual level on which the maritime policy decision-making competency is residing)¹⁵¹

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

The analysis is comprised of two interlinked analysis:

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

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

¹⁵¹ We understand this might differ for specific policies. See also table 3 of this country fiche.

Table 16 – Assessment of maritime and generic policies

Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding	Other generic policies with high impact on maritime economic activities
Grenelle de la Mer (National strategy for the Seas and the Oceans) ¹⁵²	<ol style="list-style-type: none"> 1- Research into and respect for the marine environment; 2- Development of a sustainable maritime economy; 3- Promotion of the maritime dimension of France's overseas territory 4- Affirmation of France's place in Europe and the world at large 	<ul style="list-style-type: none"> • Research and innovation • Protection and development of coastal and marine areas • Protection of marine biodiversity • Transports, ports and naval industry • Marine resources other than fisheries • Tourism, yachting, sport and leisure • Pollution • Training, professions • Public awareness, communication, education • Governing 	<ul style="list-style-type: none"> • More resources for improved coastal management; • Setting up of a network of marine protected areas for 10% of oceans by 2012 and 20% by 2020; • Reduced greenhouse gas emissions from maritime transport by 20% by 2020; • Development of a national ports strategy, reconsider shipbuilding industry; • 3% of all energy consumed to be generated from maritime energy by 2020; • Coastal tourism activities to be placed in a sustainable development perspective; • Strengthen the legal framework on pollution, reduce effluents released into oceans, fight against floating waste, set up specific funding; • Adapt and structure training programmes, strengthen establishments providing training in 	<p>It is not yet possible to assess the impact of the 'Grenelle de la Mer' policy on sustainable growth. The policy has not yet been the object of an overall evaluation. The last publicly available progress report¹⁵³ (March 2012) refers to several on-going projects, launching of funding mechanisms, creation of supporting agencies, development of ad hoc strategies. However, their impact on sustainable growth is not yet visible.</p>	<p>Desk research has not revealed the overall budget of the policy. However, investment levels for certain specific policies and initiatives are hereafter reported:</p> <ul style="list-style-type: none"> • Industrial programme 'Navire du futur': 100 M€ ; • Investment fund for maritime ports (2009-2013): 2.4 M€ • Marine renewable energies : 100M€¹⁵⁴ 	<p>Inspired by the European Union Integrated Maritime policy and part of the Grenelle de la Mer process, the French Government is currently developing an integrated French maritime policy¹⁵⁵ around four priorities:</p> <ol style="list-style-type: none"> 1- Develop the marine economy in all its dimensions; 2- Enhance training, research and innovation; 3- Better protect the marine environment through a dynamic classification of

¹⁵² All information concerning the 'Grenelle de la Mer' has been retrieved from the official website of the policy initiative as well as from the progress reports published by the French Government. If otherwise, alternative sources have been reported. For more information, see : http://www.developpement-durable.gouv.fr/IMG/pdf/09024_HS-Grenelle-Mer_Engagements_GB_23-12-10_web.pdf and http://www.developpement-durable.gouv.fr/IMG/pdf/Grenelle_de_la_mer_2eme_rapport.pdf

¹⁵³ For more information, see the second and last progress report : http://www.developpement-durable.gouv.fr/IMG/pdf/Rapport_d_etape_-_Grenelle_de_la_mer.pdf

¹⁵⁴ <http://www.geo.fr/environnement/les-mots-verts/energies-renouvelables-40381>

¹⁵⁵ <http://www.gouvernement.fr/gouvernement/la-politique-maritime>

			seafaring occupations and encourage synergies;			maritime areas 4- Improve the working conditions of seafarers
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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.¹⁵⁶ The assessment presents an expert opinion as to how far the targets and the objectives of the particular good practice have been met and in how far those have been met.

Table 17 Assessment of good practices derived

Good practice	Evidence for impact 1	Evidence for impact 2	Evidence for impact 3	Assessment
Reform of maritime ports ¹⁵⁷	Creation of 7 Development Committees (one for each of the main French maritime ports) and Scientific Committees to bring together all relevant stakeholders. Such committees meet on a regular basis to discuss all environmental and strategic aspects of the maritime ports.	On the one side, maritime ports are now owners of the railways located in their constituencies. In 2010, a first railway operator 'Maritime Rail Services' (partially owned by the La Rochelle maritime port) has entered into service for the transportation of oil products from La Rochelle to Guéret. Since then, the service has enlarged to other products and destinations. On the other side, harbour-related commercial operations are now opened up to private ownership and competition	2.4 Million Euros have been invested for the period 2009-2013 to support the reform, notably to improve connections of ports to rail and river transport networks	According to the French Institute for Maritime Economy ¹⁵⁸ , the reform has led to: <ul style="list-style-type: none"> • A modernised system of governance; • The promotion of intermodal logistics services; • An enhanced competitiveness of French ports .

¹⁵⁶ Provided that data is available to identify indicators of success of the good practice (evidence for impact).

¹⁵⁷ Information has been retrieved from the French Ministry for Sustainable Development (http://www.developpement-durable.gouv.fr/IMG/pdf/Grenelle_de_la_mer_2eme_rapport.pdf). If otherwise, alternative sources have been reported.

¹⁵⁸ <http://www.isemar.asso.fr/fr/pdf/note-de-synthese-isemar-121.pdf>

<p>The 'Grenelle methodology'¹⁵⁹</p>	<p>Drafting proposals:</p> <p>Four Working Groups composed of around fifty members taken from five sectors – Government, local authorities, companies, employee representatives and environmental groups – together with specialist qualified individuals</p>	<p>National consultation:</p> <ol style="list-style-type: none"> 1- Internet community consultation 2- 18 regional oceans round tables with a total of 4.000 participants 3- Consultation from the twenty French National councils concerned: National Council of the Coast, Senior Council for Merchant Navy, national councils for waste, water, air, etc. 	<p>Final Round Table:</p> <ol style="list-style-type: none"> 1- Final round table 2- Speech from French President on French maritime policy 3- Publication of a Blue Book¹⁶⁰ detailing the Round Table commitments 	<p>According to WWF France¹⁶¹:</p> <ul style="list-style-type: none"> • The Grenelle de la Mer has strengthened the dialogue between NGOs and industry, hence bringing closer the world of ecology and of the economy; • Working Groups were able to adopt a more comprehensive approach, hence including economic, social and environmental aspects; • Because of the economic and financial crisis, the economic dimension has prevailed over environmental concerns.
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¹⁵⁹ It believed that the decisional procedure that led to the approval of the 'Grenelle de la Mer' maritime policy was an innovative and inclusive one, which might be considered as a best practice for other national and/or European maritime policy initiatives.

¹⁶⁰ The English version of the Blue Book can be found here : http://www.developpement-durable.gouv.fr/IMG/pdf/Livre_bleu_anglais-2.pdf

¹⁶¹ <http://www.wwf.fr/s-informer/dossiers/grenelle-de-la-mer>

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.

Table 11 – Selection table of the most relevant figures and detailed references

		Eurostat			National Sources			Alternative Sources			Other Indicators			
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	SMEs*	Further indicators	Source & Reference year
		(€, million)	Total number		(€, million)	Total number		(€, million)	Total number					
0. Shipbuilding														
0.1	Shipbuilding (incl. leisure boats) and ship repair	1,472	26,631	Eurostat, data for 2010	n/a	n/a	n/a	n/a	16000 (excluding suppliers and subcontractors)	Le Cluster Maritime Français, 2011, http://www.cluster-maritime.fr/article.php?id=14	101 ¹⁶²			Amadeus database
0.2	Construction of water projects	687	4,980	Eurostat, data for 2010	719	4,362	2010 National statistics for NACE code 42.91 (construction of water projects)	n/a	n/a		292			Insee.fr, 2010

¹⁶² Figure excluding leisure boats

		Eurostat			National Sources			Alternative Sources			Other Indicators			
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	SMEs*	Further indicators	Source & Reference year
		(€, million)	Total number		(€, million)	Total number		(€, million)	Total number					
1. Maritime transport														
1.1	Deep-sea shipping	1,460	14,641	Eurostat, data for 2010	1,534	15,207	National statistics data for 2010, support data Eurostat 2010	n/a	n/a	n/a	506			National statistics NACE 2 data for 2010, supported by data Eurostat 2010
1.2	Short-sea shipping (incl. Ro-Ro)	3,049	30,572	Eurostat, data for 2010	3,203	31,753	National statistics data for 2010, support data Eurostat 2010	n/a	n/a	n/a	1,058.			National statistics NACE 2 data for 2010, supported by data Eurostat 2010
1.3	Passenger ferries	978	13,931	Eurostat, data for 2010	845	11,984	National statistics data for 2010, support data Eurostat 2010	n/a	n/a		844			National statistics NACE 2 data for 2010, supported by data Eurostat 2010

		Eurostat			National Sources			Alternative Sources			Other Indicators			
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	SMEs*	Further indicators	Source & Reference year
		(€, million)	Total number		(€, million)	Total number		(€, million)	Total number					
1.4	Inland water way transport	288	4,298	Eurostat, data for 2010	302	4,412	(only freight) National statistics data for 2010, support data Eurostat 2010	n/a	n/a		900			National statistics NACE 2 data for 2010, supported by data Eurostat 2010
2. Food, nutrition, health and eco-system services														
2.1	Catching fish for human consumption	2,759	56,196	JRC (fishing), Eurostat (fish processing, wholesale & retail), PRODCOM (share of human/animal), data for 2010	2,759	56,196	JRC (fishing), Eurostat (fish processing, wholesale & retail), PRODCOM (share of human/animal), data for 2010	470 (Ifremer, 2009), https://wwz.ifremer.fr/dcsmm/content/download/53172/754126/version/1/file/AES_Pech_e_professionnelle_V2bis_MO.pdf . This figure only	22,639//4,6.900	French Government, 2010 (only fishing activities) http://www.developpement-durable.gouv.fr/IMG/pdf/Chiffres_cle_peche.pdf //France Agrimer (National Institute for Farming and Fishing Products), 2011 data (The number comprises production,	2926 (fishmongers), 306 (trading and processing firms), 300 (processing) //4640			Le Cluster Maritime Français, 2010// Ifremer, 2009, https://wwz.ifremer.fr/dcsmm/content/download/53172/754126/version/1/file/AES_Pech_e_professionnelle_V2bis_MO.pdf

		Eurostat			National Sources			Alternative Sources			Other Indicators			
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	SMEs*	Further indicators	Source & Reference year
		(€, million)	Total number		(€, million)	Total number		(€, million)	Total number					
								includes fishing activities (no wholesaling nor retailing)		fishmonger firms, trade firms and processing firms)				
2.2	Catching fish for animal feeding	n/a	n/a		minimal	minimal	JRC (fishing), PRODCOM (share of human/animal), data for 2010 (animal share is zero in 2010 according to JRC)	n/a	n/a		n/a			
2.3	Marine aquatic products	n/a	n/a	n	258	15,336	JRC, data for 2010	n/a	17,200 (shellfish production), 2,800 (fish farming), n/a (algae)	French Government, 2010, http://www.developpement-durable.gouv.fr/IMG/pdf/Chiffres_cle_peche.pdf	3,750 (only shellfish activities), 31 (fish farming), 6 (algae cultivation)			French Government, 2010, http://www.developpement-durable.gouv.fr/IMG/pdf/Chiffres_cle_peche.pdf

		Eurostat			National Sources			Alternative Sources			Other Indicators			
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	SMEs*	Further indicators	Source & Reference year
		(€, million)	Total number		(€, million)	Total number		(€, million)	Total number					
2.4	Blue biotechnology	n/a	n/a	Not available in Eurostat. No alternative data on France found centrally	n/a	n/a	n/a National Statistical Office	No industry yet, R&D Development stage		France Biotech, 2012 http://www.scribd.com/doc/145896846/Etude-2012-Interactive-FranceBiotech	No industry yet, R&D Development stage			France Biotech, 2012 http://www.scribd.com/doc/145896846/Etude-2012-Interactive-FranceBiotech
2.5	Agriculture on saline soils	476	16,852	Eurostat, data for 2010 (agriculture in coastal NUTS-2 and percentage saline soils.	n/a	n/a		n/a	n/a		n/a	n/a		n

		Eurostat			National Sources			Alternative Sources			Other Indicators			
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	SMEs*	Further indicators	Source & Reference year
		(€, million)	Total number		(€, million)	Total number		(€, million)	Total number					
3. Energy and raw materials														
3.1	Offshore oil and gas	31	46	Eurostat, data GVA 2010, Employment 2009. No data on NACE 06.10 and 06.20	n/a	n/a		n/a	30,000 // 27,000 ¹⁶³	Le Cluster Maritime Français, 2010 / Institut Français de la mer Ifmer.org http://www.ifmer.org/assets/documents/files/lu_presse/9997JRVallat42009.PDF	52.			Amadeus database
3.2	Offshore wind	n/a	n/a		minimal	minimal	* http://www.windustry.fr/wp-content/uploads/2013/01/20130125-Annuaire-industrie-%C3%A9olienne-2012-2013-EN.pdf	minimal	minimal	* http://www.windustry.fr/wp-content/uploads/2013/01/20130125-Annuaire-industrie-%C3%A9olienne-2012-2013-EN.pdf	n/a			
3.3	Ocean renewable energy	n/a	n/a	Sector not visible in Eurostat. No alternative	n/a	n/a	Sector not visible in Eurostat. No alternative sources	74.3	400	Ecorys calculations based on the Blue Growth Study	n/a			Mainly overseas, not in metropolitan France

¹⁶³ According to IFP Energies Nouvelles, around 90% of the sector's turnover comes from export activities.

		Eurostat			National Sources			Alternative Sources			Other Indicators			
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	SMEs*	Further indicators	Source & Reference year
		(€, million)	Total number		(€, million)	Total number		(€, million)	Total number					
				e sources found for France			found for France							
3.4	Carbon capture and storage	n/a	n/a	Sector not visible in Eurostat. No alternative sources found for France	n/a	n/a	Sector not visible in Eurostat. No alternative sources found for France	n/a	n/a		n/a			
3.5	Aggregates mining (sand, gravel, etc.)	29	323	Eurostat, data for 2010. Offshore share based on UEPG	n/a	n/a		n/a	300	Ifremer, 2009, http://wwz.ifremer.fr/drogm/Ressources-minerales/Materiaux-marins/Economie/Donnees-economiques	12			Ifremer, 2009, http://wwz.ifremer.fr/drogm/Ressources-minerales/Materiaux-marins/Economie/Donnees-economiques

		Eurostat			National Sources			Alternative Sources			Other Indicators			
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	SMEs*	Further indicators	Source & Reference year
		(€, million)	Total number		(€, million)	Total number		(€, million)	Total number					
3.6	Marine minerals mining	n/a	n/a	No data found centrally	n/a	n/a	No data found centrally	No industry yet, only public-private exploratory projects, mainly in overseas departments (French Antilles), which are not considered in this study	n/a	Ifremer, 2011, http://wwz.ifremer.fr/content/download/44025/622908/file/Synth%C3%A8se%20REMIMA%20-%20version%20finale%20-%20BD.pdf	n/a			
3.7	Securing fresh water supply (desalination)	n/a	n/a		0	0	No sea & brackish water based production present in France according to Global Water Insights	minimal	minimal	Actu-environnement, 2012, http://www.actu-environnement.com/ae/dossiers/nouvelles-ressources-eau/dessaleme				

		Eurostat			National Sources			Alternative Sources			Other Indicators			
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	SMEs*	Further indicators	Source & Reference year
		(€, million)	Total number		(€, million)	Total number		(€, million)	Total number					
										nt.php				
4. Leisure, working and living														
4.1	Coastal tourism	3,401	65,569	Eurostat, data for 2010 (data for NACE 55.10, 55.20, 55.30, 55.90)	7,503	67,947	National Statistical data for 2010 (data for NACE 55.10, 55.20, 55.30, 55.90), support data Eurostat 2010	11.000 (added value only - not gross -). In 2007, it represented 40% of the added value of the whole French maritime economy (27.5 billion Euros), Observatoire	33,200	Ifremer, 2008 https://wwz.ifremer.fr/dcsmm/content/download/53191/754354/version/1/file/AES_Tourisme_littoral_MMDN_V2.pdf	13,920			Based on National Statistical NACE 2 data for 2010 (data for NACE 55.10, 55.20, 55.30, 55.90), support data Eurostat 2010

		Eurostat			National Sources			Alternative Sources			Other Indicators				
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	SMEs*	Further indicators	Source & Reference year	
		(€, million)	Total number		(€, million)	Total number		(€, million)	Total number						
								National de la mer et du littoral, https://wwz.ifremer.fr/dcsmm/content/download/53191/754354/version/1/file/AES_Tourisme_littoral_MDN_V2.pdf							
4.2	Yachting and marinas	n/a	n/a		818	33,180	ICOMIA	n/a	45,000//41,000	French Government, 2007 http://www.developpement-durable.gouv.fr/Le-secteur-economique-de-la.html // Le Cluster Maritime, 2010,	2,074			ICOMIA	

		Eurostat			National Sources			Alternative Sources			Other Indicators			
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	SMEs*	Further indicators	Source & Reference year
		(€, million)	Total number		(€, million)	Total number		(€, million)	Total number					
										http://www.cluster-maritime.fr/article.php?id=21&lang=Fr				
4.3	Cruise tourism	96	1,366	(low estimate) Eurostat, data for 2010	83	1,175	(low estimate) National Statistics Office, support data Eurostat, 2010	n/a	15,000	Croisierenet.com, 2011, http://www.tourmag.com/Croisiere-la-France-peut-mieux-faire--selon-le-Conseil-National-du-Tourisme_a41701.html	20			Conseil National du Tourisme, 2010
5. Coastal protection														
5.1	Protection against flooding and erosion, preventing salt	12	118	Eurostat COFOG, 2010 and PRC, 2008	n/a	n/a		n/a	n/a		157			Insee, 2009, http://www.insee.fr/fr/themes/detail.asp?reg_id=0&ref_id=esa-construction-2009&page

		Eurostat			National Sources			Alternative Sources			Other Indicators			
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	SMEs*	Further indicators	Source & Reference year
		(€, million)	Total number		(€, million)	Total number		(€, million)	Total number					
	water intrusion, protection of habitats													=donnees-detaillees/esa/esa-construction/esa-construction-2009/fiche4291Z.html
6. Maritime monitoring and surveillance														
6.1/ 6.2	Traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods,	n/a	n/a		n/a	n/a		n/a	n/a		n/a			

		Eurostat			National Sources			Alternative Sources			Other Indicators			
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	SMEs*	Further indicators	Source & Reference year
		(€, million)	Total number		(€, million)	Total number		(€, million)	Total number					
6.3	environmental monitoring	n/a	n/a	No data found centrally. Problem of different definitions applied across sources & countries.	n/a	n/a		n/a	n/a		n/a			
* As SMEs data could not be found, indirect data has been retrieved from INSEE. Data reported concerns enterprises with more than 10 or 20 employees.														

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. The growth of the sector is based on the growth of GVA and/or employment or alternative indicators if this results in a better data availability or an improved comparison base over a longer period¹⁶⁴. Results are shown for the 2008-2010 period and the period 2000-2012. The data for the 2008-2010 period are included in table 7 (chapter 2.2. ranking order for the 7 fastest growing maritime economic activities over the past 3 years) unless the longer term figure leads to a deviating conclusion.

Table 12 – Growth rates of MAEs 2008-2010 and 2000-2012

Maritime economic activity		Indicator	CAGR 2008-2010 (%)	CAGR 2000-2012 (%)	Source
0. Shipbuilding					
0.1	Shipbuilding	Volume index of production, gross data	10.7%	-2.0%	Eurostat
0.2	Construction of water projects	GVA	-45% ¹⁶⁵	n/a	Eurostat
1. Maritime transport					
1.1	Deep-sea shipping	Volume of deep-sea cargo shipped (tons)	-5.4%	-0.8% ¹⁶⁶	Eurostat
1.2	Short-sea shipping	Volume of short-sea cargo shipped (tons)	-6.5%	-0.7%	Eurostat
1.3	Passenger ferry services	Passengers (excl. cruise passengers)	0.4%	-1.0% ¹⁶⁷	Eurostat
1.4	Inland waterway transport	Tonnes transport on inland waterways	-0.0%	-2.0% ¹⁶⁸	Eurostat
2. Food, nutrition, health and eco-system services					
2.1	Catching fish for human consumption	Volume index of production, Gross data ¹⁶⁹	2.3%	1.7%	Eurostat
2.2	Catching fish for animal feeding	Volume index of production, Gross data	2.3%	1.7%	Eurostat
2.3	Marine aquatic products	Turnover, Euros	0.8%	n/a	JRC, STECF (2013)
2.4	Blue biotechnology	n/a	n/a	n/a	
2.5	Agriculture on saline soils	n/a	n/a	n/a	
3. Energy and raw materials					
3.1	Offshore oil and gas	primary production of oil and gas in TOE	-10.6%	-6.4% ¹⁷⁰	Eurostat
3.2	Offshore wind	n/a	n/a	n/a	
3.3	Ocean renewable energy	n/a	n/a	n/a	

¹⁶⁴ NACE codes have changed before and after 2008 which complicates making time series for a period longer than 2008-2010.

¹⁶⁵ 2009-2010

¹⁶⁶ 2000-2011

¹⁶⁷ 2004-2012

¹⁶⁸ 2007-2012

¹⁶⁹ No distinction between fish for human and animal consumption

¹⁷⁰ 2000-2011

Maritime economic activity		Indicator	CAGR 2008-2010 (%)	CAGR 2000-2012 (%)	Source
3.4	Carbon capture and storage	n/a	n/a	n/a	
3.5	Aggregates mining	Marine aggregates, tonnes	7.4%	n/a	UEPG
3.6	Marine minerals mining	n/a	n/a	n/a	
3.7	Securing fresh water supply (desalination)	n/a	n/a	n/a	
4. Leisure, working and living					
4.1	Coastal tourism	Index turnover, Gross data	0.2%	2.8%	Eurostat
4.2	Yachting and marinas	n/a	n/a	n/a	
4.3	Cruise tourism	Cruise passengers starting and ending a cruise	25.1%	10.9% ¹⁷¹	Eurostat
5. Coastal protection					
5.1	Coastal protection	n/a	n/a	n/a	
6. Maritime monitoring and surveillance					
6.1/ 6.2	Surveillance	n/a	n/a	n/a	
6.3	Environmental monitoring	n/a	n/a	n/a	

¹⁷¹ 2004-2011

