



Studies to support the development of sea basin cooperation in the Mediterranean, Adriatic and Ionian, and Black Sea



CONTRACT NUMBER
MARE/2012/07 - REF. NO 2

REPORT 1 - ANNEX 2.5

COUNTRY FICHE

GREECE

JANUARY 2014



Contents

0. General overview.....	1
1. Marine and maritime activities.....	2
2. Breakdown of marine and maritime activities at regional level (NUTS 2) and selection of most relevant regions	10
3. List of the 7 largest, fastest growing and with most future potential marine and maritime activities	14
3.1 Ranking order of the 7 largest marine and maritime activities.....	14
3.2 Ranking order of the 7 fastest growing marine and maritime activities.....	14
3.3 Ranking order of the 7 marine and maritime activities with most future potential.....	15
4. Growth scenarios for the 6 most relevant and promising marine and maritime activities	21
4.1 Overview of the 6 most relevant and promising marine and maritime activities	21
4.2 Description of the nature of each of the 6 marine and maritime activities and their value chain .	22
4.3 Description of economic and infrastructural scenario	25
4.4 Regulatory environment.....	28
5. Growth drivers and barriers to growth for the 6 most promising marine and maritime activities.....	32
6. Analysis of maritime strategies at regional and national level, as well as those under preparation and their links with Smart Specialisation Strategies	38

0. General overview

Morphological structure of the coastline

- Greece's coastal region lies in the Aegean Sea, the Ionian Sea the Libyan Sea and the Levantine Sea. The Greek coastal zone (within a range of 10 km from the coast) covers 49.442 km² (13,3% of the corresponding EUs coastal are) and is the second largest in the EU.
- This morphological structure results in the presence of an extensive coastline of 15.021¹ km representing 11% of the total EU-22 coastline. Greece is characterized by high degree of insularity, composed of an estimated number of more than 6.000 islands and islets.

Population and related social condition for maritime areas

- In 2012, 90,57% of the country's total population (10,2 million people) were located in the coastal regions of Greece. The population of Greek coastal areas represented 2,21% of the population of the 22 coastal Member States of European Union.
- In 2012, total employment in the population aged 20-64 years was about 3,69 million people of which 3,6 million were employed in country's coastal regions, representing 1,87% of the employed labour force in all the EU-22 coastal Member States.
- In 2012, total unemployment in the coastal areas, in the population aged 20-64 years, was about 1,08 million people, representing almost 93% of the unemployed persons in Greece and 5,3% of all the EU-22 coastal Member States.

Economic role of maritime areas over the national total

- GDP per inhabitant generated in the Greek coastal regions is 16.900² and stands at 86% of the corresponding in national level (EUR 19.600/per inhabitant).
- GVA of Greek maritime areas for year 2010 at basic prices is estimated to EUR 181.853,6 million, representing 93,15% of national GVA.

NACE Sector (2010)	GVA (billion EURO)		Employment (in 1000 persons)	
	Coastal areas	% on Country total	Coastal areas	% on Country total
Agriculture, forestry and fishing	53,2	84,5%	456,1	83,7%
Manufacturing	18,1	93,7%	427,8	91%
Construction	6,2	91,36%	292	90,6%
Wholesale and retail trade; transport; accommodation and food service activities; information and communication"	56,6	95,17%	1.462,7	92,8%
Total NACE	181,8	93,15%	4.300	91,3%

¹ ELSTAT, 2010.

² Nama_r_e3gdp

1. Marine and maritime activities

Table 1 - Indicators of relevant marine and maritime activities in Greece

Function/activity		GVA (EUR, billion)	Employment (*1000)	Number of enterprises	Further indicators	Source & Reference year
0. Other sectors						
0.1	Shipbuilding and ship repair	0,267	6,7	106 companies of which in 76 repair and maintenance	----	ELSTAT, 2010
0.2	Water projects	0,11	2,5	361	At least 9 projects related to port infrastructures in progress	ELSTAT, 2010
1. Maritime transport						
1.1	Deep-sea shipping	6,7	24,3	694 ³ ship management companies	9,7 million tons transported (10.8% of goods transported)	EUROSTAT, ELSTAT, 2010, Experts knowlegde Elaboration of data, Ministry of Shipping Maritime Affairs and the Aegean
1.2	Short-sea shipping (incl. Ro-Ro)	3,63	17,5	100	80,8 million tons transported (89,3% of goods transported)	EUROSTAT, ELSTAT, 2010, Elaboration of data Experts knowledge
1.3	Passenger ferry services	1,69	9,1	5 major companies	42 million passengers transported	EUROSTAT, ELSTAT, 2010 Elaboration of data
1.4	Inland waterway transport	0	0	0	The activity is not present in Greece	EUROSTAT, 2010
2. Food, nutrition, health and eco-system services						
2.1	Fishing for human consumption	0,84	30,15 ⁴	84 fish processing companies	71 thousand tons of fish caught in 2010, according to EUROSTAT (including all catch categories)	EUROSTAT, ELSTAT, 2010, Elaboration of data
2.2	Fishing for animal feeding	0	0	0	----	EUROSTAT, 2010
2.3	Marine aquaculture	0,45	3,6	106	117.000 tons of production	EUROSTA, ELSTAT, JRC, 2010 Elaboration of data
2.4	Blue biotechnology	n.a.	n.a.	at least 1	----	----
2.5	Agriculture on saline soils	0,62 ⁵	123,4	n.a.	Around 694.000 ha, of which 510.000 cultivated	EUROSTAT, JRC, 2010
3. Energy and raw materials						
3.1	Offshore oil and gas	n.a.	n.a.	n.a.	116 ⁶ kTOE crude oil 8 kTOE natural gas.	EUROSTAT, 2010
3.2	Offshore wind	0	0	0	----	EWEA (2012)
3.3	Ocean renewable energy	0	0	0	----	YPEKA,2010
3.4	Carbon capture and storage	0	0	0	----	YPEKA,2010
3.5	Aggregates mining (sand, gravel, etc.)	0	0	0	----	UEPG (2010)
3.6	Marine minerals mining	0	0	0	----	General Secretariat for Aegean and Island policy,2010
3.7	Securing fresh water supply (desalination)	0,0068 ⁷	0,12	n.a.	----	ELSTAT,EEE,2010 Elaboration of data
4. Leisure, working and living						
4.1	Coastal tourism	6,9	82,7	18.316 (2009 data)	68,8 million nights spent	EUROSTAT,ELSTAT 2010, Elaboration of data
4.2	Yachting and marinas	0,21 ⁸	8,9	10 companies represent 1/3 of the market More than 800	4,800 professional leisure boats	Experts knowlegde

³ Ministry of Shipping, Maritime Affairs and the Aegean, 2013

⁴ Elstat (2010): average annual employment

⁵ Estimation based on the percentage of agricultural areas of saline soils to the total of country

⁶ Eurostat Database [ten00078 & ten00079]

⁷ Estimation based on capacity

⁸ Due to lack of available data, GVA has been estimated based on the research of Diakomihalis, 2008

Function/activity		GVA (EUR, billion)	Employment (*1000)	Number of enterprises	Further indicators	Source & Reference year
				companies		
4.3	Cruise tourism	1,6	6,4	n.a	----	EUROSTAT, ELSTAT, ECC (2010)
5. Coastal protection						
5.1	Protection against flooding and erosion	0,014	n.a.	n.a	----	Elaboration based on Eurostat (2010) and PRC (2009)
5.2	Preventing salt water intrusion	n.a.	n.a.	n.a	----	----
5.3	Protection of habitats	n.a.	n.a.	n.a	----	----
6. Maritime monitoring and surveillance						
6.1	Traceability and security of goods supply chains	n.a.	n.a.	n.a	----	----
6.2	Prevent and protect against illegal movement of people and goods	n.a.	n.a.	n.a	----	----
6.3	Environmental monitoring	n.a.	n.a.	n.a	----	----

- The percentage applied for the calculation of cargo handling and warehouse and storage was 47% based on the outputs of the specific activities to water transport sector.
- The percentage applied for the estimation of other transportation support activities was 51% based on the share of cruise passengers to ferry passengers.

Table 2 - Overview of relevant marine and maritime activities in Greece

Function/activity		Activity overview	Socio economic indicators	Source & Reference year
0. Other sectors				
0.1	Shipbuilding and ship repair	Three are the shipyards that operate in Greece Hellenic Shipyards S.A, Elefsis Shipyards and Neorion Syros Shipyards (the last two operate under the same company). Commercial new builds, industrial works and mostly repairs to all type of vessels and mega yachts are the major activities. The shipyards are in structural decline due to decreasing competitiveness.	Regarding employment, there is a steadily decreasing trend. In 1995, more than 5.500 persons were employed in the shipbuilding activity. During the period 2008-2010 this figure went down by approx. 20 %, reaching 3.700 employees in the repair and maintenance activity and 2.800 thousands employees in the building of ships and floating structures. Furthermore, 430 people were employed in 2004 in the building of pleasure and sport activity while in 2010 this figure was down to 180 people. It should be stressed thought that during 2008-2010 this figure was more than doubled.	CESA, 2011 ECOTEC,2006 ⁹ ELSTAT,2010
0.2	Water projects	A number of water projects have been implemented, or are currently in progress, mostly port infrastructures. These are related either to the improvement of current port infrastructures or the construction of new ones for the improvement of freight and passenger transport. Currently there are at least 9 port projects within the ESPA 2007-2013 ¹⁰ program. Also, more than 20 marinas are under construction	The value of the tourist marina market reached 30 million euro in 2008, showing an average annual growth rate of 4% during the period 2005-2008. The number of people employed in the sector was more than 2.500.	INVEST IN GREECE, 2010
1. Maritime transport				
1.1	Deep-sea shipping	Greek-controlled fleet comprises of 3.677 vessels representing approx. 15,56% of the world's deadweight tonnage. 829 of those vessels fly the Greek flag. Greek shipping companies mainly focus on dry bulk carriers, tankers and container vessels. During the last few years there is an upward trend for expansion to emerged markets such as this of LNG. The majority of the Greek-shipping activity is located in the city of Piraeus. The added value of the sector in 2010 was estimated to 6,7 billion euro.	In the 694 Greek ship management companies employ approximately 15.000 people ashore. In total, 19.632 seafarers are employed on Greek and foreign flagged vessels contracted with the Seamen Fund. The great majority (77%) of seafarers are officers. Regarding their nationality, 92% of the officers and 55% of the ratings are Greeks.	UNCTAD, 2011 ELSTAT,2010, Ministry of Shipping, Maritime Affairs and the Aegean Experts Knowledge Study on EU seafarers employment –Final Report ¹¹
1.2	Short-sea shipping (incl. Ro-Ro)	Short-sea shipping carries almost 90% of the freight in Greece. Gross weight of transported goods in Greece represents 4,5% of the European total. The structure of the main types of cargo carried is as follows: liquid bulk (43,7%), dry bulk (18,4%), large containers (17,2%) and Ro-Ro (8,05%)	In 2012, it is estimated that approx. 600 people work to relevant companies and 1.000 onboard vessels, while more than 15.000 are employed to complementary and supportive activities. In 2010, total employed persons were estimated at around 17.500 people. Concerning the volume of goods during 2008-2010 there was a decreasing trend of 3% per year, reversed in 2010 -2012, where cargo handled in Greek ports recorded a 24% increase (99 million tonnes).	EUROSTAT,2010, ELSTAT, 2012 ¹²

⁹ http://ec.europa.eu/maritimeaffairs/documentation/studies/documents/greece_employment_trends_en.pdf

¹⁰ Updated list of projects, ESPA 2007-2013

http://www.espa.gr/el/Documents/PriorityProjects/ypaan_120116_espa_projects.pdf

¹¹ <http://ec.europa.eu/transport/modes/maritime/studies/doc/2011-05-20-seafarers-employment.pdf>

¹² Provisional data

Function/activity		Activity overview	Socio economic indicators	Source & Reference year
1.3	Passenger ferry services	Passenger ferry services have an essential role within the connection of remote islands with the rest of the country, contributing that way to national cohesion. Due to the existence of many islands, coastal transport network is characterized by high degree of complexity and seasonality. Half of the users embark and disembark in the port of Piraeus. In 2011, Greece ranked first regarding the number of passenger travelling on domestic voyages (33,1%) and second with most passengers ferried, reaching 79 million (all categories). Within the top 20 EU passenger ports there are two Greek ports; Piraeus and Paloukia, in the island of Salamina.	It is estimated that the sector employs 9.100 seafarers and people ashore. During 2009-2011, the sector presented a decreased trend of 12,4%, due to the general economic conditions, which affect negatively the performance of the sector.	EUROSTAT,2011, XRTC,2010/2011
1.4	Inland waterway transport	The activity is not present in Greece	----	
2. Food, nutrition, health and eco-system services				
2.1	Fishing for human consumption	Due to country's geography, fishery sector is considered as a traditional economic activity and major source of income especially for the inhabitants of insular and coastal areas. In 2011 fishery fleet consisted of 16,663 ¹³ vessels of 83,810 GT but there is a decreasing trend from 2003 and over (12,71%) due to Operational Programme Fisheries, while most of the ships are over 20 years and of small-medium in capacity. In 2011 Greek fleet represented almost 21% of the total European, but in terms of capacity it only represents 4,9%. Fishing vessels are active in the wide area of Mediterranean and the majority of fleet –more than 95%- operates in coastal areas. Most companies in the sector are small and family owned.	The employment in the sector (fishing only) experienced a downward trend. In 2005 the number of employed person in the activity was 31.000 while in 2011 this figure went down to 10.900. The total number of employees in all sector's activities (such as fish processing, wholesale and retail) are estimated to 30.150 people. In 2013, national fleet presented further decrease reaching 15.921 vessels and 78.349 GT. In 2011, the quantity of catch reached 62.846 tons, decreased by almost 10% from previous year. Regarding the value of catch this presented a less decrease of 10,5%.	ELSTAT, 2011, General Directorate for Fisheries,2013
2.2	Fishing for animal feeding	The activity is not present	----	----
2.3	Marine aquaculture	In 2010, the total production amounted to almost 117.000 tonnes corresponding to 428 million EUR. Marine aquaculture is the leading segment of the sector, representing approximately 95% of total production. Main species are Gilthead sea beam and European sea bass. Greece is among the biggest intra-community exporters in the EU, representing 25% of Unions marine finfish segment.	The number of employees in this sector in Greece is above the EU average, with roughly 1.840 persons employed in shellfish and another 1.300 persons in marine finfish. Around 500 persons are estimated to be employed part-time. However, the trend in the employment rate growth is currently negative.	JRC, 2012 FAO, 2010 ELSTAT,2010
2.4	Blue biotechnology	There is only one dedicated biotech company.	No indicators available	Medbio, 2013

¹³ http://ec.europa.eu/fisheries/fleet/software/FleetManagement/FM_Reporting/AnnualReportDocs/2011_GRC_MSAR_EN.PDF

Function/activity		Activity overview	Socio economic indicators	Source & Reference year
2.5	Agriculture on saline soils ¹⁴	Salinisation is an important process of land degradation in Greece especially in irrigated lowlands with imperfect drainage. It is estimated that 15% of irrigated lands face salinity problems. Saline soil can be found mainly in low-lying land, which surrounds some Greek areas like the Ambracian Gulf, which is the northernmost large gulf in Western Greece, and nearby various salt water lakes. In Greece there are various areas that are more and more affected by desertification. In many cases, soils contain such high levels of soluble salts that they need to be desalinated before cultivation.	There are no data regarding this activity but it is estimated based on the share of agricultural land on saline soils, that in the activity more than 123.000 persons are employed.	JRC, 2010 DIS4ME ¹⁵
3. Energy and raw materials				
3.1	Offshore oil and gas	There is only one producer company, located in the North Aegean. There are three offshore oil platforms and one gas platform producing 116k crude oil and 8 kTOE natural gas. In 2011, Greece reformed the institutional framework concerning the prospection, exploration and exploitation of hydrocarbons by enacting Law 4001/2011. Among others, the law provides, establishment of the Hellenic Hydrocarbons Management Company S.A., which is entrusted with the responsibility to manage the State's exclusive rights with regard to the prospection, exploration and exploitation of hydrocarbons.	Approximately 300 persons are employed	Institute of Energy for South East Europe, 2012
3.2	Offshore wind	Wind farms are already fully operational in Greece. The installed power has been drastically increased during the last years. In 1987, the total installed MW was 0,8 MW while in 2012 this reached 1.746 MW. Concerning geographical distribution, 1/3 of total MW is installed in Central Greece, followed by Peloponnese and Eastern Macedonia. Despite the excellent wind energy potential, Greece's shares are lower compared to other European countries. So far, there is no offshore wind farm, but some proposals for relevant projects are currently under consideration.	No indicators exist	HWEA Wind Energy Statistics, 2012
3.3	Ocean renewable energy	The areas with high renewable energy potential are Aegean islands, Euboea, Eastern Peloponnese and Thrace. However, the wave energy potential of Greece is low compared to other European countries. This is the outcome of measurements using the so-called 'POSEIDON' system, which is based on a network of observation buoys. Despite the low wave energy potential, there was an interest in designing constructing and installing wave energy devices. Two wave energy experimental systems have been installed at sea. The first project concerned an invention of a wave energy converter, which transformed the oscillating movement of a floating buoy to a single direction rotational through a system of rear wheels and chains. The second device is developed by a private company and in this case, wave motion is converted to high pressure hydraulic energy by a floater driving a piston system anchored to the sea bed.	No indicators exist	WavePlan, 2013

¹⁴ Data provided are estimations based on the JRC study, 2012.

¹⁵ http://www.unibas.it/desertnet/dis4me/land_uses/salinisation_risk_tool.htm

Function/activity		Activity overview	Socio economic indicators	Source & Reference year
3.4	Carbon capture and storage	<p>Although there is currently no CCS facility in Greece, taking into account the high fossil fuel dependency of the national electricity generation mix, CCS-related R&D activities could be a high priority research topic in the Greek National Energy Programme 2007-2013. There are research institutes and universities in Greece with an interest in examining the prospects of CCS in the country, such as the Institute for Geological and Mineral Exploration (IGME), the Centre for Research and Technology Hellas (CERTH) and the National Technical University of Athens.</p> <p>According to CERTH's website, the Centre for Research and Technology Hellas/Institute for Solid Fuels Technology and Application (CERTH/ISFTA) is the main Greek R&D institution participating in a number of CCS projects of the EU Framework Programmes and has recently completed a techno economic study related to the feasibility of a CCS demo project in North Greece on behalf of the Public Power Corporation S.A.</p>	No indicators exist	Bellona Foundation, 2010
3.5	Aggregates mining (sand, gravel, etc.)	The activity is not present	----	European Aggregates Association, 2010
3.6	Marine minerals mining	The activity is not present	----	European Aggregates Association, 2010
3.7	Securing fresh water supply (desalination)	<p>Water shortage or bad quality of water is a problem that the insular areas of the country face daily. This becomes even more intense during summer when the demand for water use is significantly higher due to the increased number of visitors. The practise applied for ensuring continuous water supply to islands is the transport of water with tankers. At present and compared to the large number of island territories which face water supply problems, the application of desalination plants is limited. Currently there are 50 desalination units producing 35.000m³/day. The majority of these plants are located at the Cyclades.</p> <p>Although the use of desalination plants is not widespread, specific university's departments conduct co-joint research with private companies. In 2007 'Ydriada'-a project of the University of the Aegean, was the first offshore desalination plant driven by solar panels and wind power which went into operation at the Irakleia island.</p>	No indicators exist	University of Patras, 2012
4. Leisure, working and living				
4.1	Coastal tourism	Tourism is an important economic activity of coastal areas. More than 95% of the total tourism activities are taking place in coastal regions.	<p>It is estimated that the sector has an overall effect on employment (direct and indirect employed persons) estimated to 741.000 (16% of the total employment in the country).</p> <p>In 2010 tourists visiting Greece reached 15 million, an upward trend of 13% during the last six years. However, the recession of the last years affected the performance of the sector which presented a decrease in the number of incoming tourists by 8% (period 2008-2009). The sector contributes more than 15% to national GDP.</p>	Foundation for Economic & Industrial Research, 2012

Function/activity		Activity overview	Socio economic indicators	Source & Reference year
4.2	Yachting and marinas	There are 20 organized marinas in the Greek territory for hosting yachts with some 6.600 berth capacity. At present a number of marinas are under construction. The demand for yachting services comes from foreign tourists while the domestic one is limited.	Presently the sector is being affected by the economic recession and the unclear legislative regime. It is estimated that total employment (direct and indirect) generated by marina and yachting accounts almost 30.000 positions. The value of the marina market reached 30 million euro (2008) growing by 4% from 2005.	Invest in Greece, 2013 HCS, 2012
4.3	Cruise tourism	Greece ranks among the major cruise destinations in Europe. In 2011 it was placed fifth regarding the number of passengers that select the country to start their cruise, representing 5,6% of the European market. In 2010 the Greek government introduced the legislative reform of the industry (Law 3872/2010) aiming at removing all the obstacles from the market and enhancing home-porting. Law received criticism due to the requirements imposed and in 2013 an new amendment was passed that fully liberalized the activity (Law 4150/2013).	The sector has an important impact on employment. Based on the ECC data the direct employment in the sector for 2011 was estimated to 6.400 persons presenting an upward trend, which mostly concerned the transportation and manufacturing sector. Concerning the total number of passenger that visited Greece in the context of a cruise itinerary, these reached 4,7million passengers (+7%) and ranks third after Italy and Spain.	European Cruise Council (ECC), 2011
5. Coastal protection				
5.1	Protection against flooding and erosion	Greece has the most extensive coastline among all Mediterranean countries with approximately 13.780 km including islands. Of this, 3.945 km (28,6%) of total coastline is subject to erosion. However, most of it is rocky (nearly 70%). In addition, tidal ranges are relatively small in the Mediterranean area and, thus, there is a rather limited risk of coastal flooding. Greece has not experienced any severe floods from the sea in the past and Sea Level Rise (SLR) is estimated to be only in the range of 0/+1 mm/year. In Greece, no coordinated actions are undertaken in the field of coastal protection to date.	Almost all big urban centres are located in the coastal zone; 33% of the population lives within a coastal strip of 1-2 km and 85% of the total population lives at maximum 50 km of the seashore. It is estimated that 80% of industrial activities and 90% of tourism and recreation. Therefore, a big proportion of the Greek GDP is at stake although the related risk is rather low. It is estimated that the amount used for the protection of coastline is 16 million per year of EUR 288 million over the period 1998-2015	Policy Reseach Corporation, Country report, 2009 ¹⁶
5.2	Preventing salt water intrusion	The phenomenon of seawater intrusion in Greece, which is very apparent in Eastern Macedonia and Thrace, started after the decade of 1950, as a result of the irrational overexploitation and the negative impacts derived from the construction of drainage coastal canals. Typical cases of salinisation coastal aquifers are found at coastal plains and deltas of the rivers of the region, areas that are also of significant ecological importance (e.g. Natura 2000); see Section 5.3 of this Table.	No available indicators	Gaaloul et al., 2012

¹⁶ http://ec.europa.eu/maritimeaffairs/documentation/studies/documents/greece_climate_change_en.pdf.

Function/activity		Activity overview	Socio economic indicators	Source & Reference year
5.3	Protection of habitats	Although Greece has mainly rocky coasts, there are many wetlands around lagoons and large deltas; e.g. Delta of Evros River, Kerkini Lake, Amvrakikos Wetlands, Mesologgi Lagoon and numerous others. These areas are mainly protected in accordance with the EU Habitat Directive. Greece includes at its National List 163 Special Protection Areas (SPAs) according to Directive 79/409/EEC within the Natura 2000 Framework and 239 Sites of Community Importance (SCIs) according to Directive 92/43/EEC. The surface area of the network in Greece is approximately 3,4 million hectares and occupies 21% of the land.	No available indicators	Greek Biotope/Wetland Center, The Goulandris natural History Museum, 2013
6. Maritime monitoring and surveillance				
6.1	Traceability and security of goods supply chains	In recent years, the maritime industry has been voluntarily taking actions to improve security but it was mainly the events of 9/11 that boosted relevant regulation. Following the adoption of the new IMO security regime (the International Ship and Port Facility Security (ISPS) Code), the EU Member States agreed on several related measures. Greece has adopted the common European legal framework which consists of the Regulation (EC) No 725/2004 of 31 March 2004 on ship and port facility security and the Directive 2005/65/EC of 26 October 2005 on port security. All Greek ports are compliant with ISPS (International Ship and Port Facility Security) Code requirements.	No indicators available	----
6.2	Prevent and protect against illegal movement of people and goods	Besides the ISPS port related surveillance and monitoring, the Hellenic Coastguard protects the national maritime borders, Greece follows relevant EU regulation and is supported by Europol, the EU border agency Frontex and other organisations. Greece is struggling to fight mainly against illicit immigration networks and trafficking of human beings but also against drug trafficking. During the last years Greece, with EU assistance, has enhanced border controls, particularly along its land border with Turkey and while these policies have helped reduce the flow of arrivals across the border with Turkey at the region of Evros, they have transferred the problem to the Greek islands.	During the period 01.01.2012 - 30.09.2013 the Hellenic Coast Guard was involved in 347 incidents of illegal border crossing, arresting 7.775 illegal migrants and 114 facilitators in the Greek-Turkish sea borders.	Ministry of Shipping, Maritime Affairs & the Aegean
6.3	Environmental monitoring	Marine environmental monitoring is used for a wide range of activities including coastal protection (Section 5 of this Table), fisheries (Section 2) but also for monitoring water quality and pollution. For example, POSEIDON is a comprehensive marine monitoring and information system in the field of operational oceanography aiming to enhance environmental surveillance and to protect the marine ecosystem. Regarding protection from pollution at sea, the European Union issued a substantive number of regulations concerning surveillance in the field of maritime safety in response to maritime disasters such as the Prestige, which ended in massive oil spills with important economic, environmental and social impacts. CleanSeaNet is the Near Real Time European satellite based oil spill monitoring and vessel detection service, set up and operated by the EMSA since April 2007. This system is provided free of charge to EU member States including Greece. At a national level, under the Greek national contingency plan responsibility for marine pollution response lies with the Marine Environment Protection Division (MEPD) of the Hellenic Coast Guard, which is currently under the authority of the Ministry of Shipping and Aegean. (ITOPF, 2012)	----	Poseidon system, 2013 Clean SeaNet, 2013 ITOPF, 2012

2. Breakdown of marine and maritime activities at regional level (NUTS 2) and selection of most relevant regions

Greece consists of 12 coastal NUTS 2. The selection of the most important NUTS 2 in Greece relies on the identification of the maritime role of each NUTS 2. For this purpose, four key sectors have been identified which could be considered as “representative of the maritime dimension of the region at stake”. Therefore, to each of the four sectors of each region, a score (from 0 to 10) has been assigned. For more details on methodology used for selecting most important regions, please see the Country fiche Annex.

The selection of the most relevant regions put into emphasis the fact that Attica is by far the most important maritime NUTS 2 in Greece, with a score of around 9/10, followed by Kentriki Makedonia (7,28), Notio Aigaio (4,57), Kriti (3,8), Sterea Ellada (3,48) and Ionia Nisia (3,11).

Attica region is therefore considered as the major maritime Greek region due to: a) the concentration of large number of maritime companies, supportive activities and maritime associations, b) the role of Piraeus, the major cruise port of the country, with more than 1,2 million visitors per year and c) the role of Piraeus and other Attica’s ports in terms of transported cargo, amounted to around 35% of goods handled and around 80% of all container mobilised in Greece. Also, regional maritime sector employees a great number of persons while almost half (47,2%)¹⁷ of the total GVA of Greece is produced in Attica and more than 40% of the transport and storage sector.

For these reasons, the breakdown at regional level will be carried out only for Attica. Due to unavailability of data¹⁸, only the overview of the relevant economic activities has been reported.

¹⁷ Data for 2009. National Statistic Office

¹⁸ Data at NUTS 2 level are available only for some activities and only at NACE 2 or 3 digits, which do not allow to proceed with an exhaustive analysis in line with the entire Country fiche.

Table 3 - Overview of relevant marine and maritime activities in Attica

Function/activity		Activity overview	Socio economic indicators	Source & Reference year
0. Other sectors				
0.1	Shipbuilding and ship repair	Two of the three shipyards that operate in Greece are established in Attica. Elefsis Shipyards and Hellenic Shipyards S.A. have under construction a series of seven ships of the Hellenic Navy. Hellenic Shipyards S.A. builds two new Class 214 Submarines.	Elefsis Shipyards employs a permanent staff of around 900, out of which 530 are involved in the production. In 2010 2.300 people were employed in the shipbuilding sector and another 3.500 in repairing activities, generating 0,22 billion GVA. The crisis that the sector is facing during the last years affects employment figures which present downturn trend	Elefsis Shipyards and Elstat (2010)
0.2	Water projects	Piraeus Port Authority has started the construction of 6 places for mooring of cruising vessels with a length of approximately 350 m. By the end of the project the port of Piraeus is expected to be converted into the main cruise centre in the Mediterranean region.	No available indicators	ICAP, Market Estimations, (2011)
1. Maritime transport and shipbuilding				
1.1	Deep-sea shipping	Piraeus is the maritime center of Greece. The following stakeholders are active in the area: <ul style="list-style-type: none"> - Marine consulting firms (168) - Maritime service firms include ship brokers and agents (290 firms), - Specialized legal services (big firms and individual lawyers, counting over 100 lawyers) - Specialized finance (over 210 banks and firms specializing in financial services for the maritime sector), including local banks and firms as well as international institutions, - Underwriters and maritime insurance firms - Port security operators - Shipping Associations 	The great area of Piraeus numbers more than 75.000 employees in shipping industry.	Icaza et al (2009)
1.2	Short-sea shipping (incl. Ro-Ro)	Major ports in Attica region are Piraeus Port, Rafina, Lavrio and Elefsis. More that 50% of the freight transported by short-sea shipping is concentrated in Attica region. Piraeus as the major maritime center in Greece hosts more than 60 short-sea shipping companies and a number of related companies. In Piraeus is also located the promotion center of short-sea shipping		EUROSTAT (2010) Experts knowledge
1.3	Passenger ferry services	Port of Piraeus is the largest passenger port of Greece and also a hub for passenger services from and to all Greek islands. Almost 16 million passengers travelled from and to Piraeus during 2012. However, since 2009 a reduction of almost 4 million passengers is evident. Piraeus port has 3 passenger terminals and continuous connection with Athens International Airport. Lavrio port and Rafina port (in the Attica region) have a significant passenger traffic to and from the Aegean islands too. More than 2 million passengers travelled through these ports.		Piraeus Port Authority, Lavrio Port Authority Rafina Port Authority ELSTAT (2012)
1.4	Inland waterway transport	The activity is not present		----
2. Food, nutrition, health and eco-system services				
2.1	Fishing for human consumption	Attica's fisheries fleet equals to 1.649 fishing vessels of all kinds and 20 fish processing companies are established. Also, there are 39 fishing shelters and 14 designated port of landing. Regarding the quantity of fish catches in the area, these reached 8.196 tonnes in 2010 (12% of total catch). Also there are 41 fish processing units.	In the fishing activity of the area 3.300 persons are employed	Region of Attica (2012) ELSTAT (2010)

Function/activity		Activity overview	Socio economic indicators	Source & Reference year
2.2	Fishing for animal feeding	The activity is not present	----	----
2.3	Marine aquaculture	Nearly 30 units of marine aquaculture operate in the region of Attica: 23 fish and 5 of shellfish (and two hatchery) with a total productivity of 5.007 and 410 tonnes respectively.	----	Region of Attica (2012)
2.4	Blue biotechnology	The activity is not present	----	----
2.5	Agriculture on saline soils	From the total agricultural area of 114,3 thousand hectares, the agriculture on saline soil is estimated about 9.600 hectares which represents the 8,4% of the total agricultural area in Attica	No available indicators	JRC (2011)
3. Energy and raw materials				
3.1	Offshore oil and gas	The activity is not present	----	----
3.2	Offshore wind	The activity is not present	----	----
3.3	Ocean renewable energy	The activity is not present	----	----
3.4	Carbon capture and storage	The activity is not present	----	----
3.5	Aggregates mining (sand, gravel, etc.)	The activity is not present	----	European Aggregates Association (2010)
3.6	Marine minerals mining	The activity is not present	----	European Aggregates Association (2010)
3.7	Securing fresh water supply (desalination)	The mainland regions of Attica does not face problem with water resources. On the other hand island territories of the Region, needs intervention for securing water supply. Although, currently there are not operating desalination plants there are two desalination plants under constructions with production power of 600 m ³ /d drinkable water trough reverse osmosis method.	More than 6.000 inhabitants of the island of Agkistri are going to benefit from the construction. About 20 persons are going to be employed during the construction phase.	Monitoring Committee of Regional Operation Programme of Attica (2013)
4. Leisure, working and living				
4.1	Coastal tourism	Attica region, and specifically Athens, is the major tourist destination of the country, receiving more than 3 million tourists every year. Attica region also includes the islands of Agistri, Aigina, Kythira, Poros, Salamina, Spetses and Hydra.	During the last decades the touristic profile of Attica has changed substantially, especially after Olympic Games of 2004. During that period many infrastructural changes occurred improving the level of the tourist services both in terms of transport infrastructures and accommodation. Tourist arrivals started to present a decline trend from 2007 till 2010. In 2010 the number of visitors fell to 4 million ¹⁹ as a result of the financial crisis and the degradation of its historic centre.	GNT0 (2011) PEP ATTIKIS (2012)
4.2	Yachting and marinas	Marinas within the region of Attica have a capability of approximately 4.075 boats. The largest ones are in Alimos (1.080 berths), Zea (620 berths), Glifada (810 berths) and Floisvos (303 berths). Due to the large amount of island and islets and the lengthy coastline within and nearby the region of Attica, there are a lot of investing potential in new and upgraded marinas. In March 2013, the Hellenic Republic Asset Development Fund S.A. (HRADF) launched a privatization program for Small Ports and Marinas; the first tender is related to the marinas in Alimos and in the islands of Hydra and Poros (both islands belong to the region of Attica). A somewhat different but interrelated activity is yachting. The region of Attica is home for approximately 2.620 yachts owned by Greek chartering companies.	178 employees in the marinas and 3.063 employees in yachting. During the summer months, direct and indirect employment created by the industry is much greater.	Hellenic Chamber of Shipping (2012) Hellenic Republic Asset Development Fund S.A. (HRADF) (2013)

¹⁹ http://www.pepattikis.gr/home/wp-content/uploads/2013/02/strathgikes_proteraiothtes_20142020.pdf

Function/activity		Activity overview	Socio economic indicators	Source & Reference year
4.3	Cruise tourism	The Port of Piraeus is the major cruise port both at national and regional level. The port can host 11 vessels at the same time. It has two passenger terminals, sixty slots for coaches and one helipad. Maritime agents, tour operators and other suppliers directly connected to the cruise activity are located in Piraeus. In the past, Piraeus used to host at least five Greek-owned cruise companies. Nowadays it houses only one cruise company and 19 port agents.	Based on 2008 data the number of seafarers in cruise ships was estimated at 800 persons. The recent abolishment of cabotage law (for non-European flags) met the opposition of labour association which raised concerns about the impact of the legislative regime on the employment of Greek seafarers. In 2011, cruise passengers traffic reached 1,56 million, increased 29% previous year and ranks fourth among major European ports	ECC (2011) Port of Piraeus (2013)
5. Coastal protection				
5.1	Protection against flooding and erosion	Diakakis (2013) identifies 52 floods between 1880 and 2010, in various locations around Athens basin, which caused 182 casualties and substantial damage. Greece has already implemented the Directive of the European Parliament and of the Council "on the assessment and management of flood risks" (2007/60/EC) and have already prepared a risk assessment for the region of Attica. Relevant projects are in progress in different areas of the region.	No indicators exist	Diakakis (2013) PEP Attikis (2013)
5.2	Preventing salt water intrusion	n.a.	----	----
5.3	Protection of habitats	Areas in the region of Attica (e.g the Partnitha Park and Schinias) that are included in the Natura 2000 framework are protected by the relevant authorities.	No indicators exist	----
6. Maritime monitoring and surveillance				
6.1	Traceability and security of goods supply chains	Port of Piraeus in the region of Attica is largest Greek port. ISPS code is fully implemented in the port and especially in the container terminals.	No available indicators	----
6.2	Prevent and protect against illegal movement of people and goods	The region of Attica due to its position is not an entry point to Greece. However, Athens is located in this area and a big number of relevant operations are conducted by the local police.	No available indicators	----
6.3	Environmental monitoring	The Hellenic Center of Marine Research is responsible for the monitoring the ecological quality of marine environment in the Saronikos Gulf, in relation to the operation of Psitallia Wastewater Treatment Plant	No available indicators	ORSA (2011)

3. List of the 7 largest, fastest growing and with most future potential marine and maritime activities

3.1 Ranking order of the 7 largest marine and maritime activities

In 2008, Greece entered a recession period, affecting all economic indicators of the country and employment figures. For the identification of the seven largest marine and maritime economic activities two basic indicators were combined: Gross Value Added of the activity and the number of persons employed. Reference year is 2010. Results give high relevance to the employment dimension of each activity. Based on the combination of the two indicators, coastal tourism, short-sea shipping, fishing for human consumption, deep-sea shipping, passenger ferries services, cruise tourism and yachting are among the most significant national economic activities.

Table 4 - Ranking order of the 7 largest marine and maritime activities in Greece

Rank	Marine and maritime activities	GVA (billion EUR)	Employment (*1000)	Score
1	Coastal tourism	6,8	82,7	75,3
2	Deep Sea	6,7	24,3	45,6
3	Short-sea shipping	3,6	17,5	20,2
4	Fishing for human consumption	0,85	30,1	19,3
5	Passenger ferry services	1,69	9,1	13,0
6	Cruise tourism	1,6	6,5	12,4
7	Yachting and marinas	0,21	8,9	5,3

For the complete list of all activities, see the Country fiche Annex .

3.2 Ranking order of the 7 fastest growing marine and maritime activities

The ranking of the seven fastest growing marine and maritime activities is the result of the compound annual growth rate (CAGR) for GVA and persons employed for the period 2008-2010. The evaluation of the seven fastest growing marine and maritime activities cannot be interpreted independently from the prevailed economic conditions during that period.

Table 5 - Ranking order of the 7 fastest growing marine and maritime activities in Greece

Rank	Marine and maritime activities	GVA (CAGR)	Employment (CAGR)	Score
1	Water projects	35,1%	-4,1%	15,5
2	Cruise Tourism	-11,8%	25,95%	7,05
3	Coastal Tourism	7,3%	-0,89%	3,2
4	Marine aquaculture	12,4%	-8,01%	2,2
5	Fishing for human consumption	0,7%	1,53%	1,1
6	Yachting and marinas	-2,5%	-1,6%	-2,08
7	Deep Sea Shipping	-10%	-0,08%	-5,5

For the complete list of all activities, see the Country fiche Annex.

Water projects

The GVA of water projects increased by 35% during this three-year period, due to various projects mostly regarding port infrastructures. Based on current planning, this activity is expected to keep growing because of the number of projects in progress.

Cruise tourism

Cruise tourism presents positive growth rates yearly during the last ten years and the country is the third most visited country in Europe. This trend impacts especially on employment in the sector which presents upward trends, while the number of part-time employees is even greater during summer period.

Coastal tourism

Coastal tourism has been affected by the global recession but still keeps its leading role in the national economy. The activity presented negative trend in foreign arrivals, given that both foreign (especially European) and domestic tourists decreased, but there is a dynamic increase of the number of visits from non-European countries partly counterbalancing the loss. This has led to the positive GVA trend during the period analysed.

Marine aquaculture

Marine aquaculture is presenting steadily increasing trends over the last years, with most of production exported to Italy and Spain. Despite the decrease in the number of employees, it is noted that labour productivity has been increased, as showed by the value added CAGR.

Fishing for human consumption

As regards fishing is a traditional economic activity, especially for coastal and island regions, which presented a marginal increase in terms of GVA. On the other hand, it has to be remarked that, together with cruise tourism, it is the only activity among all 29 with a positive increase in terms of employment.

Yachting and marinas

On the other hand yachting recorded negative GVA during the study period which is attributed to the economic recession and the measures imposed by the government.

Deep-sea shipping

Finally, deep-sea shipping together with tourism are considered the two largest sectors of the Greek economy, with significant contribution to national GDP. Deep-sea shipping recorded a negative GVA in the three-year period, which can be attributed to (i) the evolution of international trade, which reduced the demand for water transport, and (i) the increase of oil prices, which affected the overall performance of the sector.

3.3 Ranking order of the 7 marine and maritime activities with most future potential

The main aim of the task is to identify the maritime and marine economic activities, which have a perspective of future potential growth. For the evaluation of the activities with most future potential, the long-term importance of specific key external drivers has been evaluated. Specifically, these included: innovativeness, competitiveness, employment, policy relevance, spill-over effects, the sustainability of the activity and environmental aspects. For the complete evaluation, please see the Country fiche Annex.

The analysis put into evidence that the 7 marine and maritime activities with most future potential are reported in the table below. For the complete list, please see the Country fiche Annex.

Table 6 - Ranking order of the 7 marine and maritime activities with most future potential in Greece

Rank	Marine and maritime activities	Score
1-2	Marine aquaculture	+++++
1-2	Deep-sea shipping	+++++
3-4	Cruise tourism	++++
3-4	Coastal tourism	++++
5-7	Short-sea shipping	++++
5-7	Yachting and marinas	++++
5-7	Offshore Wind	++++

Marine Aquaculture

- **Innovativeness:** Greek government recently established the Hellenic Aquaculture Technology and Innovation Platform (following the European Aquaculture Technology and Innovation Platform) for building links between the industry and the academia, enhancing research and ensuring the active participation of the industry to national and international programs. Large Greek companies in the sector have their own R&D departments for conducting research, while participating in different projects. In Greece there are also research institutions which conduct research (such as the Hellenic Center for Marine Research) in multiple fields related to the improvement and the development of hatchery techniques, diseases prevention, animals' health, organic aquaculture, cultivation of new species etc. aiming at differentiating national production and improving sector's competitiveness. **Score assigned: +**
- **Competitiveness:** Marine aquaculture is a well established activity, with leading role in the European market (80% of the production is exported). Even during the current economic recession, the sector performed positive growth rates (3%). Due to the increased competition mostly with non-European countries, consolidation trends prevail on the market, as a response to the present conditions, for attaining current shares and ensure future growth. Furthermore, the sector promotes its qualitative trade mark. In general, qualitative standards are widely applied to all the activities of the sector, constituting a competitive advantage of the local production. **Score assigned: +**
- **Employment:** Greek aquaculture sector can have a significant impact on employment figures due to the wide range of activities developed around the main activity. Even though the number of persons directly employed in the activity presented a decreased trend, there is future potential due to the completion of the spatial planning which is expected to lead either to the creation of new farms or the expansion of the existed ones. In addition indirect employment can favour complementary activities such as processing. **Score assigned: +**
- **Policy relevance:** As stated in the National Plan for fisheries, aquaculture is a priority for the Greek government. Specific efforts are made for simplifying licensing procedures. Other legislative acts regarding the determination of specific region for the "organized development of aquaculture" will contribute to the establishment of aquaculture zones, facilitating the expansion of the sector. **Score assigned: +**
- **Spill-over effects:** There are adequate infrastructures currently operating in the sector as well research units for conducting relevant research. In this context these infrastructures can be used for differentiation of production and the establishment of new cultivations. **Score assigned: +**
- **Sustainability:** The sector faces various challenges regarding social, environmental and economic sustainability, which can affect the positive prospects of the activity. In this context, scientific community and the industry are studying and monitoring the impacts of the activity in order to remain at acceptable levels. Moreover, for the establishment of new farms, there are specific environmental conditions which must be met while legislation anticipates the monitoring of the sector. In this context national legislation foresees specific regions for the development of the activity. **Score assigned: +**

Deep Sea Shipping

- **Innovativeness:** Current economic crisis and the rising cost of bunker have lead many ship-owners to invest on fuel saving technologies and the adaptation of measures for optimizing fuel efficiency. Additionally, Greek ship-owners invest on new environmental and ship construction standards. **Score assigned: +**
- **Competitiveness:** Greece has a leading role in the international shipping industry and a significant impact on global seaborne trade. Greek merchant fleet is the largest in EU level and first in terms of capacity in international level. Despite the economic conditions, a positive growth rate is observed

in new orders while there is a trend toward the expansion of new segments such as LNG segment. Furthermore, another component of sector's competitiveness is the cost effective operation of the Greek-controlled fleet which is lower than the global average. **Score assigned: +**

- **Employment:** Traditionally, shipping industry has significant impact on employment figures. Apart from the number of seafarers, a large number of people are employed in the wide range of activities along the supply chain of the sector. Regarding the potential of the sector, the positive predictions regarding the increase of international trade and the new ship orders implies that the demand for personnel will be increased. It should be stressed that Greek officers are in shortage and there is a national campaign for attracting young in the industry, reversing this trend since the number of young selecting the profession of seafarers is gradually increasing. Also, demand for shore based positions is expected to increase accordingly. **Score assigned: +**
- **Policy Relevance:** Greek legislative regime is stable during the last decades and do not present significant changes. Regarding the objectives of the EU2020 strategy, responsible ministry gave priority in its policy to (i) the safety and security, (ii) the enhancement of the rules regarding the qualitative image of the industry and (iii) the attraction of ships under Greek flag. **Score assigned: +**
- **Spill-over effects:** Shipyards infrastructures are meeting a downward period, mainly due to the economic crisis. In this context and given the available specialized personnel, these infrastructures could be used for research purposes and more specifically for developing environment technology, which could be used by ships for complying with international regulations. Furthermore, shipyards could be used for the development of energy equipment both for ships and other purposes such as offshore energy equipment. **Score assigned: +**
- **Sustainability:** Greek shipping presents a strong environmental image and ship-owners move beyond the obligations of the national and international regulations. Specifically, vessels which are currently under construction fully comply with the amendments of IMO regarding energy efficiency²⁰, which have not yet entered into force. **Score assigned: +**

Cruise Tourism

- **Innovativeness:** Innovation in cruise tourism is mostly focused on the development of services for passengers. This effort is not widely applied but there are significant ports of call which invest in developing new services combining information technology. Also, there is an ongoing effort for establishing electronic port services and prioritization systems for facilitating the planning both for ports and companies. Private sector expresses interest in developing electronic communication and other systems, in collaboration with research institutions, with no tangible results yet. **Score assigned: 0**
- **Competitiveness:** Greece is ranked among the top European cruise destinations, proving that the country presents significant competitive advantages. Established ports have adequate infrastructures and services for the treatment of cruise ships and passengers. Although smaller and insular destinations present infrastructural deficiencies, these are usually handled with the development of specific services provided by port organizations/authorities (e.g. Santorini). It should be underlined that a number of interventions (both in infrastructures and at administrative level) are currently in progress or planned, aiming at increasing the attractiveness of destinations. **Score assigned: +**
- **Employment:** Although there is one cruise company located in Greece, national cruise market is considered job generator, mainly for the "satellite activities" (agency, transport, hotels, food and beverage etc). During the last three years, employment figures presented positive growth rates, which are expected to continue. **Score assigned: +**

²⁰ Namely, the Energy Efficiency Design Index and Ship Management Efficiency Management Plan.

- **Policy relevance:** Many efforts have been made during the last three years at legislative level for facilitating the development of the sector. Law 4150/2013, regarding the abolition of cabotage restriction to non-EU flags, is toward this direction. It should be noted that even though legal framework aims at favouring home porting, still the interest from cruise companies remain limited. This is due to the existence of deficiencies such as the connection with airport and its fees, opening hours of the museums etc. **Score assigned: +**
- **Spill-over effects:** More specifically, Greece due to its extensive coastline and the large number of islands has many ports with multiple uses (both commercial and passenger). Some of these are not active in commercial activities anymore, consequently port infrastructures and superstructures after specific interventions could be used for tourism purposes for offering specialized services. This could also be the case for the 'unused' space of commercial ports. **Score assigned: +**
- **Sustainability:** The sector is operating in sustainable way. In general, major cruise ports develop specific activities for the protection of the environment regarding waste management, water quality and noise and air quality. Currently, there are port organizations willing to introduce environmental technologies but there are not any specific initiatives neither from the side of the state or from the port authorities for enhancing the sustainable operation of the cruise ships while visiting Greek destinations (ex. cold ironing or initiatives for the use of green fuels). Also, there are signals of congestions in some destinations indicating that the carrying capacity is completed and thus specific measures should address the contemporary challenges in destination management. **Score assigned: +**

Coastal Tourism

- **Innovativeness:** Innovation in the tourism sector is limited and mostly related to the design of new services. Specifically, projects implemented are related to integrated interventions for the development of alternative forms of tourism, personalization and customization of the tourism experiences and the interconnection of the tourism product with local production. **Score assigned: 0**
- **Competitiveness:** In 2013 Greece ranked in the 32nd position in the World ranking²¹ regarding competitiveness and 3rd regarding tourist infrastructures. Despite the current economic recession and the financial difficulties, Greece has specific competitive advantages related to its position, the characteristics of its destinations and the diversified cultural and natural elements, which generate demand for the domestic product. Recent legislative reform is expected to support sector's competitiveness and facilitate investments. There are however some constrains related to the supply chain activities such as the state of the peripheral airports, airports' fee, coastal connections etc., which affect connectivity, a key component of competitiveness. **Score assigned: +**
- **Employment:** The number of people directly and indirectly employed in the tourism sector is estimated at 741.000 people. Based on current growth rates and in combination with the new suggested strategy of SETE (Association of Greek Tourism Enterprises) this number can reach 1 million²² people over the next years. **Score assigned: +**
- **Policy Relevance:** Coastal tourism is a vital activity directly linked with the viability of coastal and insular regions. A number of legislative actions have been introduced during the last two years related to the completion and upgrading of the general framework for enhancing the development of the sector. More in detail, there is a variety of reforms, from the opening-up of tourist professions till accommodation and touristic ports. **Score assigned: +**
- **Spill-over effects:** Sector's development can be enhanced by the exploitation of unused public facilities and land which could be ceded or leased by private companies in order to transform them

²¹ http://sete.gr/_fileuploads/entries/Studies%20&%20Publications/EN/FACTS%20%20FIGURES%202013.pdf

²² <http://sete.gr/EN/PRESS%20CENTRE/News%20and%20Announcements/?naID=2145>

to places of touristic attractions and to develop specialized activities such as thermal spas, golf fields, stadiums etc. **Score assigned: +**

- **Sustainability:** The protection of the environment is among the priorities stated in national tourism policy. Specific programs are established in order to promote green tourism and to enhance the environmental-friendly operation of tourism companies. Also alternative forms of tourism with limited environmental impact are supported. Additionally, environmental-friendly practices are promoted through legislation, such as eco-friendly standards and green management systems. **Score assigned: +**

Short-sea shipping (incl. Ro-Ro)

- **Innovativeness:** Sector does not present significant innovative applications regarding ships' technology, but on the contrary its fleet is considered aged. Despite that, research on ships' design and environmental solutions are also available for short-sea shipping. **Score assigned: 0**
- **Competitiveness:** Greek short-sea shipping ranked 11th, in 2011 (6% in the EU-27) in terms of goods transported in all regions and 4th in the Mediterranean Sea, after Italy, Turkey and Spain. Despite the fact that the industry is facing problems deriving from the economic recession, which has affected its ability to have access to financial resources and to modernize its ships, the activity still remains competitive due to companies' structure and know-how. The recent establishment of the Promotion Centre aims at the promotion of the short sea shipping and the improvement of the competitiveness of the Greek flagged vessels. **Score assigned: +**
- **Employment:** The sector employs an important number of persons both on board and on land. Also, the great majority of persons at port and other related activities serve predominately short-sea shipping activity. Port system is currently under a transitional phase and a number of infrastructural and administrative changes are in progress. These changes in combination with European initiatives is expected to enhance regional activity and consequently to strength employment figures. **Score assigned: +**
- **Policy relevance:** Greece does not develop specific policies for the enhancement of the national short-sea sector and its major policy priorities are the alignment and the implementation of European legislation and initiatives regarding the strengthening of the sector at European level (such as the Blue Belt). **Score assigned: 0**
- **Spill-over effects:** Ports reform is the practical signal that the enhancement of the activity is taking place, through specialization and application of advanced technologies for cargo handling. In this context superstructures can be used in similar way, as well the extension and transformation of other kind of transport infrastructures such as railways. **Score assigned: +**
- **Sustainability:** Protection of the marine environment is among the priorities of the national maritime policies and thus all European and international regulations are fully applied in the sector and further monitored from responsible national bodies. **Score assigned: +**

Yachting and marinas

- **Innovativeness:** The innovativeness of the sector is limited and mostly focused on services solutions, designed by the private sector for serving specific market segments. Generally, the sector presents limited interest in innovative solutions on infrastructures (e.g. floating infrastructures) or energy efficient applications. **Score assigned: 0**
- **Competitiveness:** The activity presents comparable advantages related mostly to its coast morphology and the numerous islands, which can satisfy different market segments. There is an extensive network of companies with high expertise and know-how. It should be stressed that economic crisis and the ongoing legislative changes has generated uncertainty over the last years affecting the performance of the sector and consequently its competitiveness. This fact in combination with the upward growth rates of the yacht sector in other Med countries is a factor

adding pressures to the national sector. The extensive infrastructural planning related to the construction of new marinas and the under reform legislative regime is considered as a response which can raise the attractiveness of the sector and strength its competitiveness. **Score assigned: +**

- **Employment:** Currently, the sector employs an important number of persons in different positions. The development of the sector, in combination with the construction of new infrastructures all around the country, is estimated to have a positive impact on direct employment figures estimated to more than seventy-five thousands positions.²³ **Score assigned: +**
- **Policy relevance:** The sector has suffered an outdated legal framework and has to face a bad image, which generated bureaucracy and restricted the development of new activities. Moreover, current fiscal policy adds more pressures to the industry. During the last years there is an ongoing process for the modernization of the relevant legislation and the creation of a more friendly business environment. These interventions are expected to support and facilitate the development of the sector. **Score assigned: 0**
- **Spill-over effects:** Greece has port infrastructures currently unused: a number of infrastructures characterized as “tourist port” which are not used for this purpose since they do not have the appropriate superstructures and services to support yachting activity. These facilities with specific updating could be used – complementary to the construction of new marinas – for serving the sector. Regarding the building of yachts, shipyards could be reformed and modernized so as to achieve specialization in building all kind of yachts as well for the construction and the maintenance of traditional wooden boats. **Score assigned: +**
- **Sustainability:** The sector is considered as sustainable mostly due to the non-massive character as well to the dispersion of the activity to the different islands, minimizing congestion phenomenon. Moreover, regarding the construction of new infrastructures, strict environmental regulations are imposed each time. **Score assigned: +**

Offshore wind

- **Innovativeness:** Even if the activity is not present research institutions participate in European projects regarding the generation of advanced technologies with potential applications in the Greek sector. **Score assigned: +**
- **Competitiveness:** The activity is not present. It is not possible to assess the competitiveness. **Score assigned: 0**
- **Employment:** Currently there are not any established wind farms in Greece, but there is specialized personnel, due to the shore based activity and the scientists already involved in EU projects. **Score assigned: 0**
- **Policy relevance:** Wind energy has been a priority for the Greek government and thus a specific National Renewable Energy Action Plan exists determining the energy objectives of the country and the timeline regarding energy obligations in respect to the Directive 2009/28/EC. In this context a number of policies and measures have been issued such as the tendering procedures for the construction and operation of offshore wind farms. **Score assigned: +**
- **Spill-over effects:** Strong synergies can exist between the shipyards and the offshore wind sectors for constructing and maintain technological equipment. Existing and not efficiently exploited port facilities could be converted and used for serving the offshore wind activity. **Score assigned: +**
- **Sustainability:** The installation of offshore wind farms can have a considerable impact on the energy production of the country. Based on policy priorities 7.500 MW is planned to be installed by 2020, from which 300 MW are attributed to offshore wind farms. **Score assigned: +**

²³ http://www.nee.gr/downloads/184STUDY_ON_YACHTING.pdf

4. Growth scenarios for the 6 most relevant and promising marine and maritime activities

Below a synoptic overview of the 7 largest, fastest growing and with most future potential activities is provided:

Table 7 - Sets of top-7 activities ranking in order of size/growth/future potential

Top-7 current size	Top-7 recent growth	Top-7 future potential
Coastal tourism	Water projects	Marine aquaculture
Deep Sea	Cruise Tourism	Deep-sea shipping
Short-sea shipping	Coastal Tourism	Cruise tourism
Fishing for human consumption	Marine aquaculture	Coastal tourism
Passenger ferry services	Fishing for human consumption	Short-sea shipping
Cruise tourism	Yachting and marinas	Yachting and marinas
Yachting and marinas	Deep Sea Shipping	Offshore Wind

Therefore, the activities identified as most relevant and promising in Greece are the following:

Table 8 – The 6 most relevant and promising marine and maritime activities

6 most relevant and promising marine and maritime activities
Marine aquaculture
Deep-sea shipping
Cruise tourism
Coastal tourism
Short-sea shipping
Yachting & marinas

4.1 Overview of the 6 most relevant and promising marine and maritime activities

Marine aquaculture

Marine aquaculture is a strategic sector for the national economy. The sector ranks first in the EU as regards seabass and seabream productions, while it has achieved lower production costs compared to its competitors. The strong export orientation of the industry has led to the establishment of qualitative standards and certifications for the production. There is an evolution at legislative level regarding the establishment of Maritime Spatial Planning for expanding current activity while specific efforts are in place regarding the research for the differentiation of local production and the cultivation of new species.

Deep-sea shipping

Greek deep-sea shipping fleet represents the largest fleet in European level. The sector is characterized by high degree of innovation and competitiveness since there are (i) investments related to new ships order, (ii) adoption of new green efficient technologies, (iii) high degree of adaptation to demand and (iv) a clear orientation to new market segments. Policy interventions related to the facilitation of vessel registration under the Greek flag aims at generating a more efficient and attractive environment.

Cruise tourism

Cruise industry covers an important role in the national economy due to the direct and indirect economic impact, mostly generated by cruise visitors and crew members' expenditures. Favoring predictions regarding future demand for cruise suggests that the international and European market will experience positive growth rates. As Greece is ranked among the top European destinations, further growth of the sector is expected. Recent legislative reform aims at creating a more environmental-friendly business, investing for home-port facilities and supporting future expansion.

Coastal tourism

Coastal tourism in Greece has received the negative impacts of economic recessions, noticing a downward trend (reversed during 2013). National policies promote new forms of tourism products focusing on niche markets, with green orientation enhancing the competitiveness of the sector and its sustainability. Positive growth rates are expected to prevail in the sector, also supported by the proactive legislative framework currently settled, aimed at attracting new investments in the sector and strengthen its growth.

Short sea shipping

Most of the cargo transported in national ports is conducted through short-sea shipping. The activity secures the constant supply and connectivity of the Greek territory. Moreover, the development of Piraeus as transshipment hub and current investments on port infrastructures are expected to increase port capacity and consequently to generate additional demand for short sea transport.

Yachting and Marinas

Greece is an established tourist destination with an extensive coastline which favours the yachting activity. There are several companies offering competitive yachting services. The extensive investments planned on tourist ports and marinas are expected to considerably increase berth capacity and attract international demand. Legislative regime allows concessions for the management of existing marinas.

4.2 Description of the nature of each of the 6 marine and maritime activities and their value chain

Marine aquaculture

Marine aquaculture is a dynamic economic activity significantly contributing to Greece's primary production. Commercial aquaculture of finfish species has evolved into one of the most developing sectors over the last decade. Good climatic conditions, extended shoreline, heavy private, national and European investment, coupled with breakthroughs in hatchery and nutrition technologies are the factors that resulted in the rapid evolution of the sector. Greece ranks first in the production of aquaculture finfish species and second in exports. Currently, there are 336 finfish units, 36 hatcheries and 590 shellfish units. At a European level, Greek finfish production represents 25% of Union's corresponding sector. In the period 2002-2010, production rose by 39%, while in 2011 production reached 121.000²⁴, valued 523 million euro. Major species are Sea Bass and Gilthead sea bream representing 83% of total production. The prevalent culture method used is sea cages. More than 80% of the production is exported mainly to Italy, Spain, France occupying at 2011 the 1st position between agricultural exporting products, and the 2nd between all Greek exporting sectors. New distributional channels are being developed and thus UK, Germany, Belgium, Netherland, Luxemburg USA and Canada are countries exporting Greek production. The number of export markets has increased from 22 in 1991 to 41 in 2009. The development of road infrastructures and the extensive network of ports are two factors facilitating export activity. Apart from the traditional species, Greek companies make efforts to diversify their production and cultivate new species, but the growth rate is slow mostly due to the market development. Currently many major firms are under reengineering or merging to address competition issues in a more global perspective. The value chain of the Greek marine aquaculture sector includes the full range of activities, starting with the feed suppliers, hatcheries and aquaculture companies for the cultivation of different species, companies of fish processing and finally wholesale and retail companies for the distribution of the product to final consumers. Part of the value chain is also the research centers that are conducting research mostly focusing on cultivation of new species.

²⁴ Provisional data, Ministry of Rural Development & Food, General Directorate for Fisheries

Deep-sea shipping²⁵

The economic crisis and particularly the low freight and overcapacity, the inability of banks to provide finance, bunker's prices and the reduction of vessels' prices has affected the performance of the sector in Greece. Despite recession and oversupply, Greek shipping maintained its leading role in the European and international shipping industry. In 2011, Greek owned fleet represented 15,56%²⁶ of the world's deadweight. During the last ten years Greek fleet has been increased by 11% (from 4110 vessels in 2001 to 4677 in 2013). Concerning the capacity of Greek fleet it is observed that despite the decreased trend in the number of vessels the total capacity in terms of DWT is steadily increased (+75% from 2001). During the period 2008-2012, fleet's capacity increased by 18,5%. Consequently the average age of Greek owned fleet was decreased to 11,3 years. Bulk vessels represent almost 48% of the total fleet and major cargo category is this of dry bulk. Tankers represent 16,4% of the Greek fleet (754 vessels) operated by 92 companies (2012 data). The vessels of this market have average age of 8,9 years and average DTW 130.032 tons. During the last 3 years the number of vessels decreased by 3% but, in the meantime tonnage increased. Statistics reveal the dynamic trend in the development of Greek fleet.

Container ships represent only a small percentage of the total fleet. Currently, the Greek container fleet is composed by 243 vessels, with a total capacity of 12.667.748 DTW. In 2012 there were 25 shipping companies managing container vessels. Piraeus is the center of shipping activity in Greece and numerous shipping offices are located there.

In 2011, the Greek flag was the sixth in global ranking (in terms of DWT) ,while the Greek –owned fleet flying EU flags represents 42,72% of the EU's total capacity.

The value chain of the sector is very wide including the vessels and ship management companies, maritime related services such as classification societies, technical offices and consultants, ship brokers, agents, legal firms and banks, underwriters, insurance firms, maritime equipment and suppliers such as ship equipment manufacturers and spare parts suppliers. In addition, it includes ports and the full range of services provided within the port area, such as bunkering, water etc. Part of the value chain is also the shipbuilding and maintenance sector.

Cruise Tourism

Till the 90's, there were many Greek cruise companies offering cruise all around the globe. During this decade numerous changes, occurred and these companies either bankrupted or merged with larger international players-shifting the profile of the sector. Currently, there is one Greek cruise company that uses the port of Piraeus and other Greek islands for starting its cruise itineraries. However, during the last ten years cruise industry has evolved considerable in Greece. This is due to the fact that cruise destinations in Greece present many advantages including the following: warm climate, existence of multiple island destinations in proximity, proximity both to major source destinations and emerged destinations such as the Black Sea. Also, Greece is perceived as a safe and secure destination. Important progress has also been done in the field of security with cruise ports fully comply with ISPS regulations. Moreover, cruise ports have become very active in promoting cruise activity and in 2011 the Hellenic Port Association established the Committee of Cruise promoting "Greek Cruise" as common brand name.

The total number of cruise passengers that visited Greek destinations in 2011 was 4,78 million (increased by 6,5% from previous year), representing 17% of the total European cruise passengers. Based on the data of the Hellenic Port Association, in 2012 cruise passengers reached approximately 5,5 million persons. Greece is the fifth European country in terms of embarked passengers with 5,6% share (slightly decreased from 2010). Compared to the top two home-port countries – Italy and Spain - Greece represents a small percentage. Major home port is Piraeus with 280 thousands passengers (embarked-disembarked) and total 1,21 million passengers in 2012. Apart from Piraeus, other embarkation ports are Irakleio, Corfu and

²⁵ http://www.petrofin.gr/Upload/2ndPart-2012-Petrofin_Research-GreekFleetStatistics.pdf

²⁶ IHS World Shipping Encyclopedia, 2013, Reproduced in Union of Greek Ship-owners Annual Report 2012-2013

Rhodes. Among the major European ports-of-calls there are three Greek destinations: Santorini, Mykonos and Rhodes.

The value chain includes mainly the cruise companies, spending money for supplies and maintenance, and transportation sector, since passengers must use some transport connections to reach home port destination. Ports are a decisive component since they host and provide treatment services to ships and passengers, including watering, bunkering, slops etc. Accommodation sector is another component related mainly with passengers embarking of disembarking from Greek destinations. Finally, the supply chain also included maritime agents, touristic and travel agents while retail sector is much benefited by the activity, via cruise passengers spending.

Coastal Tourism

The existence of multiple destinations with natural and cultural diversity, adequate infrastructures and qualitative services has brought Greece among the major tourist destinations at international level. Almost 400 beaches and 9 marinas²⁷ are awarded with blue flag. Also, the Greek list of Natura 2000 areas includes 241 Sites of Community Importance and 202 Special Protection Areas. During the period 2000-2012 arrivals presented an increasing trend estimated at 25%. In 2011 arrivals reached 16,4 million while in 2012 arrivals fell to 15,5 million recorded a 5,5% decrease, placing Greece in the 17th place international arrivals. This variation can be better explained under the prism of economic crisis. In this context, there was a decline in the number of tourists coming from traditional European source markets such as France, the Netherlands Italy etc, while on the other hand the increase of tourists coming from Russia and Turkey has partially counterbalanced this loss. Regional airports presented a marginal increase of 0,6%²⁸ while Athens International airport recorded a decrease of 14,6%. Regarding infrastructures, in 2012 hotel capacity increased by 22 units and 3.110 rooms, while the percentage of 5-stars rooms rose by almost 14%.

Diachronically, the number of nights spent presented increasing trends. For the period 2003-2010 the night spent indicator increased by 17%²⁹. Tourism activity is mostly concentrated in coastal areas (more than 90%). Coastal tourism product is characterized by seasonality and dependency from transport connections (air and coastal shipping). Arrivals start in May- reaching its peak in August till October, corresponding to 85% of tourists traffic. Currently, through the New Investment Law, the country is aiming at increasing tourism investments and the quality and the competitiveness of domestic offer. The actors involved in the value chain of the sector are the transport sector and predominately passenger ferries since it carries the majority of tourists to island destinations, tour operators and travel agents, the accommodation and food and beverage sector and the retail sector.

Short-sea shipping

In 2011, short-sea shipping transported 82% of the handled goods in Greek ports (almost 77,5 thousands tonnes), a 4,1% decrease from the previous year. Black Sea (10,3%) and the Mediterranean (60%) are the two major geographical areas where this activity takes place. The fleet of Greek short-sea shipping is currently estimated to 200 vessels, which represents less than 10% of European fleet. One third of the Greek owned fleet fly the Greek flag. Concerning the structure of the fleet, half of the vessels are tankers, 30% bulk carriers and the rest Ro-Ro and containerships. Compared to the European short-sea shipping fleet, Greek fleet consists of smaller (average size 4.500 GT) and older vessels (great majority is over 20 years). A national Short sea Promotion Centre (SPCs) operates in 20 European³⁰ countries, including one in Greece. The Centre is driven by business interests and offer neutral, impartial advice on the use of short-sea shipping to meet the needs of transport users. The value chain of the sector is similar to the deep-sea

²⁷ <http://www.blueflag.org/menu/awarded-sites/2013/northern-hemisphere/greece>

²⁸ <http://www.grhotels.gr/GR/BussinessInfo/News/Lists/List/Attachments/408/ENG-GreekTourismHotels2013.pdf>

²⁹ tour_occ_nin2

³⁰ Belgium, Bulgaria, Croatia, Cyprus, Denmark, Finland, France, Germany, Ireland, Italy, Lithuania, Malta, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, Turkey and the UK.

shipping, especially regarding the use of supportive activities. It includes the ship companies, ports, suppliers, the wide range of supportive companies and shipyards mainly for maintenance reasons.

Yachting and Marinas

The market of professional leisure craft emerged in 70's and today the professional leisure fleet consists of 4.800 boats, most of which are sailing boats (90%) and the rest motor yachts. In 1995, yachting represented 0,9% of the total tourist arrivals in Greece, while currently this percentage is estimated between 1,5%³¹ to 2%. The demand for yachting is mostly coming from foreign tourists and is responsible for the 27%³² of total maritime tourism consumption. More than 60% of the demand is coming from European users, mainly from Germany, Italy, France and Spain.

There are more than 100 companies, one third of which are active in charter activity. There are two major professional unions: the Greek Professional Tourist Yachts Owners Union and the Professional Tourist Bareboat Yacht Owners Union.

Currently, Greece has 20 marinas³³ with a berth capacity of 6.661, while the total number of berths in tourist port, anchorages and shelters is more than 10.000. Compared to neighbor countries in the Med, Greece has a limited number of marinas and consequently mooring places, a fact that negatively influences the development of the sector. It should be stressed that the activities of maritime tourism in Greece are characterized by heterogeneity and for the satisfaction of their demand different kind of infrastructures and services are required, since these are addressed in different sections of the touristic market.(e.g. massive cruise tourism vs individual yachting). The value chain of the sector includes the yachting companies, which own and charter vessels, together with brokerage and charter companies, supportive companies, ports and marinas and the retail sector.

4.3 Description of economic and infrastructural scenario

Marine aquaculture

In 2011, 106³⁴ companies operated in the sector which has become highly concentrated over the last years. The added value of the sector was estimated to EUR 0,45 billion (2010), an increase by 18% since previous year. The number of persons directly employed in the sector is almost 3.800, while the total employment is estimated to 10.000 persons. There are 109 fish processing companies employing 2.500 persons. Employment in the sector is above the EU average. Steady growth rates in combination with the export orientation of the sector and cost competitiveness are considered as two characteristics³⁵ indicating that the sector can be further developed in the next years. More over there are funding opportunities through operational programmes focusing on the cultivation of new species, biological aquaculture, re-location of farms and promotion. Especially, the promotion of the Greek production to new markets and further penetration to current markets is consider as an accelerator factor which enhances the growth potential of the sector. In this context, focus on specialized species for specific markets will contribute to the expansion of current production to new species. The introduction of a Maritime Spatial Planning is also expected to boost the development of the sector and resolve current conflicts of uses. It is estimated that the sector can triple its GVA from 0,4 to 1,4 billion euro and generate more than 20.000 new job positions³⁶.

Regarding the environmental sustainability of the sector, in the context of the current legislative regime the aquaculture farms are classified in categories A and B, according to the degree of the consequences that

³¹ Diakomihalis (2008)

³² Diakomihalis (2007)

³³ Invest in Greece (<http://www.investingreece.gov.gr/?pid=36§orID=44&la=1>)

³⁴ http://www.aquark.gr/index.php?option=com_content&view=article&id=157:article-on-greek-mariculture-2011-in-aquaculture-europe-vol-36-2-june-2011&catid=71:sector&Itemid=276

³⁵ MacKisney report

³⁶ MacKisney report

could have on the environment. For category A, in the stage of the aquaculture authorization procedure, an *Environmental Impact Assessment* should be submitted. For category B, projects do not follow the process of preparing the Environmental Impact Study, but the units are subject to *Standards of Environmental Commitments*, responsibility devolved to the administration issuing of the license for the establishment and operation of the unit. Legislation ensures the preservation of the marine environment, the quality of the products and human health.

Deep-sea shipping

Deep-sea shipping is a significant sector for the national economy, with an added value of 8,4 billion euro (2009). According to a study by the Foundation for Economic and Industrial Research (IOBE), it was estimated that the total direct, indirect and induced employment is approximately 192.000 people with benefits reaching 2,7 billion euro. Respectively, in 2010 the direct impact of ocean-going reached 6,5³⁷ billion euro, while the shipping cluster contributed indirectly 2,3 billion euro and 3,4 billion induced. Emerging trends in the Greek shipping industry suggest that the industry is slowing entering a development phase. Regarding international environment, there are forecasts for the gradual recovery of the world trade reaching 4,5% in 2014. This fact is directly affecting the demand for maritime transport signaling a positive prospect for the development of international shipping,

The traditional corporate management of the companies has resulted to decision flexibility and the recognition of development opportunities for expansion to new markets. Indicative of the future potential of the sector is the number of new ships during 2012 (304 new ships). In this context, diversification trend in new orders is another component indicating future development. More specifically, new orders apart from traditional segments also invest on the containership segment both in new buildings and second-hand vessels, mostly due to the increased freight rates recorded to some trades. Moreover, based on the future predictions regarding the increase of the demand for LNG transportation by 35% till 2020, Greek ship-owners have been active in the LNG segment, reflecting this trend to the order list. It should be stressed that current conditions regarding ship-finance favor mostly companies with capitals reserves.

Furthermore, it has been estimated³⁸ –under the prism of a policy strategy for attracting establishment of new offices in the Greek territory– that the total employment generated in the sector and cluster activities could reach 552.000 positions with corresponding added value reaching of 25,9 billion.

Greek shipping is fully applying all the international and European environmental regulations and the majority of ship-owners move beyond compliance standards. They invest in ships with new technologies for enhancing their energy efficiency, use cleaner fuels and participate to voluntary environmental programs such as speed reduction programs. Moreover, environmental management systems (ISO 14001) are also applied.

Cruise tourism

Currently, Greece is a destination market with some maintenance activities. Based on the data of the European Cruise Council (ECC) the total direct impact was estimated to 605 million euro (2012), increased by 4,5% from previous year. As noted in the report of ECC, this increase concerned all expenditure categories while there was almost 2% decrease of spending for maintenance. The industry is considered as employment generator since currently 6.500 persons are employed in the sector. Since 2008, persons employed were increased by more than 50%. The great majority of employment concerns transportation sector and manufacture. Total compensation for 2011 was estimated to 234 million euro (+3%). Regarding the potential development of the national sector, there are specific general conditions related to the prevalent trends in the international market and special conditions related to the national market. Regarding the international market it is estimated that the number of cruise passengers will reach 26,2³⁹

³⁷ <http://www.bcg.gr/documents/file135208.pdf>

³⁸ IOBE, 2013

³⁹ G.P. Wild International, 2012.

million by 2020. This implies that there will be increased demand for cruise services. At national level, full liberalization of cabotage in combination with the wide planning for upgrading current infrastructures and the construction of new ones are expected to improve the image of the Hellenic ports and raise their attractiveness. Indicative is the case of the port of Piraeus, where the construction of a new pier for serving new generation cruise ships is in progress. Apart from infrastructures, ports also invest in security issues while trying to fulfill international standards and offering a secure environment both for the ships and the passengers. Moreover, local authorities develop specific promotional activities and new products. It is noted that cruise destinations are not developed in the same way. More active cruise ports have managed to achieve through specific planning alteration of their profile and to serve the market both as port of call and home port (e.g. the port of Herakleion).

It should be noted that one major obstacle for the further development of the industry –as home port - is the not efficient and regular air connections of the major national airports with the main European capitals. In the context of the new legislative regime, it is estimated⁴⁰ that an increase of home-porting activity (2/3 of cruise passengers start their cruise from a Greek destination) could increase annual revenues to almost 2 billion till 2016.

Regarding the environmental sustainability of the sector, no violations of the international regulations have been reported and large port authorities have Port Environmental Review Systems. Most of destinations are small islands which mean that only smaller cruise ships can visit them and the environmental impacts are limited. On the other hand, there are larger destinations and marquee destinations facing congestion issues requiring quotas and measures for mitigating any kind of negative externalities.

Coastal tourism

Tourism is one of the most important sectors in Greece. In 2012, the total contribution of tourism to national GDP was 30,3 billion euro (or 16,4% of GDP marginally increased from 2011). Greek tourism represents almost 3% of the European market and 1,5% of the corresponding international.

Tourism can have even greater contribution to national economy and it is estimated⁴¹ that the sector can result to 18 billion euro of GVA and can generate approximately 220.000 new jobs in a ten year horizon. Future development of the sector depends both from internal economic situation and the trends of the global market. The World Tourism Organisation forecasts an average annual growth rate of international arrivals of 4% till 2020, meaning that the global market is recovering.

At national level, during the last years, a variety of measures and legislative interventions occurred in order to improve the business conditions and to create a more friendly investment environment. Apart from the legislative efforts, the support of the sector is also attempted through a number of operational programmes which provided funding for the differentiation and enrichment of the tourism offer and the treatment of seasonality. Further development of coastal tourism relies on the connectivity of the regions with the main tourism markets. In this context, infrastructures have a significant role for the development of the sector. Till 2013, a number of projects related to road infrastructures and port infrastructures were completed and other still in progress for upgrading the infrastructures and enhancing accessibility, while still more are needed for integrating ports, airports and rail infrastructures. Based on the current positive performance of the sector, according to which arrivals recorded a 9,9% increase in the first 8 months of 2013, it is expected that the sector has strong future potential especially regarding alternative tourism.

Coastal tourism is directly linked with the quality of the environment, as a significant parameter which improves the attractiveness of a destination and affects the experience of tourists. Tourism can affect the full range of environmental parameters and thus its efficient management and the protection of resources is crucial. National legislation foresees environmental authorization for all kind of intervention in the touristic sector. Additionally, there is a strategy for the promotion of green tourism, aiming at enhancing the efficient and environmental responsible operation of tourism enterprises (for example energy, water

⁴⁰ http://www.nbg.gr/wps/wcm/connect/445a285d-fef6-4f6d-a3d7-c5183d8fd270/Cruise_August_2012.pdf?MOD=AJPERES

⁴¹ MacKisney, 2011

saving, waste management etc). It should be underlined that seasonality adds specific pressures to country's drinking water infrastructures and solid waste management requiring permanent solutions for the sustainable development of coastal regions.

Short-sea shipping

Currently, approximately 100 companies operate in the market, the majority of which owns two vessels in average. Even though the sector was in decline, there are specific conditions that can contribute both to the recovery of the sector and further to its development. Future potential of the sector is directly connected to the national transport system and particularly to the port, road and railway network. There is strong potential for the establishment of Piraeus as transshipment hub and Thessaloniki as gateway ports, while current projects will increase port capacity. Moreover other factors affecting the transformation of Greek ports are the international partnerships, the new European legislative regime regarding custom procedures, the increased (compared to the past) interest of ship-owners to participate to EU related projects. In this context, forecasts suggest that the transformation⁴² of the two major Greek ports into hubs can generate annual GVA of 1,3 billion and more than 9.000 new jobs within the next ten years.

Short-sea shipping is characterized by high degree of energy efficiency and is more environmental friendly compared to other transport modes. The market follows all relevant regulations to maintain high safety, security and environmental protection standards on ships flying national flag.

Yachting and Marinas

The sector during 2006-2008 experienced a positive rate of growth estimated to 11%. The economic recession and the complex legislative regime affected the performance of the sector during the last three years. The sector presents signs of recovery and is estimate that there is an increase of 8-9% starting from 2012 (especially in sailboats chartering, while the motorboat sector remained at the same level with previous year).

Positive growth rates were also recorded in the marina market, estimated to 4% during the period 2005-2008. The future potential of the sector is strongly supported by the extended program applied for the construction and upgrade of new and existed marinas. Specifically, more than 20 marinas, with almost 4.000 berth places are under construction all over the country. Also, the privatisation program of small ports and marinas which is part of the so-called Project "Nereids" is expected to attract investment capitals and contribute to the expansion of the sector by granting long term concessions to 46 marinas located throughout Greece. Lack of berth places and low development rate of marina projects affect sector's development. The legislation under revision aims at raising the attractiveness of the industry, minimizing bureaucratic procedures and enhancing wintering for yacht boats.

The great majority of the professional leisure fleet is sailing boats, which implies that the environmental pressures are limited. Also, in the sector are applied all regulations regarding the air emissions and noise emissions.

4.4 Regulatory environment

Marine aquaculture

The Directorate for Aquaculture & Inland Waters of the General Directorate for Fisheries of the Ministry of Rural Development and Food is responsible for the definition of the National Aquaculture Strategy, the allocation of production quotas and, through the EU funding programmes, it manages all national and European Union (EU) funds allocated to the sector. Also, operate MRDF the Managing Fisheries Operational Programme and Application Service Actions Fisheries Operational Programme. At a regional level, the

⁴² Mackisney, 2013

Decentralized Governments are responsible for the application of the development program. . The large number of relevant legislation and the number of involved public services generate bureaucratic restrictions. The legal framework consists in:

- Law No. 2971/2001 “Seashore, coastal zone and other provisions”
- Law No. 3208/2003 on licensing and marine area renting procedures, and responsible authorities.
- Law No. 3614/2007 concerns the management, control and implementation of development initiatives for the 2007-2013 period. www.et.gr.
- Ministerial Joint Circular 121570/1866/12.06.2009 on carrying capacity and maximum farm production.
- Ministerial Joint Decision No. 31722/4-11-2011 concerns the approval of Special Framework for Spatial Planning and sustainable development for aquaculture. www.et.gr
- Law No 4014/2011, (O.J. concerning environmental licensing projects and activities
- Ministerial Decision No 1958/2012, (O.J.G. No 21 B) issued according to Law No 4014/2011, for the classification of public or private projects and activities
- Ministerial Decision No 9232/1/1/11/11-1-2011, (O.J.G. No 136B) concerning licensing aquaculture units and hatcheries
- Circular No 9231.2/1/11/29-3-2011 “Precise application of Law 3208/2009, Article 19, par.11”
- Circular No 9230.2/15/11/26-1-2012 “ Leasing of marine areas for licensing fish farms’
- Join Ministerial Decision No.50129/1392/2013 (O.J.G. No 2405B), regarding standards of environmental commitments for establishment of aquaculture units.

Deep sea shipping

The Article 13 of the Legislative Decree 2687/1953 “On Protection of Investment and Foreign Capital” regulates the deep sea sector and especially Class⁴³ A vessels. Class A is the class of ships that fall under the scope of the tonnage tax regime and represent the great majority of Greek flagged ships engaged in international navigation. In order a ship to be registered on the Register of Greek Ships pursuant to Article 13, must: a) have gross tonnage of over 1.500 metric tons; and b) be owned by a foreign company, the beneficial owner of which by a percentage of 50% plus, is a European citizen. Also, Law 27/75 (Art 25): Establishment of foreign commercial and industrial companies. Law 4110/2013 regarding tax imposed on foreign flag vessels operated by management companies in Greece. The specific legislation generates an environment favourable to the development of Greek Shipping. Bureaucracy regarding registration procedures in Greek registry was recently reformed, aiming at attracting more ships in the national registry and enhance the status of Greece as maritime center. The Greek flag, as a quality flag, is traditionally included in the Paris MOU on port state control White List and in the Qualship 21 initiative of the US Coast Guard.

Cruise tourism

The evolution of legislative process in Greece can be divided into the following three periods⁴⁴:

- Period A: prior to 1999 (cabotage restrictions in force);
- Period B: 1999 - 2010 (EC Regulation 3577/1992) and
- Period C: 2012 to present (National Law 4072/2012 and 4150/2013).

Until 1999, the Greek cruise sector operated under cabotage conditions. This means that only cruise ships flying the Greek flag had the right to offer cruise programs using any Greek port as homeport.

In 1992, Regulation 3577/92 was passed by the Council of the European Union, regarding the freedom of services in maritime cabotage trades. Its objective was to create a unified market among member states and to create a European cabotage environment by equating the European flags. The privilege of national

⁴³ Ships liable to pay tonnage tax are divided by Law 27/1975, into two Classes A⁴³ and B.

⁴⁴ Stefanidaki and Lekakou, 2011

cabotage was repealed and national regulations were harmonized with European law. In the case of Greece, there was derogation from the implementation of the regulation until 2004, due to socioeconomic cohesion reasons and only for regular passenger shipping calling at islands.

Greek cruise shipping was liberalized to European flags from 1999. In August 2010, the Greek government voted Law 3872/2010, which provides to cruise ships flying flags of third registries (non-European) the right to provide touring trips using Greek home ports for their operation. This law was formulated for maximizing the benefits from cruise activity to local communities. In this way all kind of flags enjoyed the same privileges as the Greek one. In order cruise companies to enjoy these privileges should sign a contract of agreement with Greek government. This obligation was considered as an obstacle for the further development of the sector. The latest legislative reform was law 4072/2012 in article 222 and later on Law 4150/2013 (Art 11), which removes the obligation of the company to sign contract with Greek state, aiming at enhancing home-porting activity. In parallel, Greece is investing efforts in improving port infrastructures in order to facilitate cruise calls in more coastal areas and islands.

Coastal tourism

Law 4070/2012: the Law includes several stipulations on the simplification and enhancement of tourist investments. Also, includes issues related to the procedures for the operational licensing of tourist accommodation, the creation and operation of touristic ports, the operation of tour agencies through internet etc. Among others, the said law in the article 174 introduces the institutional framework for the organization and operation of fishing tourism activities

Law 4146/2013 for Creation of a Development Friendly Environment for Strategic and Private Investments, of the Ministry for Development, Competitiveness, Infrastructure, Transport and Networks. For the purposes of the implementation of the provisions of this Law, Strategic Investments shall be construed as the productive investments, which generate quantitative and qualitative results of major significance for the overall national economy, and which facilitate the country's exit from the economic crisis. Strategic Investments relate particularly to the construction, reconstruction, expansion, restructuring, modernization or maintenance of existing infrastructure, facilities and networks (article 1), among them in tourism (all kinds) sector.

Law 4093/2012 which regulates issues of access to and practice of tourist guide profession.

Law 3908/2011 for Natural and Legal entities that have engaged or wish to engage in a range of fields and market sectors (including tourism & Yachting) throughout Greece. The purposes of the present law is to promote economic growth in Greece by introducing investment aid schemes to improve entrepreneurship, technological development, the competitiveness of enterprises and regional cohesion and promote green economy, the efficient function of existing infrastructures and the deployment of the country' s human resources (article 1). Link: <http://www.startupgreece.gov.gr/content/investment-incentives-law-39082011>

Legislative regime aims at facilitating the development of new forms of tourism, enhancing the enrichment of tourism infrastructures and the acceleration of investments in the tourism sector.

Short-sea shipping

Legislative Decree 2687/1953 which provides certain incentives and protection of foreign capital to foster long term investment projects, especially in the infrastructure sector.

Law 27/1975 under which Foreign shipping companies may establish a branch or an office in Greece, whereby foreign shipping companies enjoy substantial tax benefits, including exemption from Greek income taxation.

Law 791/1978 (which allows shipping companies to have their registered seat and to be governed by a foreign law, albeit their management is exercised in Greece.

Law 959/1979, which determines a Maritime Company, is approved for all types of ships.

There is no specialized regime regarding SSS and the provision of specific incentives. Major problem deriving from legislation are manning conditions.

Yachting and Marinas

Greece has specific legislative regime regarding professional leisure boats. This consists of the Laws 2743/1999 which provides the general framework and procedures of licensing of boats, chartering, crew requirements and other relevant issues; Law 3182/2003 which describes the legal form of companies for professional leisure boats. During the last two years there is an ongoing effort for reforming the legislative regime of yachting, in order to remove bureaucratic procedures and expand the activity. Up to date there has been prepared a draft of the new framework but has not been approved and voted by Greek Parliament. Regarding marinas the recent Law 4179/2013 refers to the operation of touristic ports and the location of marinas.

It is noted that Greece at the end of the 90's created the legislative framework for spatial planning (L. 2742/1999) which was amended in 2011 from the paragraph 41 of L. 4030/2011 for integrating the management of maritime space, through the coordination and harmonization of policies, programs and investments for the development of economic and other sport and leisure activities occurred from different entities in the same region, aiming at protecting marine ecosystem and promoting the integrated and sustainable development. The national framework consists of the General Framework for Spatial Planning and Sustainable Development, Special Framework for Spatial Planning and Sustainable Development (which specialized the guidelines of the General Framework regarding the sectors of national importance, and thus there are Special Frameworks for Renewable Sources of Energy, Tourism and Aquaculture) and Regional Frameworks for Spatial Planning and Sustainable Development.

5. Growth drivers and barriers to growth for the 6 most promising marine and maritime activities

The table below provides an overview of growth drivers and barriers to growth summarising both benchmark and SWOT analysis.

Table 9 - Growth drivers and barriers to growth for Marine aquaculture

MARINE AQUACULTURE	Growth drivers	Barriers to growth
Maritime research	<ul style="list-style-type: none"> - Institute of Aquaculture within the Hellenic Center for Maritime Research; - Significant number of research programs focused on aquaculture; - Infrastructures for experiments and pilot applications - EU co-funded research programs - Participation to research projects 	Only private funding
Development and innovation	<ul style="list-style-type: none"> - Significant number of applied research in the field of aquaculture ; - Involvement of the private sector in pilot projects; - Certifications; - Research on the diversification of the production, improvement and modernization of currently applied cultivation methods. - New markets for exports 	<ul style="list-style-type: none"> - Difficulties to obtain licences - Current economic environment - Lack of coordinated promotional campaign with export orientation - Competition from non EU countries which face lower labour cost conditions - Lack of level playing field
Access to finance	<ul style="list-style-type: none"> - Leading companies listed in the Athens Stock Exchange; - Incentives for investors; - Establishment of a national agency for investment; - Possibility of public funding through the EFF; 	<ul style="list-style-type: none"> - Difficult access to private funding for small operators; - Red tape for financial public support;
Smart infrastructure	<ul style="list-style-type: none"> - Improvement of the road network; - Research on the diversification of infrastructures adopted to environmental characteristics 	No barriers identified
Maritime clusters	<ul style="list-style-type: none"> - Federation of Greek Maricultures - Pan-Hellenic Federation of small-medium maricultures 	<ul style="list-style-type: none"> - No related maritime cluster - Lack of cooperation among producers for the development of common promotional activities to new markets
Education, training and skills	<ul style="list-style-type: none"> - Improvement of the basic level of education for the new generation entering the labor market; - Specialised degrees in universities and technological educational institutes; - EU-funding for the creation of training programs and life-long education programs 	<ul style="list-style-type: none"> - Level of education slightly below EU standards;
Maritime spatial planning/integrated coastal zone management	<ul style="list-style-type: none"> - Law of spatial planning and sustainable development and common Ministerial Degree for spatial planning for aquaculture - Areas of Organized Development of Aquaculture Activities 	<ul style="list-style-type: none"> - No clear line regarding the integration of aquaculture in maritime spatial planning;
Integrated local development	<ul style="list-style-type: none"> - Regional provisions for the development of new farms and the extension of existed ones 	<ul style="list-style-type: none"> - Not included in integrated local development initiatives;
Public engagement	<ul style="list-style-type: none"> - Industry recognised as a strategic sector; - Research; - Promotion; 	<ul style="list-style-type: none"> - Red Tape and large number of co-responsible services - Lack National promotion plan to new markets

Table 10 - Growth drivers and barriers to growth for Deep-sea shipping

DEEP SEA SHIPPING	Growth drivers	Barriers to growth
Maritime research	Experienced Laboratories in the Universities of the Aegean and of Piraeus (shipping departments) the National Technical University of Athens, Private initiatives and Funds for Maritime Research (especially through Scholarships)	<ul style="list-style-type: none"> - Only State Universities show a systematic and continuous support for Maritime Research. These Universities are now poorly funded due to the ongoing economic crisis of the country - Underdeveloped private institutes or Bodies of Maritime/ Marine education or research - Extremely limited and not well organized or systematic private funding for maritime research.
Development and innovation	Strong links with international classification societies and ship building/ ship repair yards of international calibre lead Greek Ship-owners to possess today not only a strong modern fleet but also a wealth of knowledge on all aspects of shipbuilding and maintenance technology	The Greek ship repair industry is in an unprecedented crisis due to various internal and external reasons. Greek owners seem distracted by this uncompetitive and somewhat problematic sector that cannot be supported anymore by State funding.
Access to finance	<ul style="list-style-type: none"> - Bank loans. Good relations with bankers. New developing and constructive relations with Chinese banks. - Stock exchange markets(NYSE, NASDAQ) 	<ul style="list-style-type: none"> - Over exposure to the banking system and its shortcomings - The ongoing crisis in the banking sector of Greece and Europe and the curtailing of new loans do not allow new players to appear and older ones with small fleets to modernize their vessels. - The conventional nature and strategy of most Greek Ship-owners do not allow them to explore new methods of financing.
Smart infrastructure	Good general infrastructures (energy, tlc, etc.)	<ul style="list-style-type: none"> - Insufficient rail and road public transport - Present political instability in Greece and the Balkan states - Fragile diplomatic relations of Greece and its neighbouring States - Escalating corruption and white collar crime in the country, mostly due to the ongoing crisis - Major strikes and social unrest
Maritime clusters	<ul style="list-style-type: none"> - Large number of internationally acclaimed companies - Favourable tax regime - Strong international networks - Excellent geographical vicinity of companies in Attica - Major international exhibitions, conferences and Fairs held systematically in Attica 	<ul style="list-style-type: none"> - Absence of local demand of its services - Weak linkage with related and supporting industries - Present financial instability and insecurity of the wider maritime cluster (not including ship owners/ managers) - Weak support by the State in the support and creation of a national body that would organize the country's maritime clusters
Education, training and skills	<ul style="list-style-type: none"> - Well respected public and State funded Universities and Maritime Academies. - Public and Private Maritime Museums - State Funded continuous education and accreditation centres (i.e. KESEN) which provide post training to the seafarers, fully implementing the standards of STCW /78, as amended. - Continuous efforts have been carried out to deploy economic resources needed to ensure the fulfillment of higher education standards through national or European programs. 	<ul style="list-style-type: none"> - Poorly funded State Universities - Limited private initiatives that do not enjoy the support of the Greek State - Merchant Marine Academies are until today only public and State and dependent from the Ministry Funded thus experiencing enormous difficulties both in funding and technological and educational modernization - Public Maritime Museums are underfunded - Continuous education and accreditation in the Marine Community is managed by the Greek State with all expected difficulties and shortcomings
Maritime spatial planning	Not considered as necessary at this stage, given the lack of real needs and the long, extensive coastline of the country	
Integrated local development	<ul style="list-style-type: none"> - Major contributions by ship-owners in their homelands including: Property development, Hotel/ Tourism expansion - Ship-owners have also mainly supported through their financial involvement the following sectors: Banking, Airline Industry, Coastal Shipping - Ship-owners have also supported through non for profit activities: Centres for education, Health 	Political instability and the fragile economic environment of the country has led many investors to flee the country

DEEP SEA SHIPPING	Growth drivers	Barriers to growth
	management and Hospitals Centres of research, art, sports and education (i.e. Museums, Concert Halls, Art Establishments, Sports facilities etc)	
Public engagement	<ul style="list-style-type: none"> - Absence of State intervention - Favourable tax system 	<ul style="list-style-type: none"> - Insufficient political vision and insight by the State for attracting foreign maritime management companies - Political instability and uncertainty - Bureaucracy and Corruption

Table 11 - Growth drivers and barriers to growth for Cruise tourism

CRUISE TOURISM	Growth drivers	Barriers to growth
Maritime research	Universities and laboratories conduct research in all fields of cruise tourism (economic, social, environmental and technical)	<ul style="list-style-type: none"> - Lack of adequate data for planning and monitoring the industry - Limited resources
Development and innovation	<ul style="list-style-type: none"> - Significant contribution to regional development, enhancement of local activities - Participation of stakeholders to public debate. 	No clear vision regarding the development of regional sectors and lack of adequate resources for promoting the sector
Access to finance	<ul style="list-style-type: none"> - EU funding for the construction of projects - PPP regime 	Limited sources from ports and municipalities to invest on the multiple sub-components of cruise sector such as infrastructures, services and promotion
Smart infrastructure	Development of smart applications for passengers service	<ul style="list-style-type: none"> - Limited applications to major ports and cities - High cost and limited resources for developing smart infrastructures
Maritime clusters	<ul style="list-style-type: none"> - There is the cluster of cruise ports operating within the Hellenic ports Association - There are relevant cruise associations aiming – among other objectives – to network with the major stakeholders 	<ul style="list-style-type: none"> - Coordination gap among major stakeholders for the developing common activities - Lack of an institutional body for organizing the clustering of sector actors. - Lack of funding for promoting and facilitating the clustering of the actors
Education, needs in training and skills	<ul style="list-style-type: none"> - There are Summer schools & seminars organized mostly from academic institutes - Adequate number of universities and polytechnic universities 	<ul style="list-style-type: none"> - Lack of vocational schools for training seafarers based on the demands of contemporary cruise - There is not a specialized department in a University for cruise studies- within maritime and tourism departments
Maritime spatial planning	<ul style="list-style-type: none"> - Regional planning for cruise activity mostly within port areas 	<ul style="list-style-type: none"> - No spatial planning regarding cruise activity - SMP under development in national level
Integrated local development	<ul style="list-style-type: none"> - Cooperation of port authorities and municipalities for the development of common projects for enhancing development and increase the synergies between cruise sector and local activities - Participation to projects and common actions for development of cities 	<ul style="list-style-type: none"> - Lack of coordination of actions between policy planning authorities and the stakeholders of the market - Limited actions in national level - Environmental pressures - Congested destinations - Awareness from local communities - No quotas exists for regulate the activity
Public engagement	<ul style="list-style-type: none"> - Legislative regime for the promotion of cruise industry- No intervention. - Participation of local authorities and chamber of commerce to the provision of initiatives for supporting region cruise development - Involvement of local authorities to development 	<ul style="list-style-type: none"> - Concerns about the environmental impacts of the activity, especially in small island destinations - Opposition of specific groups to legislative changes - Awareness on the impacts of the activity and its sustainable character

Table 12 - Growth drivers and barriers to growth for Coastal tourism

COASTAL TOURISM	Growth drivers	Barriers to growth
Maritime research	University departments and laboratories conduct research on coastal tourism related issues	<ul style="list-style-type: none"> - Limited financial resources for extended research - Limited focus on sea dimension
Development and innovation	<ul style="list-style-type: none"> - Development of new touristic products on the basis of cultural and natural experiences - Environmental & cultural protection policies 	Lack of resources for supporting regional programs for innovation and scattered measures
Access to finance	<ul style="list-style-type: none"> - Due to economic situation companies face constraints of getting finance - Access to finance through EU programs - Public support 	<ul style="list-style-type: none"> - Limited ability from private sector and scarce liquidity - Due to crisis there is difficulty in attracting foreign investments - Lack of capital access
Smart infrastructure	<ul style="list-style-type: none"> - Good general infrastructure - Suitable energy and telecommunication infrastructure 	<ul style="list-style-type: none"> - No extended applications - Limited financing for the development of smart infrastructures - Weak road and rail and maritime infrastructure.
Maritime clusters	Cooperation of tourism associations with the corresponding of shipping in issues of common interest	Lack of cooperation between SME
Education, needs in training and skills	<ul style="list-style-type: none"> - Advanced schools of tourism education; - Vocational schools and institutes of training; - Schools of tour guides - Good quality of tourism education 	<ul style="list-style-type: none"> - Requires modernization of schools - Establishment of relevant university department
Maritime spatial planning	Spatial planning as a requirement of national law.	Lack of maritime spatial planning.
Integrated local development	<ul style="list-style-type: none"> - Interconnection of the offered tourism services and products with the local production and other activities - Good urban planning. 	<ul style="list-style-type: none"> - Local awareness on impacts and alternative activities developed in each area - Public debates mainly on environmental issues
Public engagement	<ul style="list-style-type: none"> - Participation of municipalities, chambers and other local authorities to the promotion of regional sector - Good marketing from local public authorities. 	<ul style="list-style-type: none"> - Not adequate incentives (e.g financing) - Bureaucracy

Table 13 - Growth drivers and barriers to growth for Short-sea shipping

SHORT SEA SHIPPING	Growth drivers	Barriers to growth
Maritime research	<ul style="list-style-type: none"> - Research on technological and operational applications - High involvement of universities in EU-funded R&D projects 	<ul style="list-style-type: none"> - No access to public funding - Lack funding due to economic recession
Development and innovation	Private initiatives on a prototype of hull of multipurpose of short-sea shipping vessel.	Legislative barriers
Access to finance	International relations facilitate funding opportunities	<ul style="list-style-type: none"> - No incentives from the side of state for the renewal of aged fleet - Difficulties of raising capital for the acquisition of new vessels
Smart infrastructure	Good general infrastructure	High costs, non cost-effective
Maritime clusters	<ul style="list-style-type: none"> - Promotion centre of SSS; - Strong links with other maritime actors - Significant number of companies offering quality services - Port development and reform of the Greek port system 	<ul style="list-style-type: none"> - Non established maritime cluster
Education, needs in training and skills	<ul style="list-style-type: none"> - Maritime departments in universities; - Marine Academies - High level professional training - Continuous efforts have been carried out to deploy economic resources provided by national or European funds - In the context of attracting new seafarers for the maritime profession, there has been a drastic increase in recent years in the entrants of Merchant Marine Academies. 	<ul style="list-style-type: none"> - Lack of sufficient funding for supporting marine academies –limited private interest
Maritime spatial planning		No maritime spatial planning
Integrated local development	<ul style="list-style-type: none"> - Relation among ports and cities - Strong relations - EU cohesion policy 	<ul style="list-style-type: none"> - Lack of coordination between stakeholders - Limited public funding and initiatives
Public engagement	Absence of intervention	Flagging out of the national registry

Table 14 - Growth drivers and barriers to growth for Yachting and marinas

YACHTING AND MARINAS	Growth drivers	Barriers to growth
Maritime research	Universities and technological institutions conduct relevant research	<ul style="list-style-type: none"> - Limited funding - No government programs related to maritime research
Development and innovation	<ul style="list-style-type: none"> - Large professional leisure fleet - Expertise and specialized services - New legislative regime for facilitating new infrastructures 	<ul style="list-style-type: none"> - Strong competition from neighbour countries - Bureaucratic procedures
Access to finance	<ul style="list-style-type: none"> - EU Funding opportunities - Public support 	<ul style="list-style-type: none"> - Limited public funds - Difficult access to credit
Smart infrastructure	<ul style="list-style-type: none"> - Existence of marinas and touristic ports - Existence of shipyards - Public support for the development of a network of marinas 	Increased rates of growth regarding infrastructures from neighbouring countries
Maritime clusters	<ul style="list-style-type: none"> - Existence of yacht and marina associations - Existence of shipyard districts 	Non existence of relevant cluster
Education, needs in training and skills	<ul style="list-style-type: none"> - Marine academies - Polytechnic schools and universities - Private training centers - Technical institutes - Know how 	No interconnection with touristic education
Maritime spatial planning	<ul style="list-style-type: none"> - Legislation regarding the location of marinas - Marine protected areas 	Under development
Integrated local development	<ul style="list-style-type: none"> - Participation of regional authorities to development planning - Regional efforts for the promotion of the activity 	<ul style="list-style-type: none"> - Limited financial resources - Red tape - Lack of transport connections
Public engagement	<ul style="list-style-type: none"> - Investment Law - Privatization program - Effective system of safety of navigation 	<ul style="list-style-type: none"> - Delays in the completion of projects - Red tape - High tax burdens to yachts owners

6. Analysis of maritime strategies at regional and national level, as well as those under preparation and their links with Smart Specialisation Strategies

The aim of this section is to present strategies related to maritime and marine economic activities in national and regional level. Specifically:

- **National Strategic Plan for Fisheries, 2007-2013:** Strategic Plan describes the priorities of the Greek policy within common fishery policy. National strategy – as presented in OP – is focusing on policies in national and regional level for transforming peripheries to attraction poles for companies and residents.

Main objectives of the National Plan is the support and further enhancement of the sustainability of the fisheries and aquaculture sector, the improvement of the competitiveness of the national sector by promoting innovation and research, facilitating their interconnection, ensuring employment, the protection of marine environment, the investments on viable infrastructures as a precondition for attracting new investments and the improvement of the quality of life. National priorities are aligned with the objectives of Blue Growth related to the fishery sector. More specifically, the Strategy aims at protecting natural resources and generating the conditions for a healthier environment, through a transition from fisheries management policy (based on control) to ecosystem-based management. In this context, specific measures are applied for restructuring and modernizing the fishing fleet and supporting small scale coastal fishing activities. Preservation of the fish stocks is a strategic objective of National Plan.

Moreover, given the growing consumption patterns of fishery products, the National Strategy prioritizes the promotion and the sustainable development of the aquaculture sector by suggesting measures related to the construction, expansion and modernization of hatching units, the establishment and expansion of new farms and the support of SME's, while taking into consideration working conditions and the improvement of public and animal health , encouraging good environmental practices and transfer of know-how.

Regarding, the Blue Growth's objectives of increasing the attractiveness of coastal areas and the diversification of coastal communities' activities, national measures prioritize the improvement of the attractiveness of the fisheries areas with specific interventions and measures regarding the reinforcement of basic infrastructures and the restructuring and re-orientation of the productive base of these areas, the development of coastal areas with the establishment of programs for tourism fisheries, ecotourism etc and the encouragement of developing aquaculture activities in problematic regions of the country (island, border and disadvantageous regions).

- **“Determination of the Strategic Objectives of the Ministry of Shipping and Aegean, 2013”(Minister's Decision no 5511.1/01/13)** : Minister's Decision no 5511.1 determines the priorities of country's maritime administration and particularly set the objectives of enhancing the impact of Greek shipping to national economy, the protection of national borders, the protection of the environment and the development of insular areas. Policy concerns all kind of maritime activities deep sea, short-sea shipping and coastal shipping.

Coastal shipping is directly connected with island development. Connectivity constitutes a basic element of islands' attractiveness, which affects the growth potentials of remote areas. In the same context national policy links short sea shipping with the potential growth of coastal areas while ensuring the markets with products of mass products. Protection of the marine environment is another priority directly linked with the provision of a healthier environment. In this context there is specialized planning regarding the confrontation of marine pollution, prevention and mitigation of incidence of pollution as well sampling and analysis of water quality.

- **“National Strategic Reference Framework, 2007 – 2013 and Tourism Policy”:** Tourism Policy developed within the National Strategic Reference Framework provides the priorities for the

development of the Greek tourism aiming at diversifying the domestic tourism offer by promoting natural and cultural resources.

More in detail, objectives of the national tourism policy consistent with Blue Growth objectives are (i) strengthening of entrepreneurship by facilitating investments, (ii) enhancement of the employment, (iii) mitigation of seasonality and (iv) diversification of the tourism offer. These objectives are aimed at increasing the growth potential of the activities and the attractiveness of the coastal areas.

Sustainability of the sector is a priority in the Strategy: the protection and commercial exploitation of natural resources - minimizing the environmental impacts of the activity - are promoted within specific programs such as the "Green Tourism Act" or the "Alternative Tourism" Act. The first one, among all objectives, is aimed at upgrading the conditions and operations of companies' management by limiting the use of energy and water (e.g. utilization of renewable energy sources, waste reduction projects, projects for enhancing social responsibility). The second one support investment programs for the development of forms of special tourism, promoting natural and cultural resources.

- **"National Port Strategy 2013-2018"**: the port strategy aims at developing and integrating the national port system in order to improve the competitiveness of the national economy and enhance the territorial cohesion. Regarding the Blue Growth objectives, the national port policy is aligned with the "Increase the growth potential of activities" and the "Increase the attractiveness of coastal areas" since the OP of accessibility focuses on the construction of new infrastructures and the improvement of present ones for enhancing the inter-country connectivity and intermodality as precondition for regional development. Given the multi-island morphology of the country, maritime transport and port infrastructures are essential for the viability of the islands, while considerable impact has on touristic development.

The Greek Law 4150/2013 sets a new framework for:

- the restructuring and rationalization of the Greek port system;
- the adjustment and improvement of port infrastructures and services;
- the attraction of private investments in the port sector through long-term concessions on infra- and superstructures;
- the establishment of a regulatory authority for ports in order to ensure healthy competition in this field and provide market access to all players;
- the enhancement of port security through the implementation of the ISPS code across all ports.

Furthermore, the development of the Greek port system will take place in the following years within the framework of the Trans-European Transport Network (TEN-T) currently under review. Greek ports will try to find their place on the European and global arena by attracting transport flows as part of an intermodal transport system and logistics chains in Europe, its wider neighborhood and the world. Moreover, Greek ports will operate and develop in the future within the framework of the new European port policy, which will set a totally new scene for the port industry in several relevant fields related to the blue growth.

Core objective of current strategies is the creation of favouring business/investment environment and the enhancement of the competitiveness of the economy. Focus is given on the creation of new infrastructures (since the lack or degradation of infrastructures has been identified as a barrier of growth) and the diversification of production. The role of SME's in the development is recognized and supported through operational programmes. Furthermore, environmental parameters are taken into consideration given that qualitative natural resources constitute competitive advantages for many economic activities (coastal tourism, fisheries, yachting, and cruise tourism). Overall evaluation of current strategies emerge the problem of non integration, meaning that most measures and actions are considered as scattered, focusing on single activities, while limited synergies are created across different sectors.

Table 15 - Policies/interventions towards most promising marine and maritime activities and the Blue Growth objectives

Level	Strategies	Objectives	Most relevant and promising maritime economic activities	Links to BG Objectives	
National	National Strategic Plan for Fisheries, 2007-2013 Link	<ul style="list-style-type: none"> - Protect and preserve fisheries resources through a transition from fisheries management policy based on control to ecosystem-based management; - Restructure and modernize fishing fleet - Support small-scale coastal fishing; - Improve age structure of employment - Promote diversification of activity; - Support populations dependant on the fisheries sector in coastal and isolate areas - Sustainable development of aquaculture and improvement of the competitiveness of products and enterprises - Increase of production and improvement aquaculture products' quality, working conditions, sanitation and health - Protection of the environment and preservation of nature and genetic diversity - Improve public health and animal health 	Fishing for human consumption	Contribution to the overall improvement in human diet and more quality merchandise; Diversification of coastal communities activities; Preservation of fish stock- sustainable aquaculture; Promote aquaculture based and the exchange of best practice;	Aquaculture
			Marine aquaculture	Health environment; Increase the growth potential of activities; Increase the attractiveness of coastal areas	Maritime, Coastal and Cruise Tourism
National	Strategic Objectives of the Ministry of Shipping and Aegean, 2013 Link (in Greek)	<ul style="list-style-type: none"> - Re-planning shipping for contribution to the national economy; - Utilization of maritime funds; - Ensuring safe navigation; - Protection of sea national borders; - Development of Greek islands; - Protection of sea environment. 	Short-sea shipping	Enhance efficiency of harvesting the European energy resources Minimize land-use requirements of the power sector Reduce the European greenhouse gas emissions	Blue energy
			Deep Sea Shipping	Provider of mass market products High added value specialized products	Blue Technology
			Passenger Ferries services	Health environment Increase the growth potential of activities Increase the attractiveness of coastal areas	Maritime, Coastal and Cruise Tourism
National	National Strategic Reference Framework, 2007 – 2013 and Tourism Policy Link	<ul style="list-style-type: none"> - Diversify the country's touristic product - Enriching touristic product - Promoting the country's touristic product - Developing a functional and modern institutional framework for tourism and alternative forms of tourism; - Strengthening entrepreneurship by facilitating investments and utilising the funds of NSRF; - Investing in human resources; - Ensuring high quality of infrastructure and services. 	Coastal Tourism	Health environment Increase the growth potential of activities Increase the attractiveness of coastal areas	Maritime, Coastal and Cruise Tourism
			Cruise Tourism Yachting and Marinas		
National	National Port Strategy 2013-2018 www.hcg.gr	<ul style="list-style-type: none"> - Overhaul and modernization of the institutional framework for the organization, administration and supervision of the port system - Enhancement of the role of the ports in order to upgrade inland maritime transport and to strengthen local economies - Increase of the share of Greek ports in the international maritime tourism sectors (cruise, tourist ports, marinas - Improvement of their position in the international market. 	Deep Sea Shipping	Enhance efficiency of the existing energy resources Minimize land-use requirements of the power sector Reduce the European greenhouse gas emissions Enhance environmental performance and promote sustainability Increase the growth potential of activities Increase the attractiveness of coastal areas	Blue Energy
			Short-sea shipping		
			Passenger Ferries services		
			Cruise Tourism Yachting and Marinas		Maritime, Coastal and Cruise Tourism

The table below illustrates the interconnections with Smart Specialization strategies, encompassing all 12 strategies' horizontal directions. **The links of the national strategies with the Smart Specialisation Strategies are conducted in the context of how objectives and corresponding measures - as stated in the policy documents - are aligned and can contribute to the objectives of smart specialization.** According to the table below:

- **The National Strategic Plan for Fisheries, 2007-2013** presumably is connected with the "Innovation friendly business environments for SMEs" of Smart Specialisation Strategies, since the Plan provides funding mechanism for the support and modernization of small and very small companies. It is also connected with "Green growth" since policy measures aim at achieving the sustainable development of the sector focusing on the application of methods which minimize or improve the positive environmental effects compared to common applied practices, enhance the use of technological innovative methods which do not increase fishery effort, support the use of new forms of energy in the mainland facilities of aquaculture plants, intensify the monitoring controls for the environmental conditions and the promotion of biological products. National strategy is also referred to the development and enhancement of collective organizations but has no clear direction toward supporting clustering in the sector. The national plan makes reference to the mobilization of private investments but lacks of strong measures or incentives for facilitating research and its links with the market. Moreover, the plan does not anticipate specific actions for the involvement of stakeholders to policy making processes.
- **Determination of the Strategic Objectives of the Ministry of Shipping and Aegean, 2013"(Minister's Decision no 5511.1/01/13)** it is predominately connected to the "Internationalization" and "Green Growth" objectives. Legislative reforms derived from policy priorities and related to the creation of a more attractive business environment aim enhancing the Greek flag, while high standards of safety contribute to the qualitative image of Greek shipping. Moreover, policy priorities are consistence with Green Growth since a number of measures and actions are realized in relation to the training of personnel and exercises for combating marine pollution.
- **National Strategic Reference Framework, 2007 – 2013 and Tourism Policy** is connected with "Cultural and creative industries" by promoting natural and cultural reserves to prolong tourism period and to create alternative forms of tourism products. More specifically, the state aid program "Alternative Tourism" aims at using the comparative advantages of each destination for developing differentiated tourism products while maintaining cultural and natural resources of the regions. Also, strategy promotes "Green Growth" in the sector prioritizing green investments and encouraging the application of environmental management standards. Moreover, environmental responsible businesses are subsidised in terms of advertisement and promotion. "Internationalization" is satisfied within national tourism policy since there are specific campaigns for the promotion of the Greek tourism product to international markets. Furthermore, current policy anticipated monitoring processes and promotes marine research and innovation.
- **National Port Strategy 2008-2013:** it is connected to "Internationalization" since major objective of the strategy is the enforcement of the role of Greek ports to international maritime transport system. In particular, through operational programs and other kind of projects, the aim of national policy is to ensure the viability, reliability and competitiveness of maritime transport system. In this context, a number of interventions are planned related to the specialization of infrastructures, the concession program, the administrative structures, the safety requirements, the application of e-services etc.

In general, **national strategies are connected with a wide range of Smart Specialisation Strategies objectives.** Taking into consideration the current economic environment most policies are connected to internationalization and green growth. As illustrated there is not strong connection to research infrastructures, centers of competence and science parks, universities-enterprise cooperation, cluster and key enabling technologies. Especially, regarding national investments on R&D, it is noted that these equals to 0,6% of national GDP, which means that is less than the European average. Based on the research

realized by Reid et al., (2012)⁴⁵ regarding smart specialization, it was suggested that regional innovation policy has failed mostly due to weak support and non-systemic governance. Major concerns are the problem of mobilizing private investments, the fragmented “project-based” approach and the no linear connection between research and commercial applications.

⁴⁵ Reid A., N. Komninos, J-A. Sanchez-P. P Tsanakas (2012) RIS3 National Assessment Greece: Smart specialisation as a means to foster economic renewal. Report for the European Commission, Directorate-General for Regional Policy, Brussels.

Table 16 - Policies/interventions towards most promising marine and maritime activities and the Smart Specialisation Strategies⁴⁶

Level	Strategies	Objectives	Most relevant and promising maritime economic activities	Links to Smart Specialisation Strategies
National	National Strategic Plan for Fisheries, 2007-2013 Link	<ul style="list-style-type: none"> - Protect and preserve fisheries resources through a transition from fisheries management policy based on control to ecosystem-based management - Restructure and modernize fishing fleet - Support small-scale coastal fishing - Improve age structure of employment - Promote diversification of activity - Support populations dependant on the fisheries sector in coastal and isolate areas - Sustainable development of aquaculture and improvement of the competitiveness of products and enterprises - Increase of production and improvement aquaculture products' quality, working conditions, sanitation and health of men or animals - Protection of the environment and preservation of nature and genetic diversity - Improve public health and animal health 	<p>Fishing for human consumption</p> <p>Marine aquaculture</p>	<p>Innovation friendly business environment for SMEs</p> <p>Green growth</p> <p>Internationalization</p>
National	Strategic Objectives of the Ministry of Shipping and Aegean, 2013	<ul style="list-style-type: none"> - Re-planning shipping for contribution to the national economy; - Utilization of maritime funds; - Ensuring safe navigation; - Protection of sea national borders; - Development of Greek islands; - Protection of sea environment. 	<p>Short-sea shipping</p> <p>Deep Sea Shipping</p> <p>Passenger Ferries services</p> <p>Cruise Tourism</p>	<p>Internationalization</p> <p>Green growth</p> <p>Social Innovation</p>
National	National Strategic Reference Framework, 2007 – 2013 and Tourism Policy http://www.espa.gr/elibrary/NSRF%20document_english.pdf	<ul style="list-style-type: none"> - Diversify the country's touristic product - Enriching touristic product - Promoting the country's touristic product - Developing a functional and modern institutional framework for tourism and alternative forms of tourism - Strengthening entrepreneurship by facilitating investments and utilising the funds of NSRF - Investing in human resources - Ensuring high quality of infrastructure and services 	<p>Coastal Tourism</p> <p>Cruise Tourism</p> <p>Yachting and Marinas</p>	<p>Innovation friendly business environment for SME's</p> <p>Green growth</p> <p>Social innovation</p> <p>Cultural and creative industries</p>
National	National Port Strategy 2013-2018 www.hcg.gr	<ul style="list-style-type: none"> - Overhaul and modernization of the institutional framework for the organization, administration and supervision of the port system - Enhancement of the role of the ports for upgrading inland maritime transport and strengthening local economies - Increase n of the share of Greek ports to the international maritime tourism sector (cruise, tourist ports, marinas) - Improvement of their position in the international market 	<p>Deep Sea Shipping</p> <p>Short-sea shipping</p> <p>Passenger Ferries services</p> <p>Yachting and Marinas</p>	<p>Enhance efficiency of harvesting the European energy resources</p> <p>Minimize land-use requirements of the power sector</p> <p>Reduce the European greenhouse gas emissions</p> <p>Health environment</p> <p>Increase the growth potential of activities</p> <p>Increase the attractiveness of coastal areas</p>

⁴⁶ Smart Specialisation Strategies (S3) used for this logical analysis have been defined on the basis of the S3 horizontal approaches (or RIS horizontal priorities), as defined in the Guide to Research and Innovation Strategies for Smart Specialisation, available at http://s3platform.jrc.ec.europa.eu/en/c/document_library/get_file?uuid=e50397e3-f2b1-4086-8608-7b86e69e8553. See the Country fiche guide for more details at <http://www.cogeaspa.it/blue-growth-study/country-fiches/?lang=en>.

Sources and references

This Country fiche has been compiled according to a common methodology adopted in the framework of this Study and more specifically in Task 2.

A “Country fiche Guide” and a detailed methodology (“*Methodology for identifying and estimating Maritime Economic Activities using NACE and other data*”) are available at <http://www.cogeaspa.it/blue-growth-study/country-fiches/?lang=en>

Sources

Bellona Environmental CCS Team (2010), A Bridge to a greener Greece. A realistic assessment of CCS potential. http://www.bellona.org/filearchive/fil_BELLONAwEBFINAL.pdf

Blue Flag: <http://www.blueflag.org/menu/awarded-sites/2013/northern-hemisphere/greece>

Boston Consulting Group, (2013), Impact Assessment of the Shipping Cluster on the Economy and Society. <http://www.bcg.gr/documents/file135208.pdf>

CESA-Community of European Shipyards’ Association, (2011), Annual Report 2010-2011.

Christofilogiannis P., (2011), Greek Mariculture 2011: 30 years of experience the cornerstone for building the vision for 2030. http://www.aquark.gr/index.php?option=com_content&view=article&id=157:article-on-greek-mariculture-2011-in-aquaculture-europe-vol-36-2-june-2011&catid=71:sector&Itemid=276http://www.cesa.eu/presentation/publication/CESA_AR_2010_2011/pdf/CESA%20AR%202010-2011.pdf

Clean SeaNet: <https://csndc.emsa.europa.eu/web/guest>

Diakakis M. (2013), An inventory of flood events in Athens, Greece, during the last 130 years. Seasonality and spatial distribution. *Journal of Flood Risk Management*.

Diakomihalis M.(2007). Greek Maritime Tourism: Evolution, Structures and

DIS4ME: http://www.unibas.it/desertnet/dis4me/land_uses/salinisation_risk_tool.htm

Diakomihalis M. and Lagos D., (2008), Estimation of the economic impacts of yachting in Greece via the tourism satellite account. *Tourism Economics*.

ECOTEC Research & Consulting,,(2006), Employment trends in all sectors related to the sea or using sea resources, Country report-Greece.

http://ec.europa.eu/maritimeaffairs/documentation/studies/documents/greece_employment_trends_en.pdf

Elefsis Shipyards: <http://www.elefsis-shipyards.gr/main.html>

European Cruise Council, (2011), The cruise industry. A leader in Europe's economic recovery.
http://ec.europa.eu/competition/consultations/2012_maritime_transport/euc_2_en.pdf

European Cruise Council, (2012). Contribution of Cruise Tourism to the Economies of Europe 2012 Edition.
<http://www.nee.gr/downloads/175EC%20cruise%20report%202012.pdf>

European Aggregates Association: Estimates of Aggregate Production Data, 2010,
<http://www.uepg.eu/statistics/estimates-of-production-data/data-2010>

FAO-Food and Agriculture Organization: <http://www.fao.org/countryprofiles/index/en/?iso3=GRC>

Foundation for Economic and Industrial Research (2012), The impact of tourism in Greek Economy (in Greek) <http://www.hatta.gr/LinkClick.aspx?fileticket=tMAqg2RKluE%3D&tabid=196&language=en-US>

Gaaloul N., Pliakas F., Kallioras A, Schuth C. and Marinos P. (2012), Simulation of Seawater Intrusion in Coastal Aquifers: Forty Five-Years Exploitation in an Eastern Coast Aquifer in NE Tunisia.

Greek Biotope/Wetland Center Goulandris natural History Museum:
http://www.ekby.gr/ekby/en/EKBY_Profile_en.html

<http://benthamsience.com/open/tohydj/articles/V006/SI0023TOHYDJ/31TOHYDJ.pdf>

Hellenic Chamber of Shipping -HCS (2012), Research for the importance of recreational boating in maritime tourism and national economy. (in Greek) http://www.nee.gr/downloads/184STUDY_ON_YACHTING.pdf

Hellenic Republic Asset Development Fund: <http://www.hradf.com/en/infrastructure/small-ports/small-ports-alimos-hydra-poros-epidavros>

Hellenic Statistic Authority (EL.STAT) <http://www.statistics.gr>

HWEA (2012), Wind Energy Statistics. <http://www.eletaen.gr/drupal/sites/default/files/Statistics.pdf> JRC Scientific and Technical Reports, (2012), Economic Performance of the EU Aquaculture Sector (STECF-OWP-12-03).

ICAP: <http://www.icap.gr/Default.aspx?id=8424&nt=146&lang=2>

Invest In Greece Agency : <http://www.investingreece.gov.gr>

Icaza L., Marzo S., Sahbaz and Saraavelos G. (2009), The Greek Shipping Cluster. Harvard Business School
http://www.isc.hbs.edu/pdf/Student_Projects/Greece_Shipping_2010.pdf

Institute of Energy for South East Europe (2012) <http://www.iene.gr/category.asp?cid=5&lng=1>

http://stecf.jrc.ec.europa.eu/documents/43805/218925/2012-03_STECF+EWG+11-14+-+EU+Aquaculture+Sector_JRC70424.pdf

JRC Scientific and Policy Reports (2012), The economic performance of the EU Aquaculture Sector-2012 exercise (STED-13-03). http://stecf.jrc.ec.europa.eu/documents/43805/410684/2013-04_STECF+13-03+-+EU+Aquaculture+sector_JRC81620.pdf

Lavrion Port Authority S.A.: <http://www.oll.gr/>

MackKisney & Company (2012), Greece 10 Years Ahead. Defining Greece's new growth model and strategy. Executive summary.

http://www.mckinsey.com/locations/athens/GreeceExecutiveSummary_new/pdfs/Executive_summary_English.pdf

Medbio: <http://www.biotechgreece.com/>

Ministry of Shipping, Maritime Affairs and the Aegean: <http://www.yen.gr>

Ministry of Environment, Energy and Climate Change:
<http://www.ypeka.gr/Default.aspx?tabid=37&locale=en-US&language=el-GR>

National Bank of Greece, (2012), Sectoral Study (in Greek).
http://www.nbg.gr/wps/wcm/connect/445a285d-fef6-4f6d-a3d7-c5183d8fd270/Cruise_August_2012.pdf?MOD=AJPERES&CACHE=NONE

Petrofin Research, (2012), Greek fleet statistics. http://www.petrofin.gr/Upload/2ndPart-2012-Petrofin_Research-GreekFleetStatistics.pdf

Policy Report Corporation, (2009), The economics of climate change adaptation in EU coastal areas. Country overview and assessment.
http://ec.europa.eu/maritimeaffairs/documentation/studies/documents/greece_climate_change_en.pdf

Organization for the Planning and Environmental Protection Athens (ORSA), (2013),
<http://www.organismosathinas.gr/Default.aspx?id=77>

Poseidon system: <http://poseidon.hcmr.gr/>

Piraeus Port Authority S.A.: <http://www.olp.gr/en/>

Rafina Port Authority S.A.: <http://www.rafinaport.gr/>

Raptis D. (2012), Study on small desalination units. Autonomous reverse osmosis units and RES. (in Greek).
<http://nemertes.lis.upatras.gr>

Reid A., N. Komninos, J-A. Sanchez-P. P Tsanakas (2012) RIS3 National Assessment Greece: Smart specialisation as a means to foster economic renewal. Report for the European Commission, Directorate-General for Regional Policy, Brussels.

Regional Operational Program of Attica, (2012), Strategic Positions and priorities of Region of Attica. Operational period 2014-2020"Attica 2020+". (in Greek) http://www.pepattikis.gr/home/wp-content/uploads/2013/02/strathgikes_proteraiothtes_20142020.pdf

Research Institute for Tourism (2013), Performance of Greek Tourism and developments in the basic figure of the Greek Hotel Market 2011-2012.
<http://www.grhotels.gr/GR/BussinessInfo/News/Lists/List/Attachments/408/ENG-GreekTourismHotels2013.pdf>

Region of Attica: [http://www.patt.gov.gr/main/index.php?lang=enRegional Operational Program of Attica:](http://www.patt.gov.gr/main/index.php?lang=enRegional%20Operational%20Program%20of%20Attica)
<http://www.attikis.gr/en/Pages/Default.aspx>

SETE- Association of Greek Tourism Enterprises, (2013), Greek tourism: Facts and Figures
<http://sete.gr/fileuploads/entries/Studies%20&%20Publications/EN/FACTS%20%20FIGURES%202013.pdf>

Stefanidaki E. And Lekakou M. (2011), Liberalization assessment: The Greek cruise market. In Tourism: An International Interdisciplinary Journal.

UNCTAD- United Nations Conference on Trade and Development, (2011), Review of Maritime Transport.
http://unctad.org/en/docs/rmt2011_en.pdf

WavePlam: <http://www.waveplam.eu/page/>

Wild G.P. (2012), 'Competing in a Changing World: Outlook for Cruise Tourism to 2020'', Report.

XRTC Business Consultant, (2011), Greek Ferry-Annual Report 2010-2011.(in Greek)
http://www.xrtc.gr/docs/Industry_Reports/2011/XRTC_Greek_Ferry-Annual_Report_2011_EL.pdf