French Marine Economic Data 2013

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Introduction

The maritime economy includes the activities linked to the sea, namely:

- Marine resource extraction: living resources and marine minerals,
- Exploitation of marine space and of physical properties of marine waters (energy plants using marine water as a heat sink, marine renewable energies, submarine cable laying, maritime and coastal construction and public works, maritime transport, Navy),
- Exploitation of seascapes (tourism, leisure, boating),
- Resource processing (of living resources and oil & gas)
- Manufacturing and service industries supplying the above exploitation activities: shipbuilding, ship repair and boat building and their suppliers, oil and gas services, financial services,
- Public services: defence; State intervention at sea and public services to maritime activities and to seafarers; public and private activities contributing to the protection of marine and coastal environment; and public research.

Since 1997, the French Marine Economic Data report, published by Ifremer, includes a set of key sectoral indicators used to value the economic significance of the French marine-related activities in terms of production and jobs, their role in the national economy, their weight in international competition and the importance of non-market public services. The analysis of the marine sectors is carried out mainly at national scale but regional indicators are also presented when they are available. The European dimension of the activities is also taken into account.

The coverage of the marine economy is subject to debates. The delimitation adopted may depend on national specificities. The coverage used in the present report has evolved since the early issues and now includes inland navigation and river works. Conversely, certain key sectors are not included because they raise important problems of data availability, e.g. salt production or bank services. On the basis of the above description, the coverage includes the following sectors:

Industrial sector

- Seafood industy: commercial fisheries, mariculture, seafood trade, seaweed exploitation and processing, seafood processing
- Marine sand and gravel extraction
- Energy production: onshore power plants, marine renewables
- Shipbuilding and repair: merchant and defence shipbuilding, marine equipment, ship repair, boat building
- Marine and river civil engineering
- Submarine cable manufacturing, laying and maintenance
- Oil and gas offshore services
- Coastal tourism
- Maritime transport and inland navigation: seaport and river port services, maritime and river shipping services
- Marine insurance

Non-commercial public sector
- French Navy
- Public intervention at sea and maritime affairs: signalling and rescue, safety at sea and security, seafarer training, social protection
- Protection of coastal and marine environment
- Marine science.

Indicators and sources

The economic indicators used to analyse marine-related activities are sectoral indicators such as turnover, value added, employment, number of enterprises and exportation rate. The public sector is described by budgets, staff number and cost broken down by activities.

- The sectoral indicators provided by the National Institute of Statistics and Economic Studies (INSEE), based on the French classification of economic activities (NAF) are a key statistical information for the assessment of industrial sectors. The NAF provides a sectoral breakdown of activities without double accounts; it permits international comparisons because it is in line with the Statistical Classification of Economic Activities in the European Community (NACE).
- Satellite accounts, e.g. those for transport, tourism and environment, are also useful sources.
- The assessment of certain sectors not identified in the NAF requires using data from industry associations and enterprises.
- The indicators used for international comparisons come from Eurostat, the statistics directorate-general of the European Commission, and from industry associations.
- The contributions of the Navy General Staff and the Maritime Affairs Directorate on the public sector were very helpful and most appreciated, as were those of the Transport Ministry and the different marine science organisations on their respective domains.

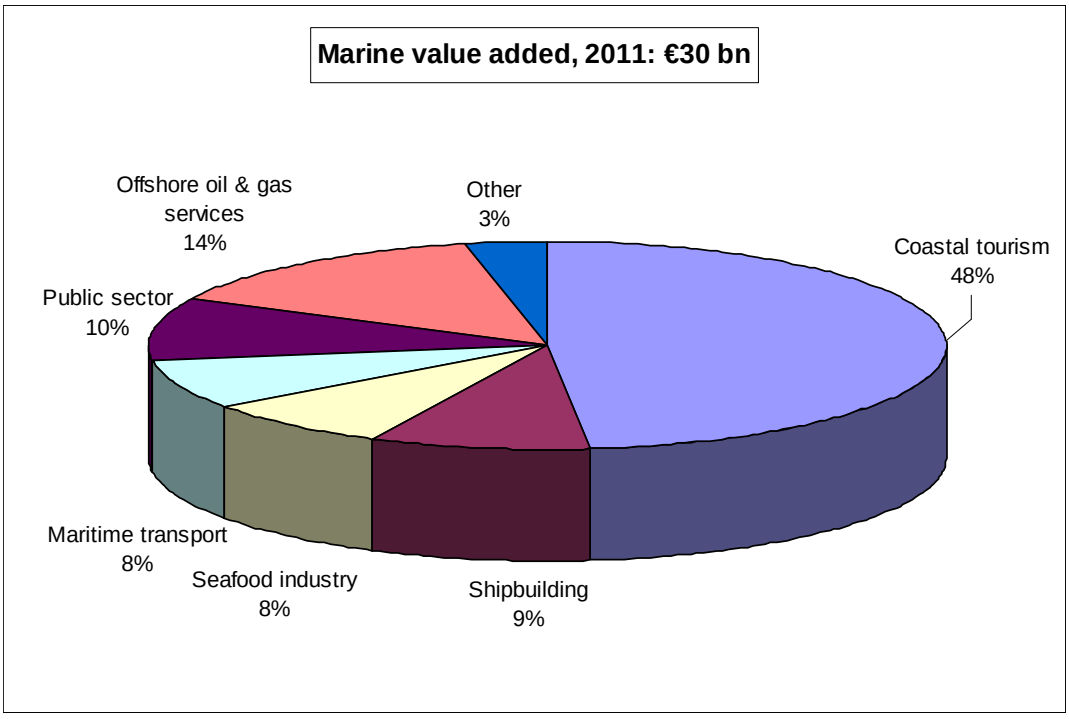
The indicators are presented as short time series for the recent years. Account must be taken of availability delays: a homogeneous update of all of the marine data used in this report can be achieved for year n-2 at best when it is published in the end of year n. Owing to some additional publication delay, the latest common year of the time series presented in this report is 2011.

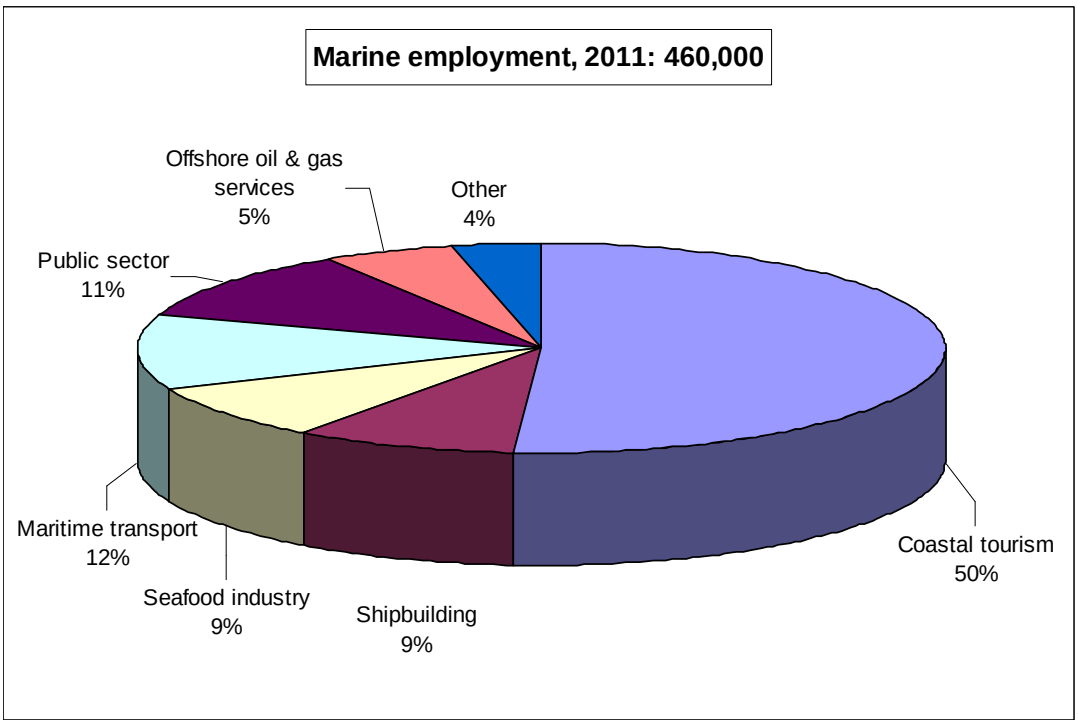
A more important difficulty encountered in preparing an assessment of the national marine economy is that a range of marine sectors are not identified as such in statistical classifications and in national accounts. They are included in broader sectors (e.g. cable manufacturing, oil and gas services, tourism) the marine part of which has to be valued. This valuation requires reliable estimates. The French marine economic data report is periodically updated with the aim to progressively improve the quality and traceability of the marine economy indicators.

French Marine Economic Data 2013: summary

The French marine economy in 2011

- **Value added : €30bn**
- **Employment: 460,000 jobs**





Marine-related activities in France, 2009-2011

Units: million EUR, number of FTEs/jobs

	2009			2011		
	Turnover	Value added	Employment	Turnover	Value added	Employment
Industrial sector		**23 029**	**405 201**		**27 308**	**409 723**
Coastal tourism (1)	**38 400**	**13 700**	**229 400**	**41 700**	**14 600**	**235 500**
Seafood industry (2)		**2 204**	**40 836**		**2 306**	**40 205**
Commercial fisheriees	*1 010*	*626*	*10 900*	*1 051*	*559*	*10 517*
Mariculture	*705*	*396*	*10 000*	*935*	*506*	*9 732*
Wholesale trade (including auctions)	*3 906*	*436*	*7 542*	*3 725*	*434*	*6 145*
Retail trade	*649*	*151*	*2 597*	*919*	*217*	*2 816*
Seafood processing	*3 020*	*595*	*9 797*	*3 412*	*590*	*10 995*
Shipbuilding		**2 043**	**41 192**		**2 747**	**40 379**
Merchant and defence ship building	*3 988*	*661*	*10 228*	*3 840*	*1 143*	*11 379*
Marine equipment (7)	*3 000*	*800*	*18 000*	*3 400*	*950*	*17 700*
Ship repair	*897*	*305*	*5 523*	*911*	*282*	*4 478*
Boat building	*1 040*	*277*	*7 441*	*1 238*	*372*	*6 822*
Maritime and river transport		**1 874**	**54 789**		**2 332**	**53 180**
Maritime and coastal shipping	*9 903*	*4*	*12 956*	*12 963*	*461*	*12 577*
Inland navigation (3)	*653*	*207*	*2 800*	*774*	*234*	*2 983*
Renting and leasing of water transport equipment (3)	*660*	*496*	*6*	*484*	*413*	*24*
Marine insurance (4)	*575*	*150*	*2 677*	*624*	*154*	*2 069*
Sea and river port support services	*1 170*	*548*	*8 606*	*1 261*	*657*	*8 141*
Port handling	*1 339*	*469*	*4 986*	*1 260*	*413*	*4 628*
Other port services (5)	*na*	*na*	*22 758*	*na*	*na*	*22 758*
Marine aggregate extraction (6) (8)	**73**	**26**	**655**	**67**	**22**	**655**
Electricity production (7) (8)	**na**	**na**	**6 518**	**na**	**na**	**9 718**
Maritime and river civil engineering	**1 522**	**578**	**4 742**	**1 391**	**757**	**4 056**
Submarine cables (8)	**1 338**	**254**	**2 069**	**1 104**	**244**	**2 030**
Offshore oil & gas services (8) (9)	**8 200**	**2 350**	**25 000**	**12 500**	**4 300**	**24 000**
Non commercial public sector (10)		**3 093**	**54 962**		**2 944**	**50 673**
Navy		**2 700**	**48 006**		**2 492**	**43 790**
Public intervention at sea, education and social protection		**173**	**3 256**		**165**	**3 101**
Protection of marine environment (11)		**na**	**300**		**na**	**300**
Civil marine science and research		**220**	**3 400**		**287**	**3 482**
TOTAL		**26 122**	**460 163**		**30 252**	**460 396**

(1) Data based on revised tourism satellite accounts.
(2) Employment measured in FTEs.
(3) For river transport: employment as of 2008 instead of 2009. For renting and leasing: all figures as of 2010 instead of 2011.
(4) Revised data based on 2010 taken as the new base year for national accounts.
(5) Number of jobs excluding port authorities, handling, pilotage, berthing and towing services; including consignment.
(6) Includes aggregate extraction and onshore first sorting; includes processing of limestone aggregates; excludes processing of silica aggregates by cement making industry.
(7) Employment for 2012-2013 only.
(8) Employment measured in number of jobs (not in FTEs).
(9) 2009 data is fragile.
(10) Ifremer estimates of value added of public services based on overall staff costs. Data from Navy General Staff, Maritime Affairs Administration, DGITM and research institutes.
(11) Estimated number of staff at Cedre, CELRL and AAMP. Staff costs data not available.
na: not available.

- In the present report, the coverage of marine activities is comparable to that of the 2011 update. However the coverage of wholesale, retail sale and trade has been improved for the seafood industry and maritime transport activities.
- Like in the previous issues, the selected key indicators are: number of enterprises, turnover, value added, employment, export rate. Employment is systematically measured in full time equivalents wherever FTE figures are available, contrary to the previous issues. This creates an inevitable heterogeneity with sectors where employment is measured in number of jobs/staff as of end of year.
- The 2009 data presented above have been revised as compared to the previous update, to make 2009 and 2011 results fully comparable.
- The breakdown of value added and employment by main activities confirms that coastal tourism is the most important marine sector in France, in line with the previous updates of this report. It accounts for about the half of the marine value added and employment.
- The other main sectors are:
  - shipbuilding,
  - maritime and river transport,
  - seafood industry,
  - offshore oil and gas services whose employment is relatively low as compared to value added,
  - public sector.
  - Other sectors have a significant contribution to the marine economy: submarine cables, maritime and river civil engineering, marine aggregate extraction.
- The French marine economy grew from 2009 to 2011, with employment remaining more or less stable. Considered separately, the industrial sector shows a comparable development with employment growing slowly and value added increasing significantly over the same time period. In the public sector, with the Navy accounting for the most important component, employment decreased.
- Data are sensitive to estimation methods. So it would be risky to give too detailed interpretations of the results. However ship and boat building growth from 2009 to 2011 is noteworthy as is that of maritime shipping and coastal tourism. The sharp decrease in exports in a range of marine activities must also be underscored.

Industrial Sector

1. Seafood industry

1.1. Marine fisheries

All categories of marine fisheries are taken into account in this section, from small coastal fisheries to high sea tuna fisheries. They land fresh and frozen fish, cephalopods, crustacean, shellfish and seaweed products.

Tab. 1. Marine fisheries key figures

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Production (1) (thousand tonnes)	699	659	626	626	538	519	483	507	524	558
Sales (2) (million EUR)	1 332	1 230	1 195	1 212	1 183	1 120	930	940	1 051	1 054
Value added estimates (3) (million EUR)	898	774	742	671	658	613	513	483	559	na
Employment (FTEs) (4)	13 213	12 484	11 937	11 403	11 396	11 088	10 919	10 779	10 517	na
Number of fishing vessels, mainland and overseas (5)	7 906	7 880	7 837	7 671	7 631	7 389	7 305	7 226	7 250	7 157

(1) Landing tonnage for fresh and frozen products (including tuna and seaweed excluding maerl and gelidium), mainland and overseas. Sources: FranceAgriMer for fish, Ifremer/SIH for seaweed.
(2) Fresh and frozen product sales, excluding seaweed.
(3) Revised value added rates. For 2003-2005: source Ifremer/SIH, estimates based on a representative sample of vessels. 2006-2012: estimates based on Ifremer/SIH fisheries data of the English Channel and Atlantic ports (under 40 m vessels).
(4) FTE: full time equivalent. Only seafarers onboard. Excluding seaweed harvest activity. Until 2007: data from Ifremer/SIH English Channel and Atlantic fisheries; data from FranceAgriMer for Mediterranean fisheries (seamen employed onboard 9 months or more). After 2007: data from Ifremer/SIH.
(5) Number of vessels as of 31 December.
na: not available.
Source: FranceAgriMer, Environment ministry/SDSIM.

- Overall the French commercial fisheries generate a turnover of over €1bn and a value added of about €500-600m.
- These figures show a significant downward trend over the observation period, parallel to an equally significant decrease in employment.
- According to Ifremer/SIH data, the total engine power of the fishing fleet of France mainland reached 700,706 kW in 2011 against over 900,000 kW in 2000 : a more than 20% decrease principally due to that of the number of vessels in mainland ports: the average engine power per fishing vessel slightly decreased from 160 to 150 kW over the same period. The number of fishing vessels in overseas islands and regions increased over the past ten years from about 2,300 in 2003 to about 2,600 in 2013.
- Offshore seaweed harvest increased in recent years from 60,000 tonnes in 2011 to 80,000 in 2013 (live weight; source: Ifremer/SIH); its turnover fluctuates around €3m. Near-shore seaweed harvest (7 to 8,000 tonnes per year) involves about 80 permanent jobs and 500 occasional ones for a turnover of about €6,000 (sources: Seaweed and Marine Plant Industry Association, Ifremer/SIH).

Sales per species

In 2011 fresh products accounted for about 60% of landings (in tonnage) and 80% of total sales. Tuna is usually the important species in terms of fresh and frozen product sales; in 2013 it accounted for 15% of landings and 10% of sales (source: FranceAgriMer).

Tab. 2. Breakdown of the French marine fisheries production

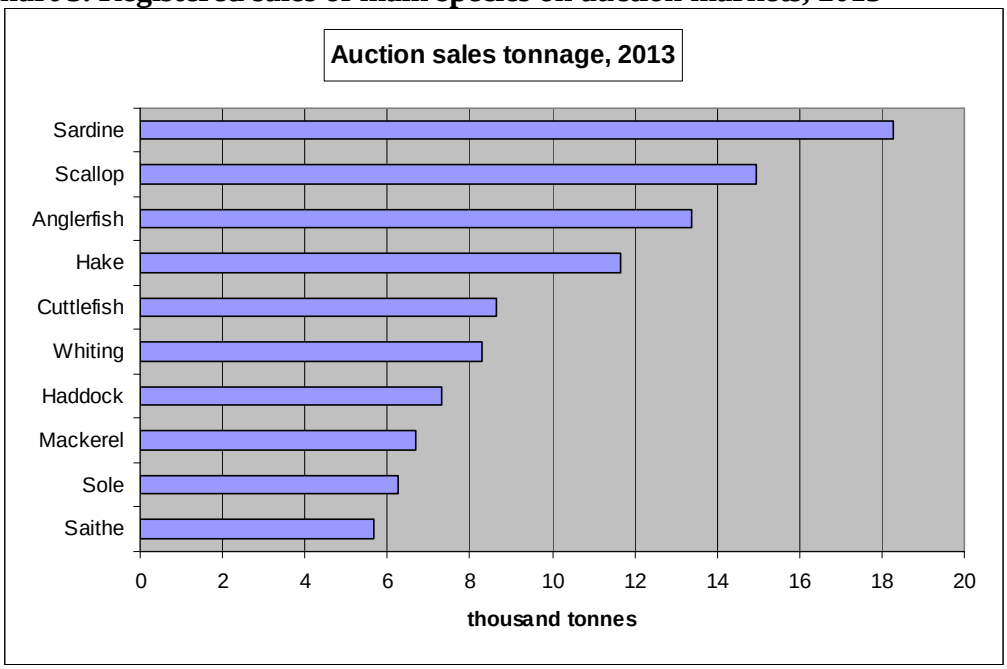
	2009		2010		2011	
	Weight ('000 tonnes)	Sales (m €)	Weight ('000 tonnes)	Sales (m €)	Weight ('000 tonnes)	Sales (m €)
Auction sales of fresh products	187	539	193	567	202	632
Total sales of fresh products (1)	283	764	305	740	310	830
Seaweed (2)	46	na	48	na	60	na
Frozen products (3)	154	166	155	200	154	221
Total fresh and frozen products (4)	483	930	507	940	524	1051

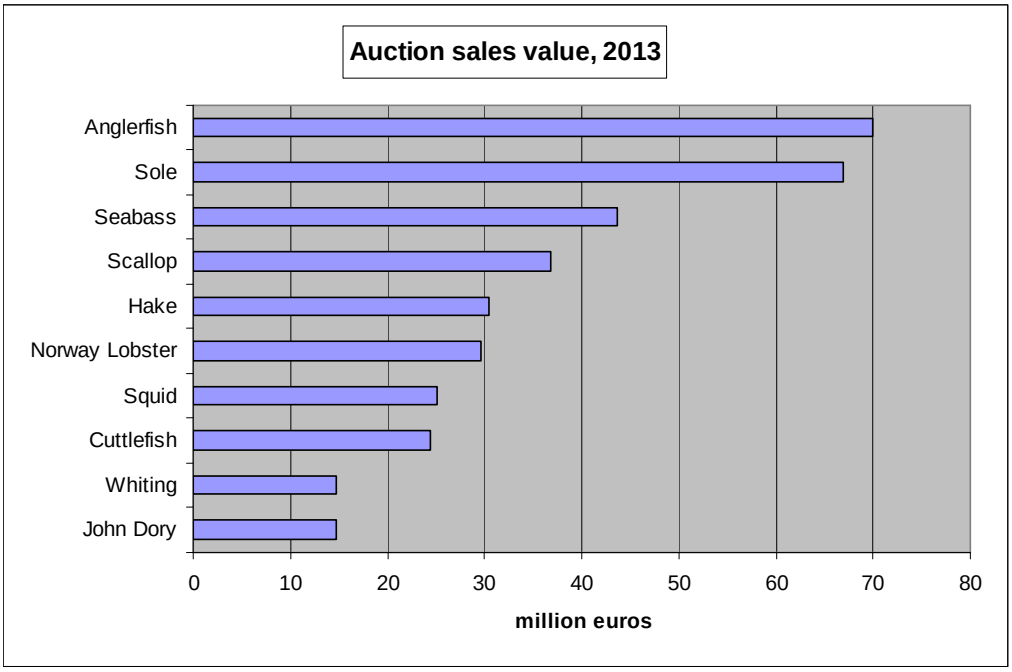
(1) Including sales outside auctions places.
(2) Live weight. Estimated landing value from harvest at sea.
(3) Landings of frozen filets from deep-sea fisheries are measured in whole (gutted) landed weight equivalent.
(4) Including seaweed landing tonnage.
na: not available.
Source: FranceAgriMer

Auction sales of fresh fish in metropolitan France

- The ranking of the most important commercial species did not vary widely over the recent years.
- Sardine, Scallop and Anglerfish are the most important species in terms of sales tonnage; Sole and Anglerfish are the most important ones in terms of sales value.

Chart 3. Registered sales of main species on auction markets, 2013



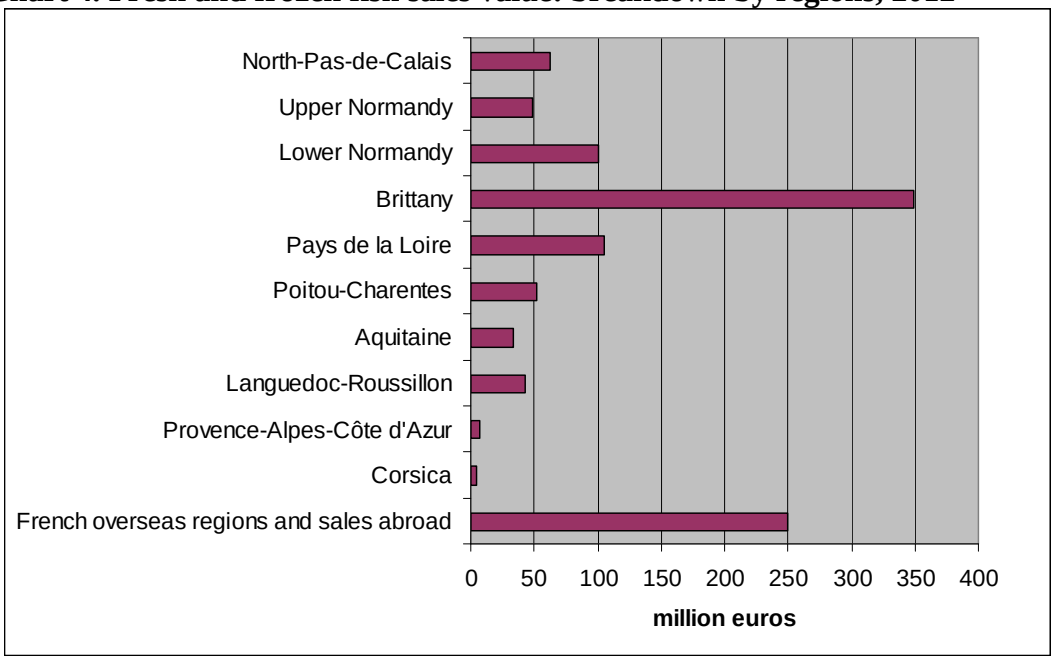


Source: FranceAgriMer / Registered auction sales

Breakdown of sales by regions 2012 (fresh and frozen fish, excluding seaweed)

- The ranking of regions by amounts of sales did not vary widely over the recent years.
- Brittany remained by far the most important producing region: its market share was of about a third in metropolitan France and increasing since 2008.
- In the absence of detailed data, the sales in overseas regions have been brought together with sales in foreign countries.

Chart 4. Fresh and frozen fish sales value: breakdown by regions, 2012

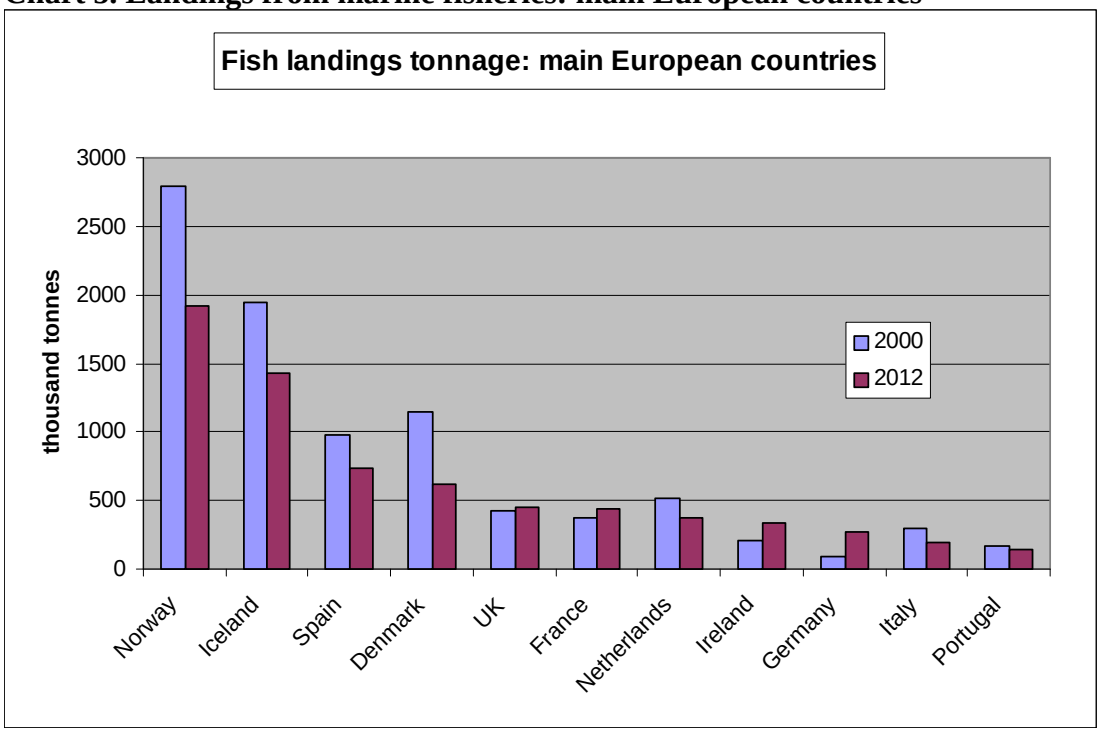


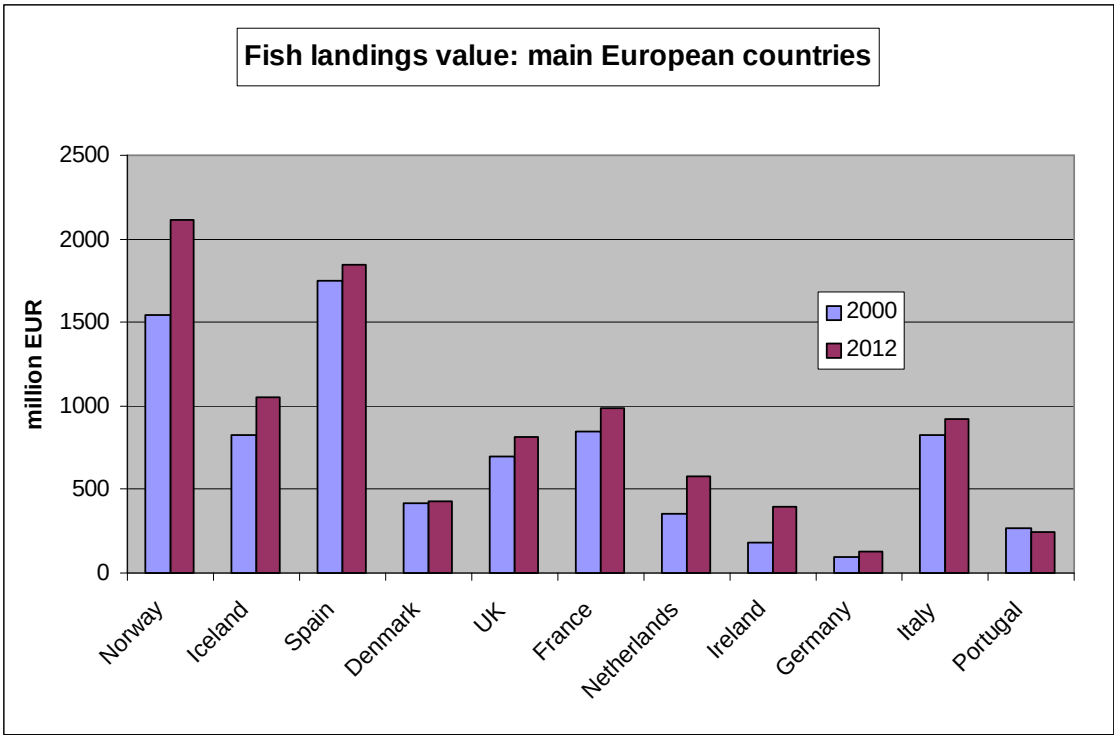
Source : FranceAgriMer

European fishing industry: EU member states' fisheries

- European states' landings have widely varied in tonnage and value since the early 2000s, and unit prices per product recorded important differences from country to country. The observed period saw a significant decrease in the landings tonnage of the largest fishing fleets (Norway, Iceland, Spain and Denmark) while their landings value increased.
- From 2000 to 2012 France recorded a slight increase in landings tonnage and value : it is the 4th largest EU producer.
- In terms of landings tonnage, Norway and Iceland - non EU countries - are the largest European producers. But the main EU producing countries compare with these in terms of sales value.

Chart 5. Landings from marine fisheries: main European countries





Norway: provisional data 2012
Netherlands: estimates for 2012
Germany: 2011 data
Source: Eurostat

- The EU is a large seafood exploiter of seafood products with a little less than 5% of world production (fisheries and mariculture), but far behind China which account for one third of it. For the EU, fisheries are a sizeable business in economic terms: the overall value of landed fish products from the EU-28 vessels exceeded €7bn in 2011.
- Fish resources are the only marine resources managed at EU level. The Common Fisheries Policy (CFP, 1983), revised every ten years, has a main objective: the sustainable development of fish resources. The four policy component of the CFP are: a) the management of fishing quotas on the main commercial resources, granted to each member state; b) funding the modernization of the EU fleet; c) the organisation of markets intended to stabilize producers' income; d) fishing agreements with third countries (outside the EU), consisting in ensuring the access of EU vessels to additional areas against financial counterparties or third party access to EU markets.
- The decline of the EU commercial fish production for two decades and the failure of the management of fishing overcapacity have led the EC to propose a decentralization of the CFP through national multi-annual management plans; the control of discards and the establishment of temporary fishing concession, transferable inside the EU are also proposed by the EC.
- On a global scale, the commercial fish production is slowly decreasing and has fallen under 80 million tonnes since 2008, with impacts on the commodity supply strategies of the seafood processing industry. Conversely human consumption of fish and mariculture products is on a steady increase (more than 130 million tonnes in 2011), largely driven by China's growth. The growing discrepancy between production and consumption is partly filled up by the Asian freshwater aquaculture, but this situation suggests risks of tension on the aquatic protein markets in the midterm and long term.

Tab. 6. European marine fisheries production*

	2012 landings value (m€)	2012 landings tonnage ('000 tonnes)	2010 number of vessels	2010 number of less than	2010 number of 12 to 24m	2010 number of over 24m	Fleet capacity, 2010 ('000 GT)	Fleet capacity, 2010 ('000 kW)
EU-27**	7 100	4 276	83 796	69 190	11 312	3 294	1754	6543
Norway	2 118	1 912	6 309	5 022	937	350	366	1 238
Iceland	1 052	1 431	1 628	1 227	194	197	150	470
Spain	1 843	733	10 847	7 797	2 119	931	415	934
Denmark	426	614	2 826	2 284	459	83	66	242
UK	815	454	6 422	5 334	815	273	208	825
France	986	439	7 242	5 891	1 126	225	174	996
Netherlands***	582	373	849	316	235	298	148	343
Ireland	397	341	2 148	1 818	215	115	69	198
Germany	130	265	1 680	1 309	296	75	68	160
Italy	925	196	13 515	9 288	3 762	465	186	1 112
Portugal	252	140	8 492	7 655	624	213	101	372
Sweden	95	109	1 369	1 110	200	59	33	179
Poland	61	105	793	562	178	53	37	87
Finland	29	103	3 365	3 268	80	17	17	172
Estonia	21	64	935	850	48	37	15	40
Greece	317	61	17 168	16 069	869	230	88	506
Latvia	19	60	786	681	22	83	41	61
Belgium	65	18	89	na	39	na	16	51
Malta	11	2	1 093	999	76	18	12	86
Cyprus	8	1	1 006	973	24	na	4	43
Lithuania	4	3	171	124	na	na	46	54
Romania	1	1	475	466	7	na	1	7
Slovenia	1	0	185	162	21	na	1	11

*Landed fish products in the EU-27, all types of consumption.
**Landings: estimates for 2011.
***Estimated 2012 landings.
na: not available.
Source: Eurostat

The fishing fleet of mainland France (excluding Corsican and overseas fleets)

Over the past two decades the number of vessels decreased in all size categories. Over the same period almost all of these categories recorded an increase in total engine capacity. Deep sea fisheries were impacted by a decrease in the number of vessels and in engine power.

Tab. 7. Fishing fleets of mainland France, 1990-2011 (1)

	Number of vessels			Average engine power by vessel (kW)		
	1990	2011	2011/1990	1990	2011	2011/1990
Under 7 m	2684	1143	-57%	29	40	38%
7 to 10 m	2950	1718	-42%	70	89	27%
10 to 12 m	1023	824	-19%	123	142	15%
12 to 15 m	574	228	-60%	166	194	17%
15 to 18 m	618	248	-60%	244	269	10%
18 to 24 m	589	283	-52%	352	385	9%
24 to 40 m	248	156	-37%	521	487	-7%
40 m and over	85	42	-51%	1942	2132	10%
Total	8771	4642	-47%	132	151	14%

(1) Except overseas and Corsican fleets.
Source: Agriculture and Fisheries ministry, Ifremer/SIH

1.2. Mariculture

The mariculture industry for human consumption includes two subsets:

- shellfish farming (mainly oysters and mussels),
- fish farming producing fish (sea bass, bream, salmonids, turbot) and shrimp or prawn (mainly shrimp in New Caledonia).

In addition, oyster farming is developed in Polynesia for pearl production.

Tab. 8. French mariculture key figures
Unit: million EUR

	2006	2007	2008	2009	2010	2011
Turnover for metropolitan France*	461	492	718	759	765	851
Turnover for overseas regions*	117	118	104	87	80	84
Total turnover*	578	610	821	846	845	935
Value added**	404	426	438	456	458	506

*Until 2007, shellfish framing turnover was based on sales for consumption. Since 2008, it is based on sales of breeders to traders/distributors and sales of traders/distributors to consumers (including sales of hatchery and collection spat).
**Average value added rate estimated at 70% until 2007. Value added rates have been re-assessed on the basis of 2009 data and applied to 2008-2011: 55% for oyster and other shellfish farming; 50% for mussel farming; 35% of marine fish farming. The rate for pearl production and shrimp farming remains at 70% in the absence of updated information.
Sources: Agriculture and Fisheries Ministry (aquaculture survey for production in mainland France), Polynesia Statistical Institute (ISPF) for pearl production, New Caledonia Institute of Statistics and Economic Studies (ISEE) for New Caledonia tropical shrimp farming.

- Mariculture production has significantly developed over the past ten years: turnover steadily increased in mainland France but decreased in overseas regions.
- Mariculture employment (a little more than 10,000 full time equivalents - FTEs in 2009) mainly comes from shellfish farming, which is by far the most important component of the activity.

- The activity is monitored through periodical surveys by the Agriculture and Fisheries Ministry and these are the main information source used in this section.

Tab. 9. Sales volumes of mariculture products for consumption

Unit: tonne

	2006	2007	2008	2009	2010	2011
Oyster	112677	113215	104939	97720	80 649	78 966
Mussel	72698	76611	78526	83044	70 339	65 021
Other shellfish	3777	3820	3227	5534	2 251	2 446
Marine and amphihaline finfish	7429	7985	7961	5809	5668	6129
Tropical marine fish*	298	262	246	246	246	246
Tropical shrimp	2323	1888	2 080	1 868	1 195	1 593

* Missing data after 2008. 2008 data has been used for 2009-2011.
Sources: Ministry annual survey on mariculture in mainland France, ISEE (shrimp of New Caledonia), tropical finfish farming survey for 2008.

Tab. 10. Sales values of mariculture products

Unit: million EUR

	2006	2007	2008	2009	2010	2011
Oyster	258	268	431	452	500	571
Mussels	108	117	174	194	171	167
Other shellfish	15	15	24	39	27	22
Marine and amphihaline finfish	50	53	53	39	39	40
Tropical marine finfish	1,8	1,6	1,7	1,7	1,7	1,7
Farmed pearls	101	101	81	66	65	63
Tropical shrimp	14	15	21	19	14	19
Marine finfish hatcheries	14	17	18	15	12	20
Shellfish hatcheries*	16	21	19	19	16	32

*Until 2007: estimates of the value of hatchery production. Since 2009 (value extended to 2008): total spat sales (from hatcheries or collection) sourced from Ministry's annual surveys.
Sources: Ministry annual survey on mariculture in mainland France; ISPF for pearl production; ISEE for shrimp of New Caledonia; tropical finfish farming survey for 2008.

Tab. 11. Regional breakdown of shellfish farming enterprises and employment, 2011

	North & Normandy	Northern Brittany	Southern Brittany	Pays de la Loire	Poitou-Charentes	Aquitaine	Mediterranean	Total
Number of enterprises	297	259	450	296	905	290	441	2938
Share of enterprises	10%	9%	15%	10%	31%	10%	15%	100%
Employment (FTEs)	1203	1215	1 247	807	2 950	651	1 142	9213
Share of employment	13%	13%	14%	9%	32%	7%	12%	100%

Source : Ministry mariculture survey for 2011, mainland France.

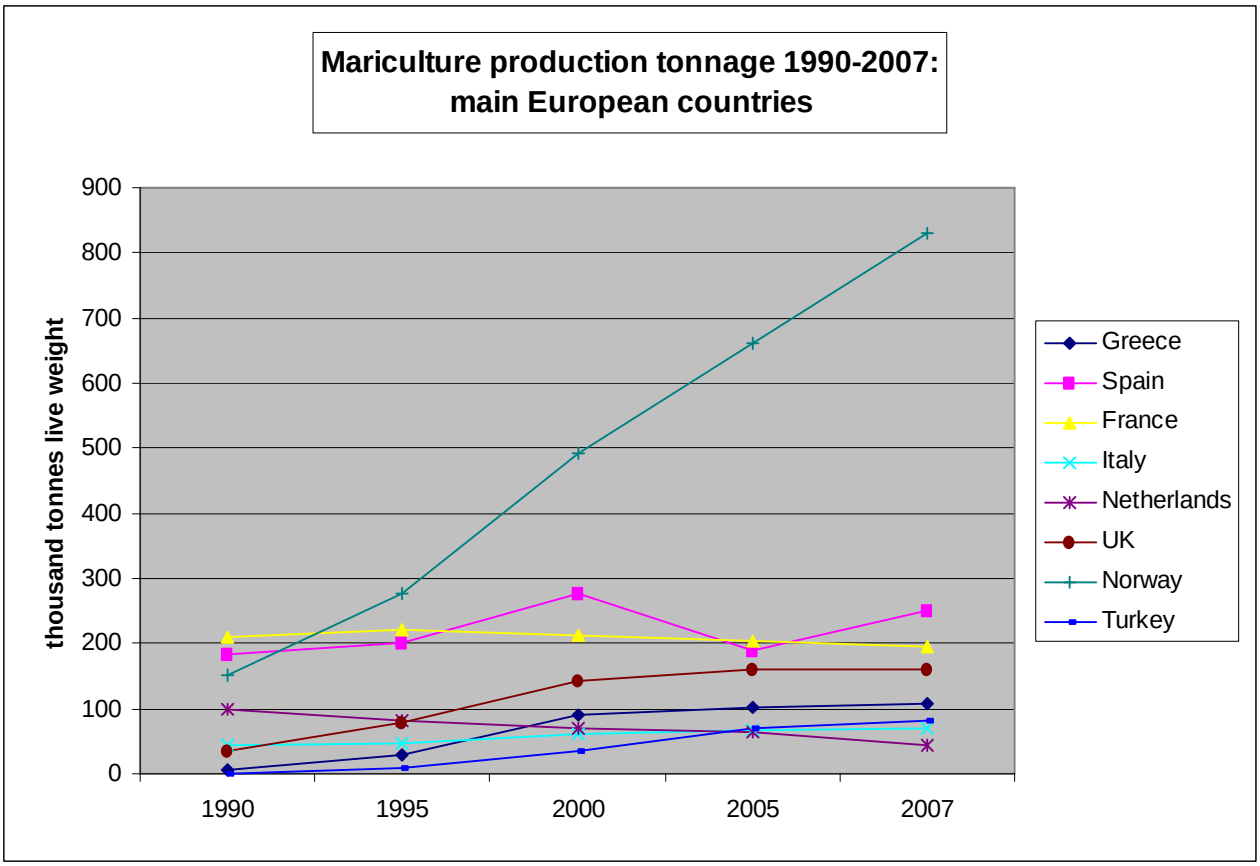
Remark

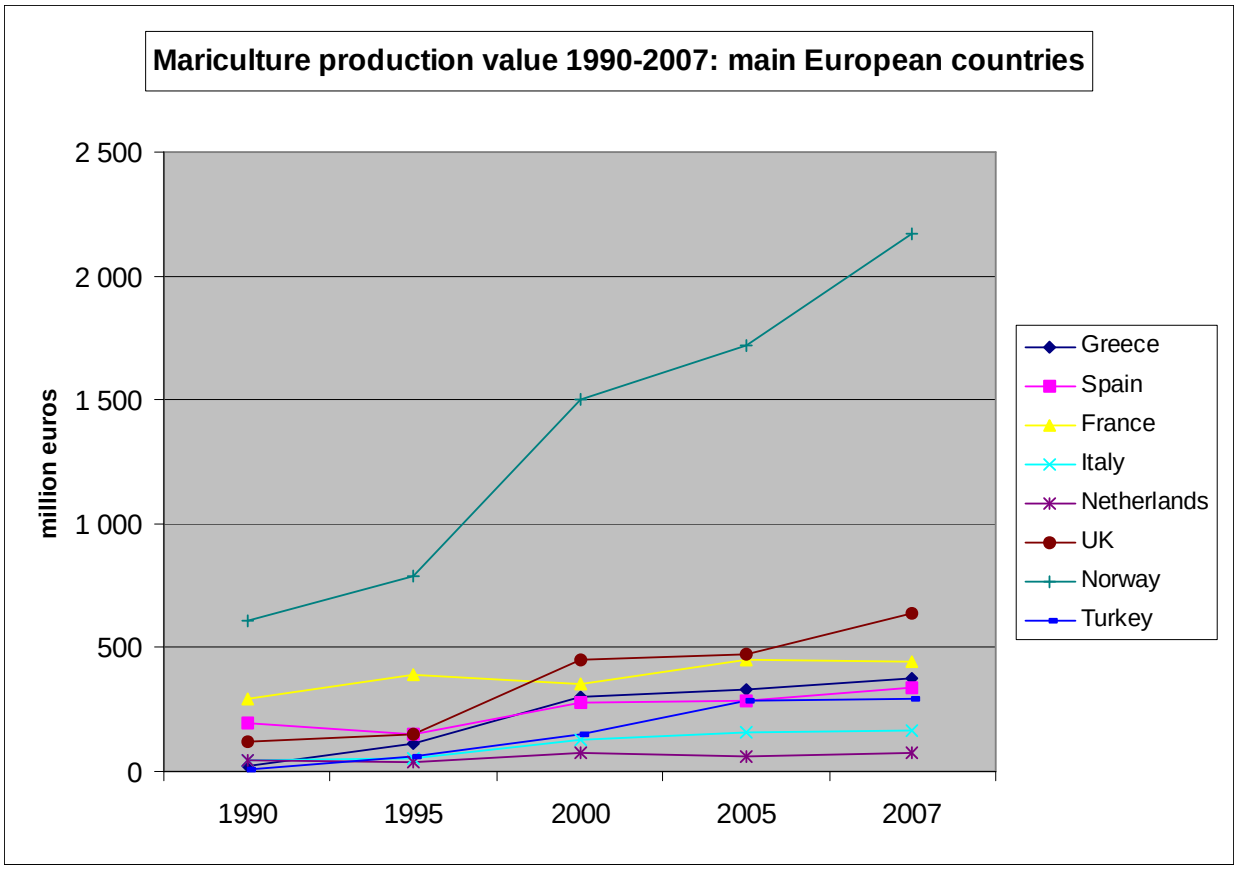
- Marine finfish farming in mainland France, 2011: 31 enterprises, 519 FTEs (regional data not available).

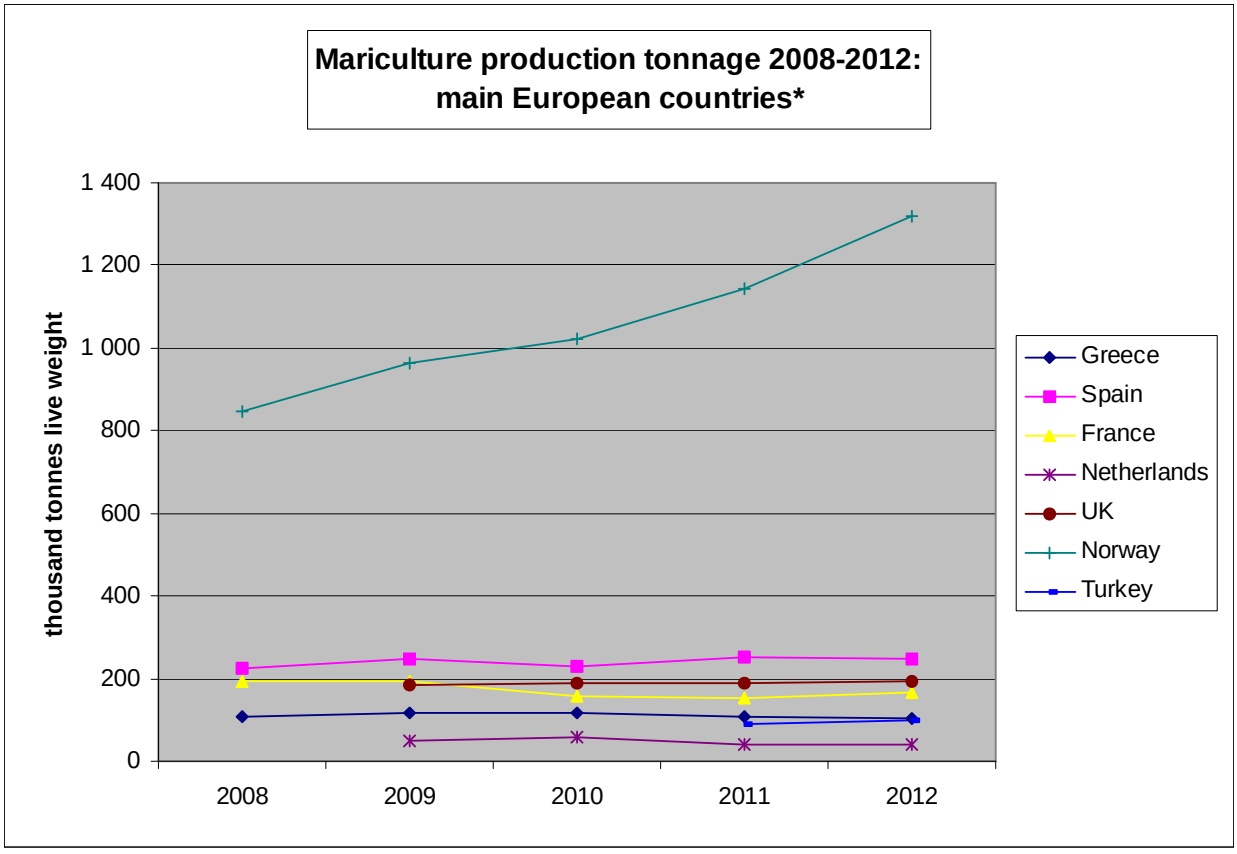
European mariculture: main producing countries

- The six largest producing member states account for almost 80% of the EU production in tonnage and value: Spain, Greece, France, Italy, Netherlands, UK.
- In tonnage and value, Norway alone produces more than 150% of the total production of these six countries. It produces 7-fold as much as in the 1990s in value and 9-fold in tonnage.
- Small players in the 1990s, Greece's and Turkey's mariculture industries have made much progress in 15 years and have become important contributors to Europe's production.
- As compared to the other European countries, France's production value appears to have been stable over the studied period while tonnage has slightly decreased. France's share of the overall European production has decreased.
- The figures presented in this section combine shellfish and marine finfish farming.

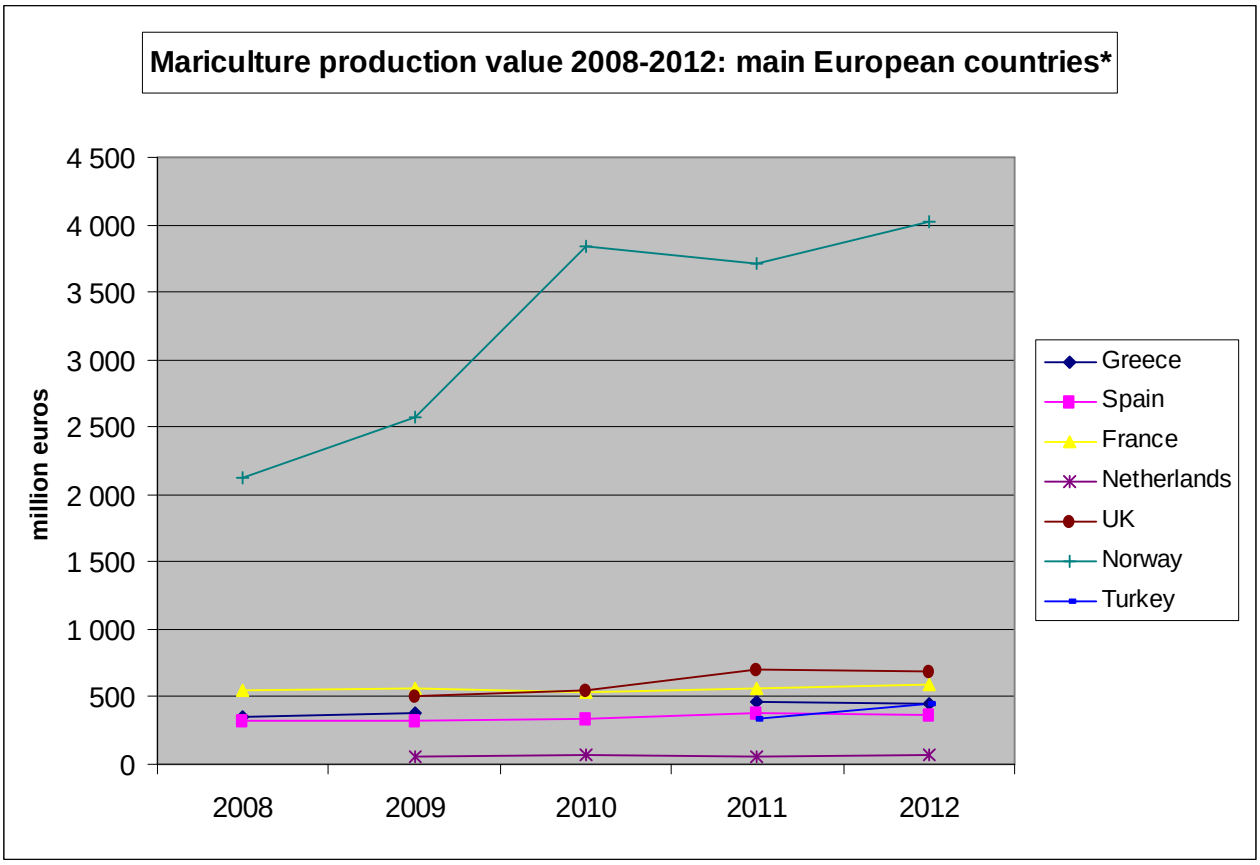
Charts 12. Mariculture in Europe: main producing countries
ECU/EUR conversion based on 1995 value.







* Excluding hatchery and nursery production



* Excluding hatchery and nursery production
Source: Eurostat

1.3. Seafood trade

The activity includes:

- The numerous wholesale traders and retailers,
- Fish auctions,
- fishmongers.

Fish auctions are market places where wholesale traders and fishmongers buy landed products from French and foreign vessels under the control of producer organisations which set withdrawal prices.

A specific category of wholesale dealers includes business which have an activity of middlemen between producers on the one hand and wholesalers, retailers and big supermarket chains on the other. These may perform technical operations (batching, basic processing and packaging) in addition to their current commercial activity.

Tab. 13. Key figures on wholesale trade of seafood products (1)

Units: million EUR, number of persons and FTEs

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Turnover	4 181	4 149	4 280	4 322	3 978	na	2 880	3 100	3 725
Value added (2)	423	429	433	445	447	na	335	505	434
Employment (3)	8 801	9 084	8 539	8 419	7 762	na	6 220	13 227	7 457
Employment (FTE)	na	na	na	na	na	na	5 280	12 062	6 145
Number of enterprises (4)	1 169	1 171	962	983	945	na	706	755	785
Export rate (5)	16,3%	15,0%	14,8%	14,4%	14,7%	na	12,1%	13,5%	10,6%

(1) Including auctions and all categories of wholesale dealers.
(2) Value added at market prices.
(3) Salaried employees as of 31 December.
(4) Including 130 to 150 sole proprietorships.
(5) Source: Customs Directorate General. Data on transactions of €1,000 or more and of 1 tonne or more. Intracommunity trade of enterprises with a turnover of €150,000 or more.

na: not available

Sources: INSEE/SUSE, SIRENE (2003-2007, NAF 2003 51.3S; enterprises with a turnover of less than €76,300 excluded until 2004; micro-entreprises excluded from 2005 to 2007). INSEE/ESANE (2008-2010, NAF 2008 46.38A, enterprises with 1 salaried employee or more).

Tab. 14. Key figures on retail trade of seafood products

Units : million EUR, number of persons and FTEs

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Turnover	873	861	860	875	892	na	649	577	919
Value added	214	214	209	212	215	na	151	137	217
Employment (1)	5 171	5 159	4 997	5 047	4 995	na	4 411	4 061	3 900
Employment (FTE)	na	na	na	na	na	na	2 597	2 432	2 816
Number of enterprises	2 039	1 987	2 187	2 243	2 189	na	1 542	1 934	1 795
Export rate (2)	0,9%	0,8%	1,8%	1,1%	1,2%	c	c	3,1%	1,3%

(1) Number of salaried employees as of 31 December.
(2) Source: Customs Directorate General. Data on transactions of €1,000 or more and of 1 tonne or more. Intracommunity trade of enterprises with a turnover of €150,000 or more.

na: not available

c: confidential data

Sources: INSEE/SUSE, SIRENE (2003-2007, NAF 2003 52.2E; enterprises with a turnover of less than €76,300 excluded until 2004; micro-entreprises excluded from 2005 to 2007); INSEE/ESANE (2008-2010, NAF 2008 47.23Z, enterprises with 1 salaried employee or more); Customs.

- The number of auctions market decreased from 42 in the 1990s to 39 in 2013. In 2005, the ten largest auction markets accounted for 59% of the total sales value; in 2012, 62%. For the five largest ones, these figures were 41% and 43% respectively (sources: FranceAgriMer, French Auction Managers Association).
- Parallel to that, the specific category of wholesale traders mentioned above also saw a decrease in the number of businesses : in 2011 there were 306 enterprises (of which 36 wholesale dealers/basic processors) against 680 in 1989; overall they employed 4,584 (source: FranceAgriMer).

1.4. Seaweed harvesting and processing

Seaweed production is mainly used for extracting gelling agents (colloids), and has also outlets in farming, pharmaceuticals and the food industry. Seaweed processing is an R&D intensive industry. The companies are principally located in Brittany. Outlets are mainly found in the fields of:

- cosmetics (production of alginates, colloids and natural gelling agents, some of which are also used by the food industry),
- food industry (processing, canning and packaging of certain fish species and products),
- farming, to a lesser extent (natural fertilisers).

1.4.1. Seaweed harvesting

Based on a recent study the activity produced about 71,000 tonnes of seaweed in 2011 (source: Seaweed and Marine Plants Association), of which:

- 65,000 tonnes harvested by 35 dedicated vessels in West Brittany, for a turnover of €1.7 to 2.7m;
- 6,000 tonnes harvested by hand along the shore of West Brittany principally. The activity employs 80 persons in professional capacity for a turnover of about €300,000; and about 500 in a casual capacity, also for a turnover of some €300,000 (sources: Seaweed and Marine Plant Industry Association, Ifremer/SIH).

The marine fisheries key figures (see above) use an upper bound estimate of seaweed sales (€3m in 2011). Overall, the activity employs some 650 persons (seamen and non-seamen harvesters) in a part-time time capacity throughout the year, and taken into account in the above employment figures.

The overall world production was estimated at 15 million tonnes in 2010 ; China was the largest producer with near 8 million tonnes; then Indonesia (near 4 million), Philippines (about 2 million), South Korea (near 1 million), Japan (0.5 million), Chile (near 400,000). France was the fourth largest net importer (about 125,000 tonnes in fresh equivalent), mainly from Chile, the Philippines and Indonesia; it exported 20,000 tonnes in fresh equivalent, mainly to Europe (source: Bretagne Développement Innovation ©, Market Study, September 2012).

1.4.2. Seaweed culture

Seaweed culture is showing a strong and steady growth at global scale. World production was estimated at 16 million tonnes in 2010, with Asia accounting for 90% of this amount. The French production was marginal in this segment with 60 tonnes (source: Les Marchés, 8 November 2012).

1.4.3. Seaweed processing

The activity is included in the seafood processing sector (see this section below).

- About 65 establishments,
- 1,635 persons employed,
- Turnover estimated at €424m in 2007 (source: Brest Chamber of Commerce, July 2008).

Colloid production is operated by establishments belonging to international chemical companies while small-sized enterprises are involved in the processing of edible seaweed.

1.5. Seafood processing

The seafood processing industry includes companies whose main or secondary activity consists in manufacturing products for human consumption from fish, crustaceans, molluscs and cephalopods. It uses various preserving technologies and manufacturing processes. The activity does not include those enterprises which only fillet fish (classified as fish trading enterprises: see above "Seafood trade" section).

Tab. 16. Seafood processing industry key figures (1)

Units: million EUR, number of persons, percentage.

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Turnover (m€)	3348	3272	3328	3620	3547	na	3020	3149	3412
Value added (m€)	695	681	682	693	627	na	595	602	590
Number of jobs (2)	15454	15361	17745	19822	20105	na	11055	12780	11779
Number of FTEs	na	na	na	na	na	na	9797	11367	10995
Number of enterprises	361	352	407	406	393	na	349	310	318
Export rate	9%	10%	10%	9%	11%	na	10%	8%	9%

(1) Revised data as compared to our 2011 issue.
(2) Number of salaried staff as of 31 December.
na: not available.
Sources: INSEE/SUSE and SIRENE for 2003-2007 (NAF 2003 15.2Z; enterprises with a turnover of less than €76,300 excluded until 2004; micro-enterprises excluded from 2005 to 2007). INSEE/ESANE for 2008-2010 (NAF 2008 10.20Z, enterprises with 1 salaried employee or more). Customs Directorate General: data on export transactions of €1,000 or more and of 1 tonne or more; intra-community trade of enterprises with a turnover of €150,000 or more.
Statistical disruption: NAF 2008 code 10.20Z reduces the field of code 15.2Z: it does not include manufacturing of fish-based ready-to-eat meals; it does not include product packaging by fish traders; it includes processing and preserving at sea only by vessels entirely dedicated to this activity.

Tab. 17. Breakdown of turnover by product categories

	2012	2009
Chilled delicatessen products (1)	23%	20%
Smoked salmon	19%	20%
Dried fish and salted fish	2%	
Canned products and soups	18%	20%
First stage processing (2)	17%	19%
Prepared dishes	14%	12%
Shrimp	3%	9%
Others (3)	1%	1%

(1) Including surimi and caviar.
(2) Filleting, carving, shelling, packaging and freezing.
(3) Seaweed and misc. products.
Source: FranceAgriMer

Tab. 18. Breakdown of seafood enterprises and turnover by regions

	Enterprises 2012*	Turnover 2012	Turnover 2009
North	14%	10%	15%
Normandy	6%	7%	8%
Brittany	26%	32%	34%
Pays de la Loire, Poitou-Charentes, Aquitaine	13%	27%	20%
Mediterranean regions	10%	3%	6%
Other regions including overseas	31%	21%	17%

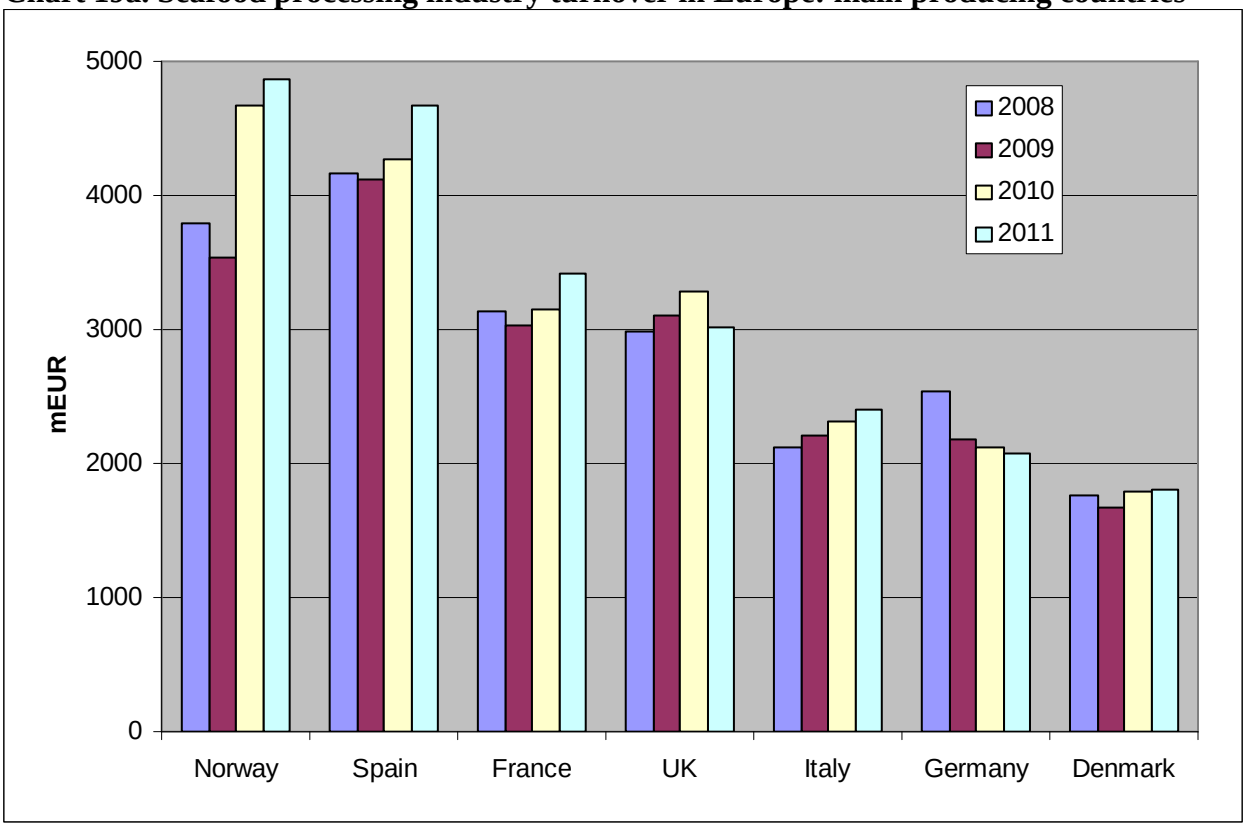
*Shares of the population of enterprises.
Source: FranceAgriMer

1.5.1. The European seafood processing industry

The activity is concentrated in a small group of countries: Germany, Denmark, Spain, France, Italy, UK and, outside the EU, Norway. These six countries account for 92% of the EU-28 turnover and more than 70% of the number of enterprises. The Dutch seafood processing industry is more modest but not negligible in Europe.

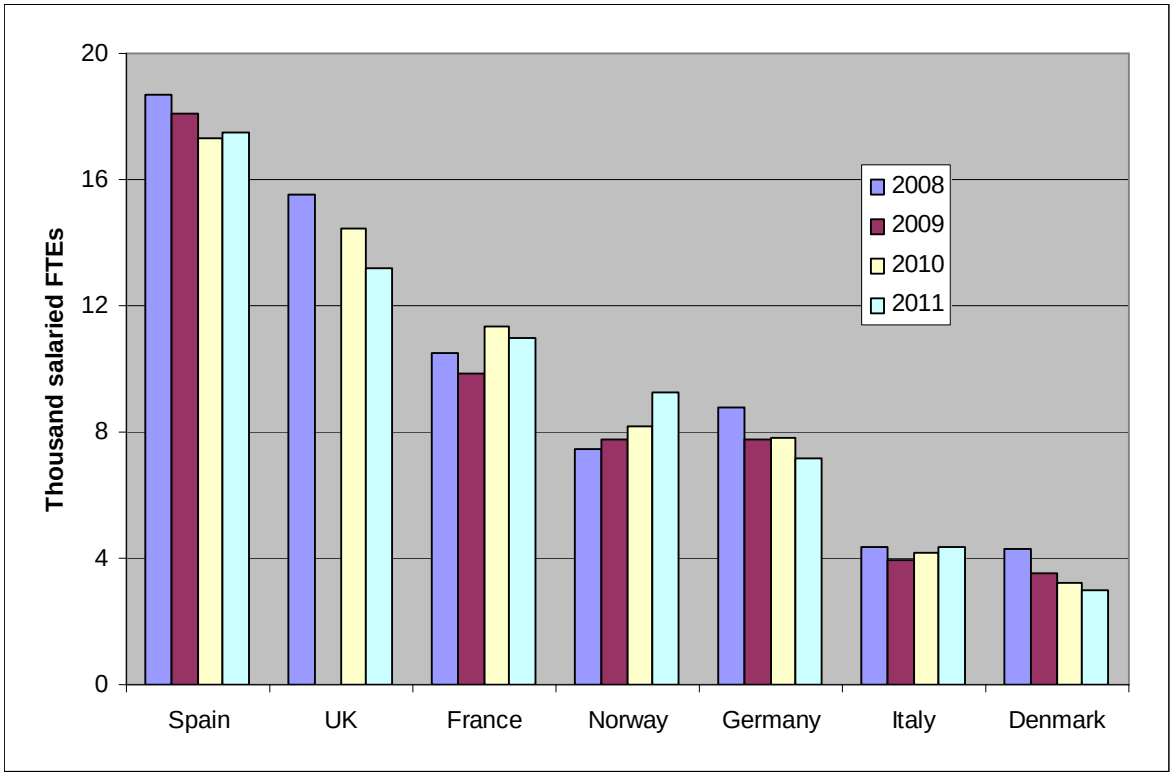
The Norwegian industry shows a much higher productivity than the European average as measured by the turnover/employment ratio.

Chart 19a. Seafood processing industry turnover in Europe: main producing countries



Source : Eurostat

Chart 19b. Seafood processing industry employment in Europe: main producing countries



2009 data on UK not available.
Source : Eurostat

2. Marine aggregates

Marine aggregates mined in metropolitan France include silica sands and gravels, calcareous sands and maerl. There are also extraction operations in Guadeloupe (mixed volcanic and calcareous sands used for construction and civil engineering) and at Saint-Pierre-et-Miquelon (siliceous sands and gravels). The products are principally used in construction and public works (siliceous aggregates), agriculture soil improvement (calcareous aggregates and maerl), beach nourishment and, in smaller amounts, for commercial vegetable gardening (siliceous sands), drinking water processing and bone surgery (maerl).

Tab. 1. Marine aggregates production key figures

Units: million EUR, tonnage.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Siliceous ('000 tonnes)	5920	5870	6530	6700	7500	7200	6000	6000	6200	6400
Channel (excl Brittany)	*1160*	*1190*	*1220*	*1300*	*1400*	*1400*	*1200*	*1300*	*1300*	*1700*
Brittany	*30*	*30*	*0*	*0*	-	-	-	-	-	-
Atlantic (excl Brittany)	*4730*	*4650*	*5310*	*5400*	*6100*	*5800*	*4800*	*4700*	*4900*	*4700*
Calcareous* ('000 tonnes)	459	453	439	314	395	391	496	500	500	na
Total production ('000 tonnes)	6379	6323	6969	7014	7895	7591	6496	6500	6700	na
Estimated turnover**	55	57	63	65	78	79	73	65	67	na
Estimated value added***	18	18	20	21	25	27	26	22	22	na

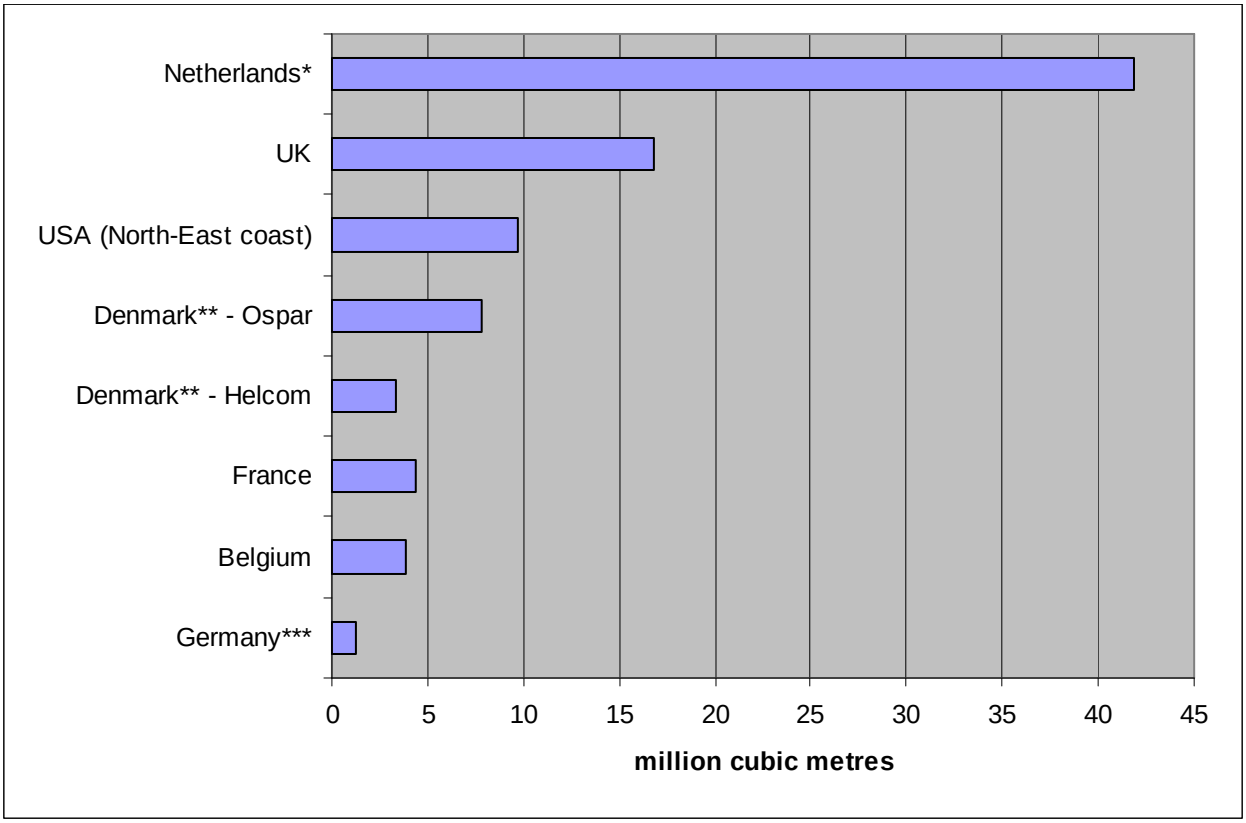
*Shelly sands and maerl: production in Brittany.
**Based on average price estimates, after consultation of the industry.
***Based on INSEE accounting data of the aggregates extraction sector (NAF 2008 8.12Z and NAF 2003 14.2A).
- negligible.
na: not available.
Sources: UNPG, INSEE for sector accounting data.

- The activity involves 12 enterprises and 15 sand extraction vessels. It also involves two calcareous sand processing plants located in North Brittany.
- Total employment is estimated at 655 staff (sea- and shore-based).
- 2% of construction materials originate from marine aggregates in France.
- The definitive cessation of maerl extraction was planned for 2013, owing to the ecological problems raised by the activity (Law 2009-967, art. 35).
- Beach replenishment requires marine sands but extraction data are fragile in this case. Sands requirements in France, though much less important than those of the Netherlands for example, are not negligible: 2 to 3 million tonnes per year (source: Secretary-General of the Sea).
- There is no aggregates extraction in Mediterranean (French seafront) except irregular amounts of sands for beach replenishment.

Aggregate extraction in HELCOM and OSPAR areas

- UK recorded a growth in extracted amounts after an important decrease, from around 14 million cubic metres (mcm) in 2007 to a little more than 9 million in 2010 in areas under Crown Estate licenses.
- Extracted amounts in the Netherlands recently went up to very high levels: 122.5 mcm in 2010, of which 91.4 mcm (more than 150 mt) for Maasvlakte II, the 20 sq km offshore extension of the port of Rotterdam for container terminals. This civil engineering project required an overall 290 mcm materials (480 mt).

Chart 2. Main marine aggregates producing countries in HELCOM and OSPAR areas, 2012



* Of which 24 mcm for the Maasvlakte II extension project of the Rotterdam harbour.
** Helcom and Ospar areas are overlapping in Denmark (in Kattegat). The data from the two convention-areas cannot be added.
***Total extracted from Helcom and Ospar areas.
na: not available.
Source: UNPG for France, ICES/WGEXT Report 2013 for the other countries.

3. Energy

Electricity plants located ashore are conventional thermal plants, nuclear plants and wind turbines. The choice of an electricity generation site depends on its capacity for cooling the plant or diluting effluents discharged by the plant. The natural, stable cold reservoir provided by the sea makes coastal access highly attractive for building nuclear and thermal power plants. This location also enables fuel supply costs to be lowered. Finally, the sea provides power, as shown by tidal power plants in estuaries, and projects for wind farms and marine current turbines off France's shores.

3.1. Coastal thermal and nuclear plants

The large electric power plants on the coast represent a significant part of installed power in metropolitan France, in particular about 30% of installed nuclear power.

Tab. 1. Electricity plants on the coast. 2012-2013 data

Site	Units	Net power (MW)	Energy source	Operation start	Employment 2012-2013 (8)
Dunkirk harbour (1)	1 and 2	2 x 400	Combined cycle gas turbines	2005	48
Gravelines (2) (outer harbour of Dunkirk)	1 to 6	6 x 900	Nuclear	1980-1985	2 262
Penly (East English Channel)	1 and 2	2 x 1300	Nuclear	1990-1992	918
Paluel (East Channel)	1 to 4	4 x 1300	Nuclear	1984-1986	2 285
Le Havre - harbour (3)	1	600	Coal	1968	301
Flamanville (4) (West Channel)	1 and 2	2 x 1300	Nuclear	1985-1986	1 120
Rance Estuary		240	Tidal energy	1966	30
Dirinon (West Brittany) (5)		2 x 85	Combustion turbine	2011	7
		1,7	Wind turbine	2004	
Cordemais (6)	2 and 3	2 x 700	Fuel	1976	650
(Loire estuary)	4 and 5	2 x 600	Coal	1983-1984	
Le Blayais (Gironde)	1	900	Nuclear	1981	2 020
	2	900	Nuclear	1982	
	3 and 4	2 x 900	Nuclear	1983	
Martigues (7)		2 x 465	Combined cycle gas turbines	2012-2013	77
		0,1	Photovoltaic installation	2013	
TOTAL		24 742			9 718

(1) Footprint: 4.5 ha. Gas sourced from a steel production unit and a gas terminal in the vicinity. Employment as of 2010.
(2) Footprint: 150 ha, two thirds of which were reclaimed from the sea.
(3) One generation unit decommissioned. Two coal units non operating. Remaining coal unit (600 MW) undergoing renovation, to be operational in the end of 2014.
(4) Evolutionary Pressurized water reactor (EPR) being built. Commissioning postponed from 2012 to 2016. 2850 staff on the construction site as of the end of 2013.
(5) Combustion turbines recently updated but built earlier. Ifremer estimate of average employment.
(6) Fuel fired Unit No 1, operational since 1970, being decommissioned.

(7) Footprint: 52 ha.
(8) Employment data revised as compared to the earlier updates of the report: includes all permanent staff working on the plant sites.
Sources: EDF, GDF-Suez.

3.2. Marine renewable energies

3.2.1. Offshore wind energy

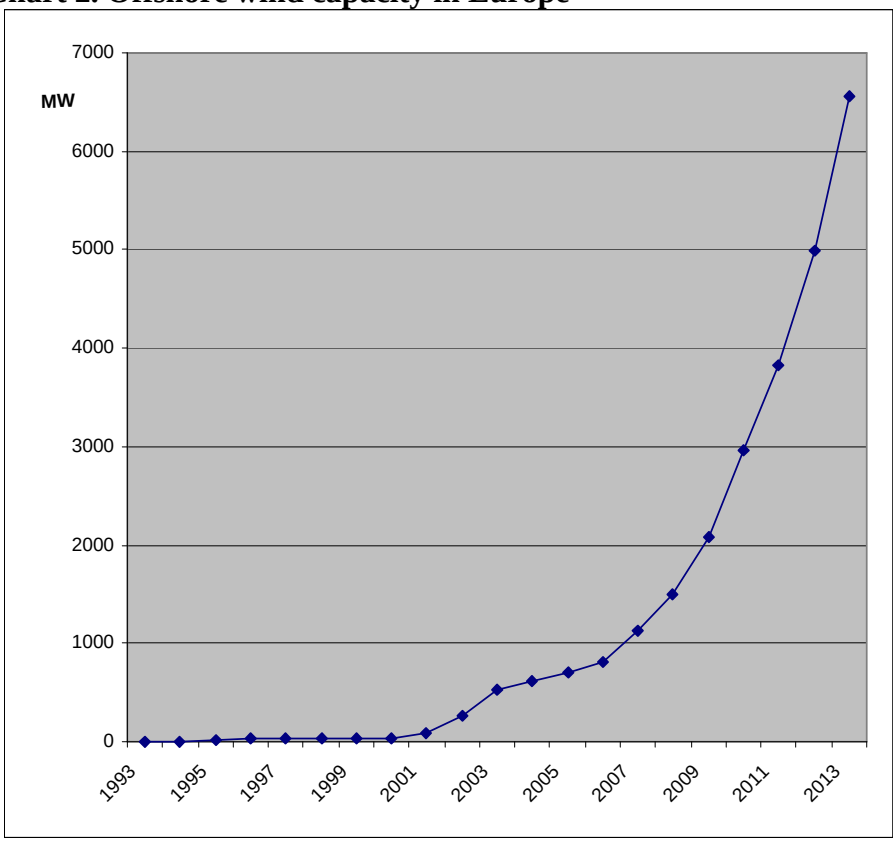
Wind energy is a mature industry but its profitability still depends on the buy-back conditions agreed upon with the grid. Europe is a pioneer for offshore projects with 2,080 wind turbines in operation in 2013 and 90% of the world installed power in 2012: the activity concerns bottom-mounted wind turbines; floating turbines are the subject of a small number of pilot units.

Two thirds of the projects are in the North Sea, 17% in the Baltic and 16% in the Atlantic. UK, Denmark, Germany and Belgium are the largest producers but other stakeholders are appearing (Spain, Ireland, Finland). There are project outside Europe, notably in China with 250 MW being presently operational, an additional 1,850 MW capacity planned for 2014 and another 3,750 MW to be built from 2015 onwards (source: Offshore Wind China).

In terms of offshore wind capacity, the overall amount of investment for 2013 has been estimated from €4.6 to 6.4bn (source: EWEA).

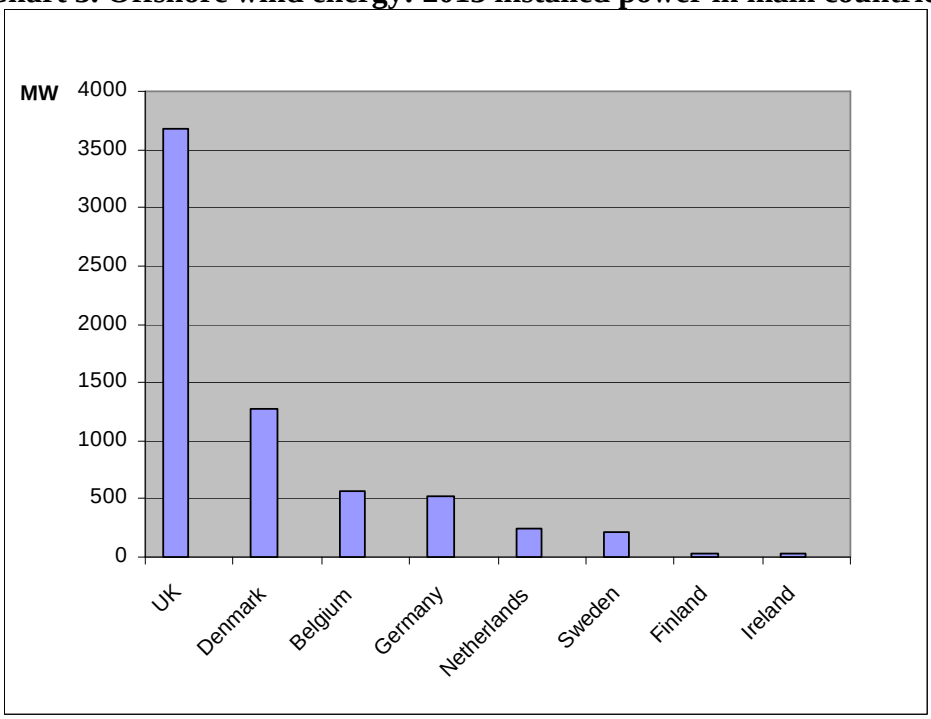
The UK (3.7 GW) represented 47% of the installed power accumulated in 2013 (Denmark 22%, Germany 15%, Belgium 2%); its effort will remain important as the government's plan for renewable energy foresees an overall 18 GW offshore wind capacity in 2020 and an additional 25 GW being ordered as of this date (source: Crown Estate).

Chart 2. Offshore wind capacity in Europe



Source: EWEA

Chart 3. Offshore wind energy: 2013 installed power in main countries



Source : EWEA

3.2.2. France's offshore wind projects

- France has no offshore wind capacity to date.
- The objective for 2020 is a 6 GW installed capacity of bottom-mounted wind farms, thus about 1200 turbines.
- First call for tender in July 2011 for a 3 GW capacity, i.e. 500 to 600 units. End of tender selection procedure in April 2012 for a construction phase from 2015 onwards in four areas:
  - Fécamp (Upper Normandy), 88 km², 498 MW, 83 units of 6 MW,
  - Courseulles-sur-mer (Lower Normandy), 77 km², 450 MW, 75 units of 6 MW
  - Saint-Brieuc (Brittany), 180 km², 500 MW, 100 units of 5 MW
  - Saint-Nazaire (Pays de la Loire), 78 km², 480 MW, 80 units of 6 MW.
- Second call for tender in March 2013. End of selection procedure in May 2014 in two areas:
  - Le Tréport (Upper Normandy), 110 km², 500 MW
  - Yeu-Noirmoutier (Pays de la Loire), 79 km², 500 MW.

  Overall this tender represents 124 units of 8 MW per unit, as compared to the average installed power of wind turbines in Europe in 2013: 4 MW per unit.

3.2.3. Floating wind turbines: international situation

Floating wind turbines are the subject of pilot units. This technology would permit to locate wind farms out far from the shore in deeper waters using a floating structure and benefiting from stronger winds. Investment and maintenance costs are higher than those of bottom-mounted turbines for the moment.

- Hywind, is a 2.3 MW prototype installed in 2009 off the Norwegian coast in water depth of 200 m, and has a 100 m draft. Possible sites for demonstration units and/or a pilot park a being identified in the US and UK waters.
- WindFloat, prototype installed 6 km off the Portuguese coast to the North of Porto in water depth of 45 m, is the subject of testing with a 2 MW turbine; the pre-commercial phase, planned for 2016-2017, would consist in installing 3 to 5 units of 6 to 8 MW.
- Other projects are being developed by Japanese, Dutch and American stakeholders.
- In France the most advanced project will consist in two prototypes to be installed in 2014-15 off the Mediterranean coast; it could be extended to a 30 MW farm made up of 13 units from 2017 onwards.

3.2.4. Other marine energies

Bottom-mounted wind turbines are the majority of marine renewable energy units currently in operation. The other technologies either do not yet present the same level of technological readiness and are the subject pilot units in phase of testing, or are technologically mature but not yet planned for large-scale development. In France, a call for expression of interest was closed in October 2013 for marine current turbine, wave energy and ocean thermal energy conversion pilot projects.

- Marine current turbines in France: one pilot unit using an Irish technology started operation off the coast of Paimpol in North Brittany. It is being tested from 2011 on and planned to be extended to a farm of 4 units with a total 2 MW capacity. Another pilot site is considered in Gironde (South-West France).

- Marine current turbines abroad: only a small number of projects are planned; they are mainly British but also German, located off the Scottish and North-Irish coasts: the British waters have by far the largest tidal energy resources in Europe, estimated at more than 10 GW, representing 50 to 75% of Europe's tidal energy capacity; the resources of French waters are estimated at 15% of Europe's capacity.
- Wave energy: some pilot project are in testing phase or planned for testing in UK (e.g. Pelamis being tested off the Orkney Islands), Denmark, Belgium, Sweden, Australia and the US.
- Tidal energy: after the first large plant built in the Rance estuary at the border of Brittany and Normandy (240 MW) in 1966, the technology was used for a limited number of projects in operation, the most recent of which being the only one of large size: the Sihwa Lake tidal power station, South-Korea, 254 MW, commissioned in 2011. A range of projects are being planned, including in UK. The problem raised by large tidal energy plants is related to their important impacts in terms of modifications of water bodies.
- Thermal energy conversion uses the temperature difference between warm and cold water sources, and can be developed in tropical waters. It is at research stage; a co-operation project between American and French scientists aims at testing an onshore prototype.

4. Shipbuilding and repair

The sector covers shipbuilding and repair of civilian and military vessels, marine equipment and boat building. These segments differ in technology specialization, concentration, the size and nature of markets. But companies may diversify on several of these segments.

4.1. Civilian and military shipbuilding

Tab. 1. Civil and military shipbuilding key figures (1)

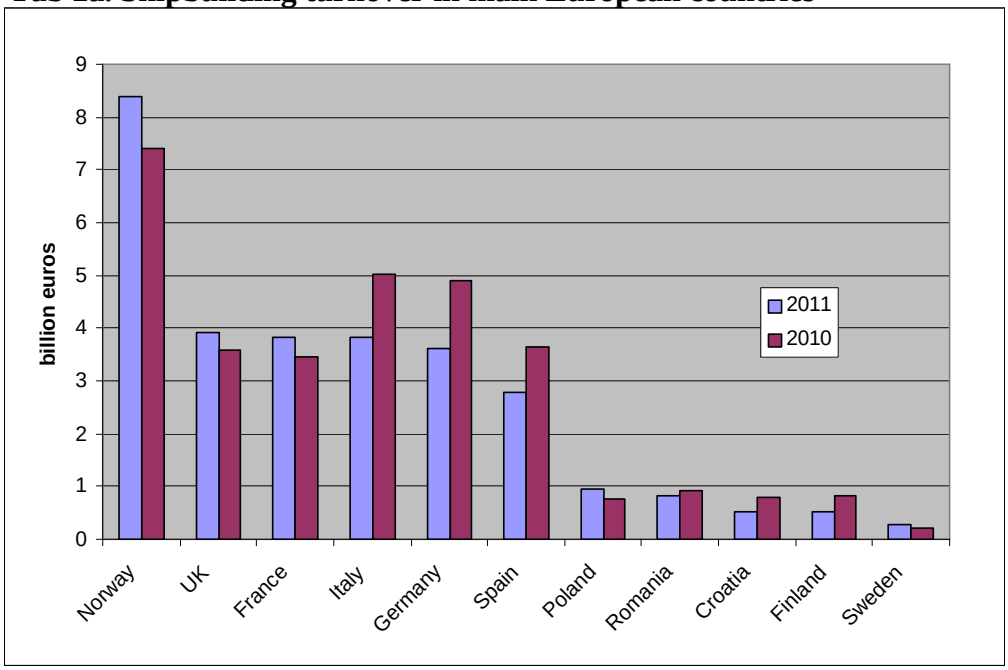
	2003	2004	2005	2006	2007	2008	2009	2010	2011
Turnover (m€)	3703	3757	3625	4250	3930	na	3988	3461	3840
Value added (m€) (2)	1043	1201	1150	1333	1144	na	661	872	1143
Employment (3)	20546	19711	18591	20597	18467	na	11195	12547	13398
Employment FTEs (4)	na	na	na	na	na	na	10228	11015	11379
Number of enterprises	110	na	146	149	151	na	137	153	135
Export ratio	na	na	26%	33%	39%	na	35%	45%	13%

(1) Revised data. 2003-2007 data based on business statistics for civilian shipbuilding and military shipbuilding collected separately for two different NAF codes until 2007.
(2) Value added at market prices. Data as of 2003-2004 estimated.
(3) Number of salaried employees as of 31 December.
(4) Number of salaried FTEs.
na: not available.
Sources: INSEE/SUSE and SIRENE for 2003-2007 (NAF 2003 35.1A and 35.1B; enterprises with a turnover less than €76,300 excluded until 2004; micro-enterprises excluded from 2005 to 2007); additional data from businesses on 2003-2004; INSEE/ESANE for 2008-2011 (NAF 2008 30.11Z, enterprises with 1 salaried employee or more); Customs data on exports: transactions of €1,000 or more and of 1 tonne or more; intra-EU transactions from enterprises with turnover of €150,000 or more.

- The period until 2012 saw a decrease in global ship demand and in prices, while the leadership of Asian yards intensified on most ship markets. Price decrease is principally due to transportation overcapacity, with ship owners carrying on receiving ships ordered prior to the global slowing down of shipping activities, and not mitigated by a sufficient amount of ship dismantling or order cancellations. Several yards were led to withdraw from the market (source: BRS).
- China, with a 45% market share of order tonnage in 2012, South Korea, slightly decreasing to 29%, and Japan (18%) lead the markets (source: BRS).
- In 2011, the EU-28 shipbuilding industry represented:
  - a little more than 4000 enterprises,
  - a cumulated €24.7bn turnover,
  - a €6.8bn value added (at factor costs),
  - about 130,000 salaried employees (source: Eurostat).
  - Together with Norway (the largest European shipbuilder in terms of turnover) and Turkey (2009 data only), this represented overall more than 4,700 enterprises with nearly 160,000 salaried FTEs and a turnover of more than €35bn.
- The Eurozone shipyards, confronted with a high euro/dollar rate, economic difficulties and the scarcity of ship order financing, had a global market share of 1% in 2012 (source: CESA). The European yards are still world leaders on the cruise ship market but a Japanese yard is in the top 5.

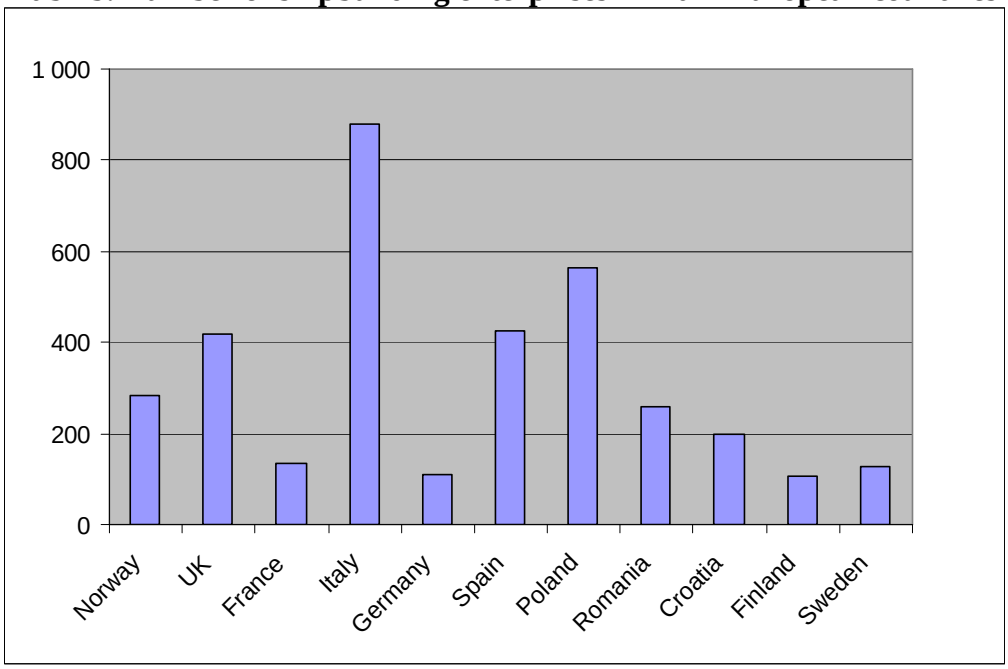
- French yards mainly build passenger and defence ships, offshore service, port service and fishing vessels.
- European yards build, inter alia: offshore service vessels (Norway and UK), cruise ships (Italy, Germany, Finland and France), technology intensive merchant ships (Germany and Spain), defence ships (UK and France), FPSOs (Spain) and research vessels (Germany, UK and France).

Tab 2a. Shipbuilding turnover in main European countries



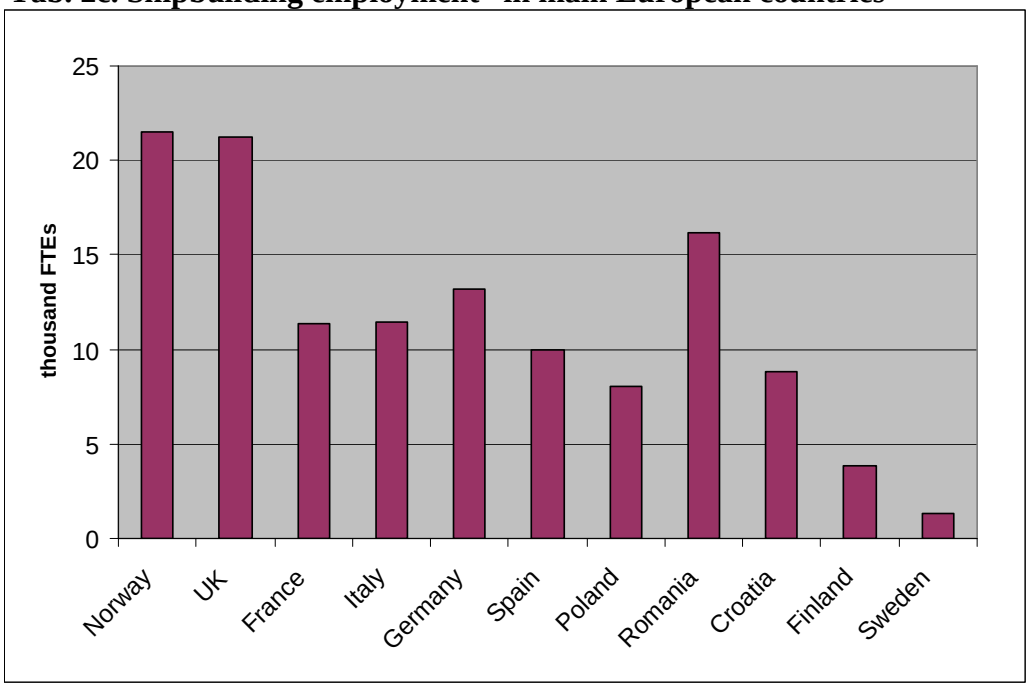
Source: Eurostat

Tab 2b. Number of shipbuilding enterprises in main European countries



Source: Eurostat

Tab. 2c. Shipbuilding employment* in main European countries



*Number of salaried FTEs.
Source: Eurostat

4.2. Marine equipment

The marine equipment industry supplies shipbuilding and repair yards and ship operators; it combines two complementary activities: equipment manufacturing and supply, and services. Equipment manufacturing and supply includes two categories of businesses:

- technical equipment manufacturing, notably propulsion machinery, electric and electronic equipment, shipboard handling, navigation and bridge equipment, pumps, ventilation and air conditioning, and manufacture of ship paints and coatings;
- the manufacturing of assembled and tested equipment either as modules in their technical setting or prefab, and complete systems such as ventilation and air conditioning or fitting out public areas and cabin areas in passenger ships.

Services include the activities of consultancies and engineering services specialized on shipbuilding.

Remarks :

- the coverage of the activity used herein has been extended as compared to the one used in the previous updates of this report ;
- marine equipment is not documented by detailed statistical information regularly updated; its assessment is based on estimates.

Key figures

- 2011-2013 turnover: about €3.4bn, including merchant ship equipment supply (about €2.1bn) and defence ship equipment supply (about €1.3bn) (estimates from GICAN French Marine Industry Group).

- 2011-2013 employment estimated at 17,700 jobs; of which about 13,000 for equipment manufacturing and about 4,700 for engineering and support services, including control and classification (estimates from GICAN).
- 2011-2013 value added: €950m (Ifremer estimate based on sector-related accounting statistics on equipment manufacturing: NAF 2008 codes 26, 27 and 28).

Sources: GICAN, INSEE.

4.3. Ship maintenance and repair

Ship maintenance and repair includes:

- maintenance and repair of civilian ships (excluding pleasure boats);
- conversion of ship structure;
- dismantling and recycling of decommissioned ships.

Ship maintenance and repair is mainly a service operation, incorporating supply of (replacement) equipment while conversion is closer to shipbuilding thus primarily a manufacturing activity. Dismantling is a service to ship owners and a material supply activity to downstream users such as the steel industry. Repair services differ from building and conversion by shorter operation time.

Until 2007 the sector statistics included maintenance and repair of merchant ships; from 2008 onwards repair of defence ships and pleasure boats is also included.

Tab. 3. Ship maintenance and repair key figures

Units : million EUR, number of persons / FTEs, percentage.

	2003 (1)	2004	2005	2006	2007	2008	2009	2010	2011
Turnover	241	nd	408	385	441	nd	897	973	911
Value added	83	nd	137	127	145	nd	305	313	282
Employment (2)	3099	nd	3033	2564	2608	nd	6209	5432	4878
Employment FTEs (3)	nd	nd	nd	nd	nd	nd	5523	4908	4478
Number of enterprises (4)	285	nd	428	445	433	nd	2220	2283	2080
Export ratio	34%	nd	25%	26%	32%	nd	2%	1%	1%

(1) Turnover, value added and export data from SESSI (annual inquiry on a sample of 28 businesses). SUSE data on employment and the number of enterprises.
(2) Number of salaried jobs as of 31 December.
(3) 2009-2011: number of salaried FTEs.
(4) Enterprises of 1 salaried employee or more.

Sources: SESSI for 2003 data (NAF code 35.1C, enterprises of 20 salaried employees or more). INSEE/SUSE for 2003-2007 data (enterprises with turnover of less than €76,300 excluded in 2003, micro-enterprises excluded in 2005-2007). INSEE/ESANE for 2008-2011 data (NAF code 33.15Z, enterprises of 1 salaried employee or more). Customs data for export in 2004-2011 (transactions valued at €1,000 or more, or of 1 tonne or more; intra-EU transactions from enterprises with turnover of €150,000 or more).

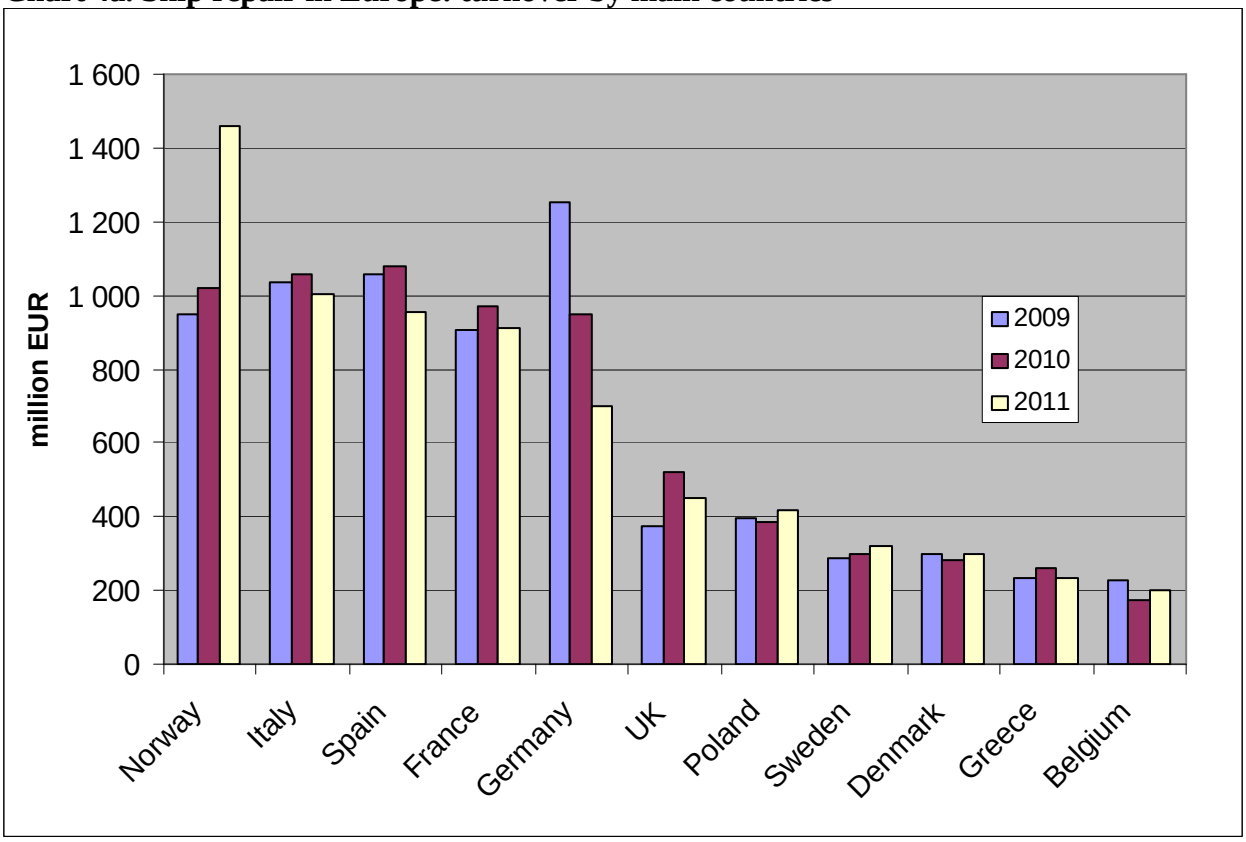
The 2008 statistical disruption, due to NAF change, has modified the population of businesses in the ship repair sector after its merger with pleasure boat repair which was part of the boat building sector until 2007.

European situation

- At EU-28 level the sector represented a cumulated €7.6bn turnover in 2011 (source: Eurostat).
- Outside the EU, the activity is significant in Norway (€1.5bn turnover in 2011) and in Turkey (€400m in 2009). The overall turnover of EU-28, Norway and Turkey nears €10bn.
- Employment: 70,000 jobs in the EU-28 in 2011, and estimated from 80,000 to 90,000 pour Europe.

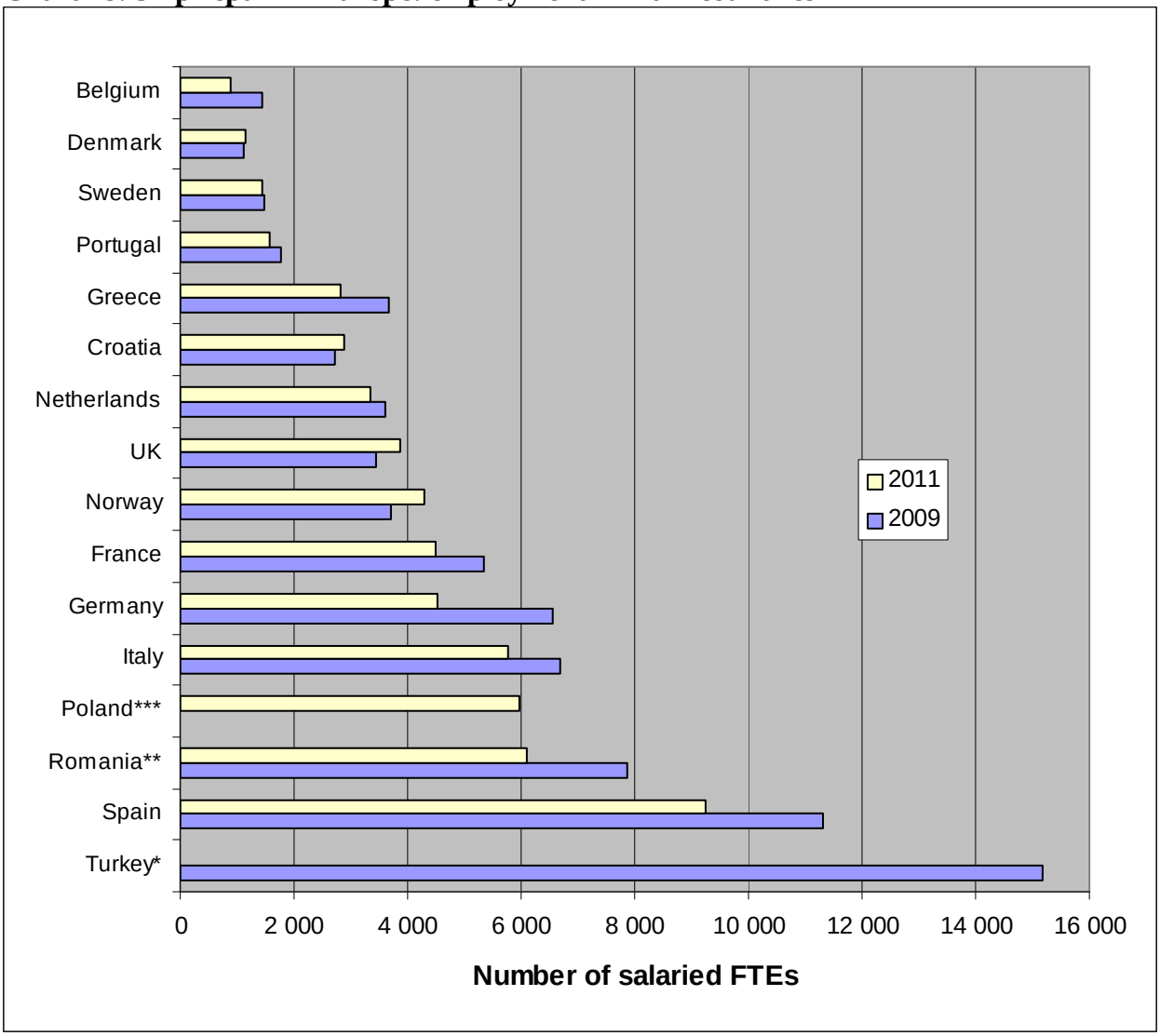
The impact of the economic slowdown on the ship owners' situation had knock-on effects on the European ship repair sector. To the remarkable exception of Norway (where ship repair's labour productivity is by far higher than that of its European competitors), the activity remained stagnant or decreased over the recent years. Employment decreased in most countries except Norway and the UK. A trend towards business concentration was sensitive at global as well as European scales.

Chart 4a. Ship repair in Europe: turnover by main countries



Source : Eurostat

Chart 4b. Ship repair in Europe: employment in main countries



*2011 data not available.
**2009 and 2010 data
***2009 data not available.
Source: Eurostat

4.4. Boat building

The boat building sector includes the construction of sail boats, motor boats, inflatable crafts with flexible or semi-rigid hulls and other pleasure and sport crafts such as small boats, canoes, kayaks and skiffs (not including equipment for water sports and windsurf boards). Since 2008, the sector does not include any longer boat repair, fitting-out and maintenance: these components are now part of the ship repair sector in the revised NAF.

Tab. 5. French boat building industry key figures

Units : million EUR, number of persons / FTEs, percentage.

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Turnover	1591	1705	1832	1990	2174	nd	1040	1133	1238
Value added	nd	541	590	645	719	nd	277	372	372
Employment (1)	11149	11531	11901	12683	12874	nd	8382	7396	7479
Employment FTE (2)	nd	nd	nd	nd	nd	nd	7441	6634	6822
Number of enterprises	827	840	1269	1435	1469	nd	352	385	394
Export ratio	43%	44%	47%	47%	47%	nd	51%	47%	51%

(1) Number of salaried jobs as of 31 December.
(2) Number of salaried FTEs.
Sources: INSEE/SUSE for 2003-2007 (NAF 2003 35.1E, including boat repair), enterprises of 1 salaried employee or more, enterprises with turnover of less than €76,300 excluded in 2003-2004, micro-enterprises excluded in 2005-2007; INSEE/ESANE for 2008-2011 (NAF 2008 30.12Z), enterprises of 1 salaried employee or more; Customs administration for export in 2004-2011 (transactions valued at €1,000 or more, or of 1 tonne or more; intra-EU transactions from enterprises with turnover of €150,000 or more).

- The French boat building industry was severely impacted by the economic slowdown and demand decrease. Job losses were estimated at 1,000 for yards from 2009 to 2010 and 5,000 in 2010 for the entire chain, including yards, suppliers and subcontractors as a whole.
- A recovery in sales and exports became sizeable from 2010 to 2011, while the number of delivered licenses still followed a downward trend, even until 2012.

The boat building and supply chain in French regions

The boat building and supply chain is defined by the industry as including marinas, boat building yards, equipment manufacturing and supply, marine and river boat renting, trade, maintenance, imports, nautical sports and the other associated services (architecture, brokerage, boat driving schools, support and security services, insurance and boating press) (source: FIN French Nautical Industries Federation). With a turnover estimated at €1.4bn in 2009 and 13,500 jobs, the chain is broken down as follows:

	Share of 2009 turnover	Share of 2009 employment (number of jobs)
Mediterranean regions (PACA, Languedoc-Roussillon, Rhone-Alps, Auvergne and Corsica)	34%	36%
Western regions (Brittany, Normandy, Pays de la Loire and Centre regions)	33%	33%
Southern-Atlantic regions (Poitou-Charentes, Aquitaine, South & Pyrenees, and Limousin)	18%	17%
North Eastern regions (North-Pas-de-Calais, Picardy, Ile-de-France, Alsace, Burgundy, Champagne-Ardennes, Franche-Comté, and Lorraine)	14%	12%
Overseas regions	1%	2%

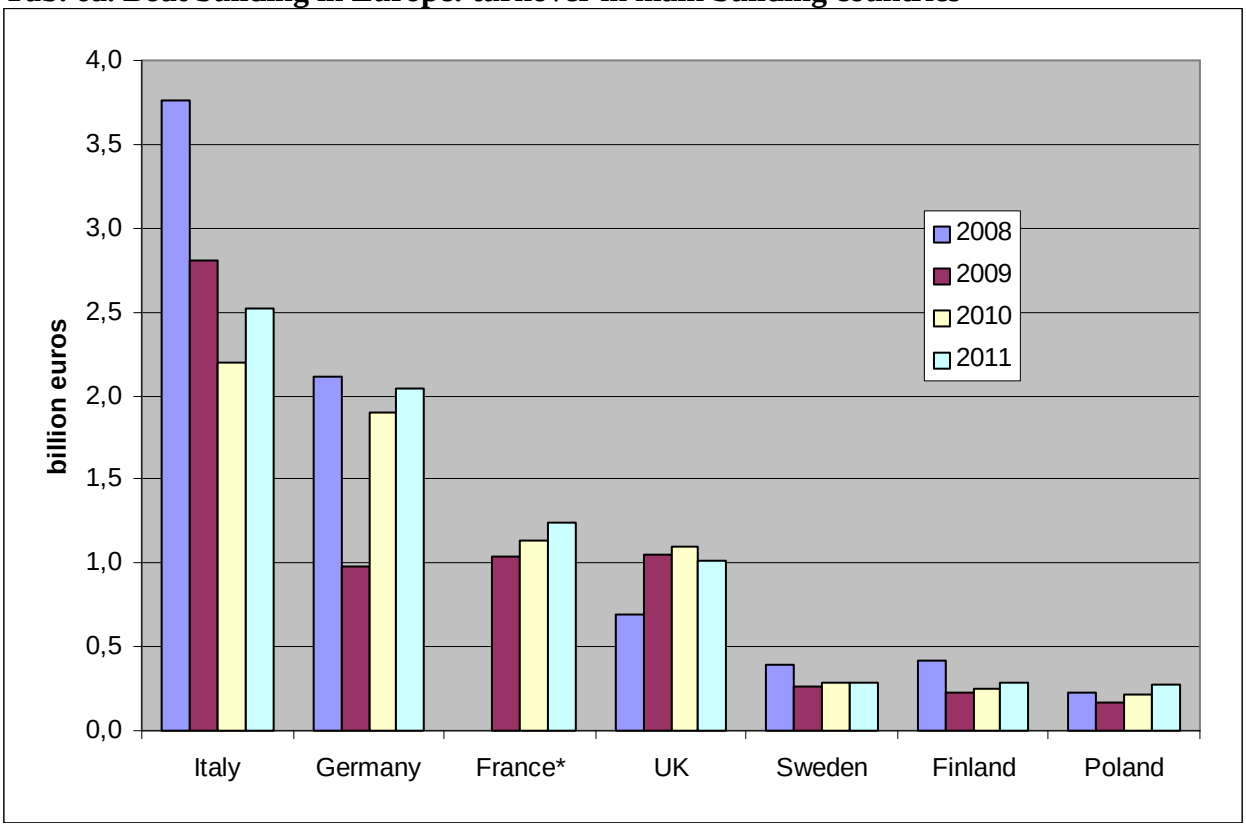
Source: FIN, 2010.

European situation

The cumulated turnover of the EU countries' boat building sector was over €9bn in 2011 with 4,700 enterprises and about 48,000 salaried jobs.

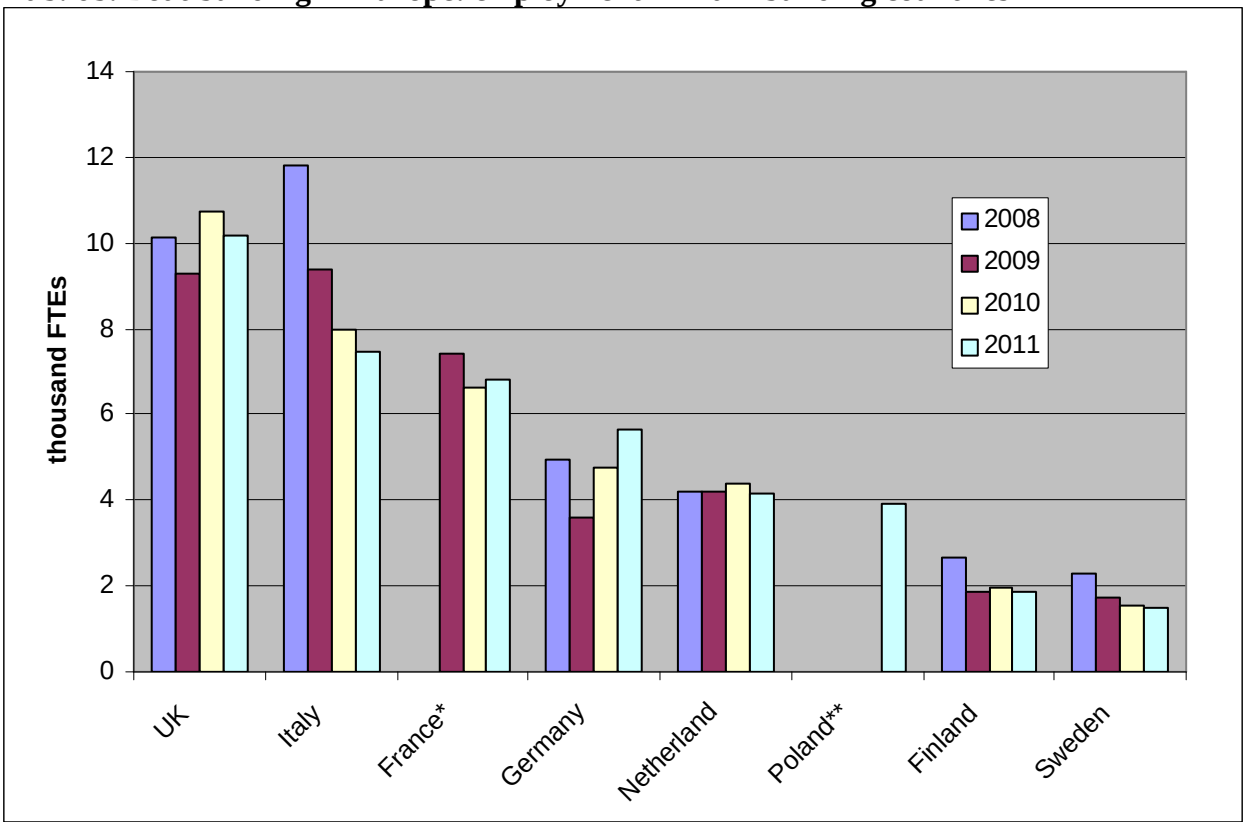
The drop in the activity was important over the 2008-2011 period after the favourable phase of the 1990s and the early 2000's. A trend towards recovery appeared in 2010-2011, notably in Germany and France but also in Italy where employment had been severely adjusted and a number of companies put out of business.

Tab. 6a. Boat building in Europe: turnover in main building countries



*2008 data not available.
Source: Eurostat

Tab. 6b. Boat building in Europe: employment in main building countries



*2008 data not available.
**2008-2010 data not available.
Source: Eurostat

5. Marine and river civil engineering

Marine and river civil engineering includes construction and engineering works performed at sea, in rivers, or bodies of inland water. This involves building with natural or artificial riprap and developing or regulating navigable or non navigable waterways. The activity involves both building and maintenance.

Tab. 1. Marine and river civil engineering key figures

Units: million euros, number of persons.

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Turnover	1244	1010	1000	1291	1296	na	1522	1865	1391
Value added	290	267	308	342	381	na	578	719	757
Employment (1)	4175	3676	3499	4413	4738	na	5271	4922	4576
Employment FTE (2)	na	na	na	na	na	na	4742	3972	4056
Number of enterprises (3)	235	243	232	220	229	na	157	292	257
Export ratio	44%	56%	60%	62%	61%	c	0%	0%	c

(1) Number of salaried employees as of 31 December.
(2) Number of salaried FTEs.
(3) Number of active enterprises as of 31 December.
na : not available
c: confidential
Sources: INSEE/SUSE for 2003-2007 (NAF 2003 45.2R), enterprises of 1 salaried employee or more, enterprises with turnover of less than €76,300 excluded in 2003-2004, micro-enterprises excluded in 2005-2007; INSEE/ESANE for 2008-2011 (NAF 2008 42.91Z), enterprises of 1 salaried employee or more; Customs administration for export in 2004-2011 (transactions valued at €1,000 or more, or of 1 tonne or more; intra-EU transactions from enterprises with turnover of €150,000 or more).

The following types are classified as maritime and river engineering works:

- building harbours, seawalls, navigable canals, water inlets, locks and other structures to regulate water courses;
- carrying out work in water (erecting cofferdams, constructing bridge piles), dredging, or underwater (by divers or other means);
- clearing ditches, stream bank developments and reed and weed cutting.

In France, maritime and river works account for a modest part of the public work sector: a little less than 1% in 2012 and 1.5% in 2008 (source: FNTP Public Works Industry National Association); but the role of maritime and river works for navigability and updating ports is key. Harbour works represent the major part of the activity; marine energies are a growing business requiring maritime works.

5.1. Activity in metropolitan regions

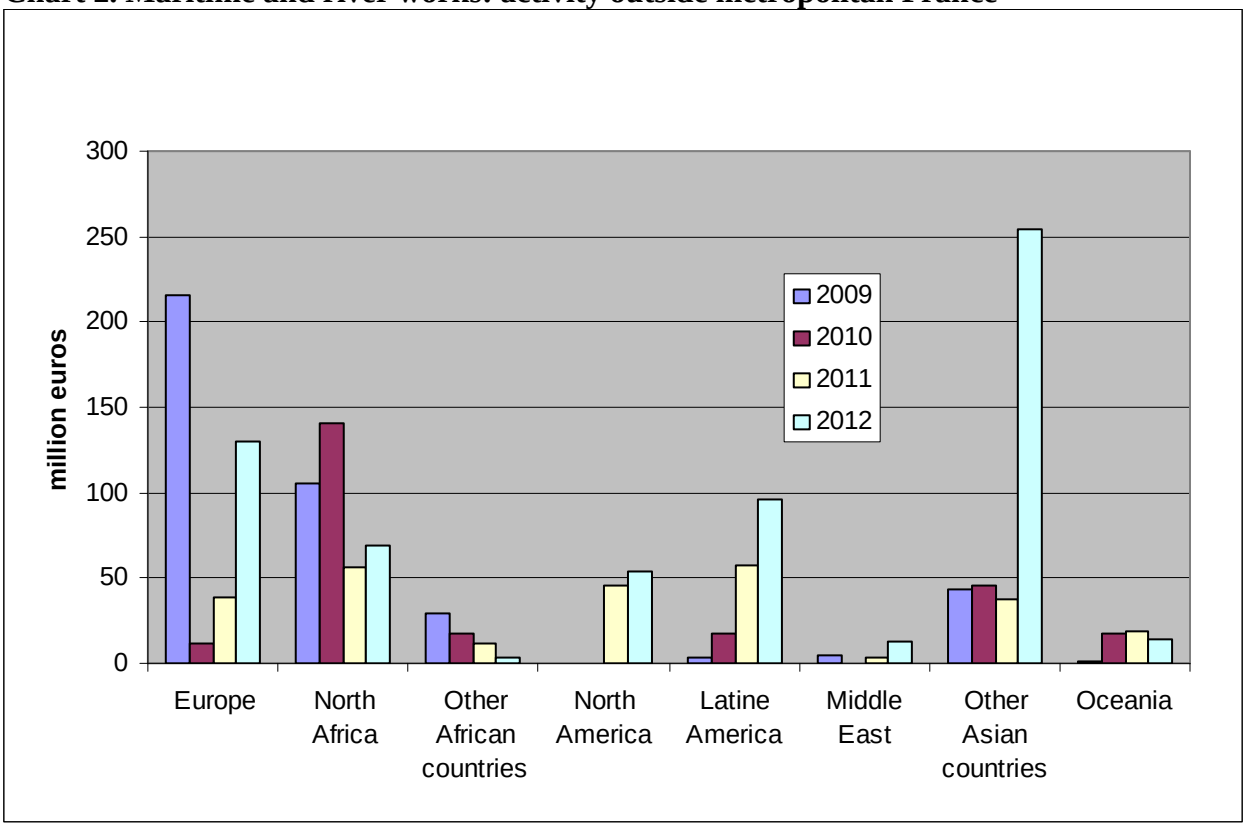
According to data from the industry on work locations, the share of the top four regions in terms of work value (Provence-Alps-Cote-d'Azur & Corsica, North-Pas-de-Calais, Upper Normandy and Ile-de-France) was 47% in 2011 overall and 55% in 2012 (source: survey of FNTP members).

Despite the fragility of statistics on so small a subset of the public work sector, the above figures illustrate the geographical concentration of maritime and river works; these four regions have important sea and inland ports.

5.2. Activity outside of metropolitan France

The key figures presented above point out a sharp drop in exports in 2009-2011. In particular, the amount of orders from the EU countries collapsed in 2010 and 2011 (€10m against more than €200m in 2009) and were not offset by the amount of exports outside of Europe (source: survey of FNTP members). However the situation improved in 2012.

Chart 2. Maritime and river works: activity outside metropolitan France



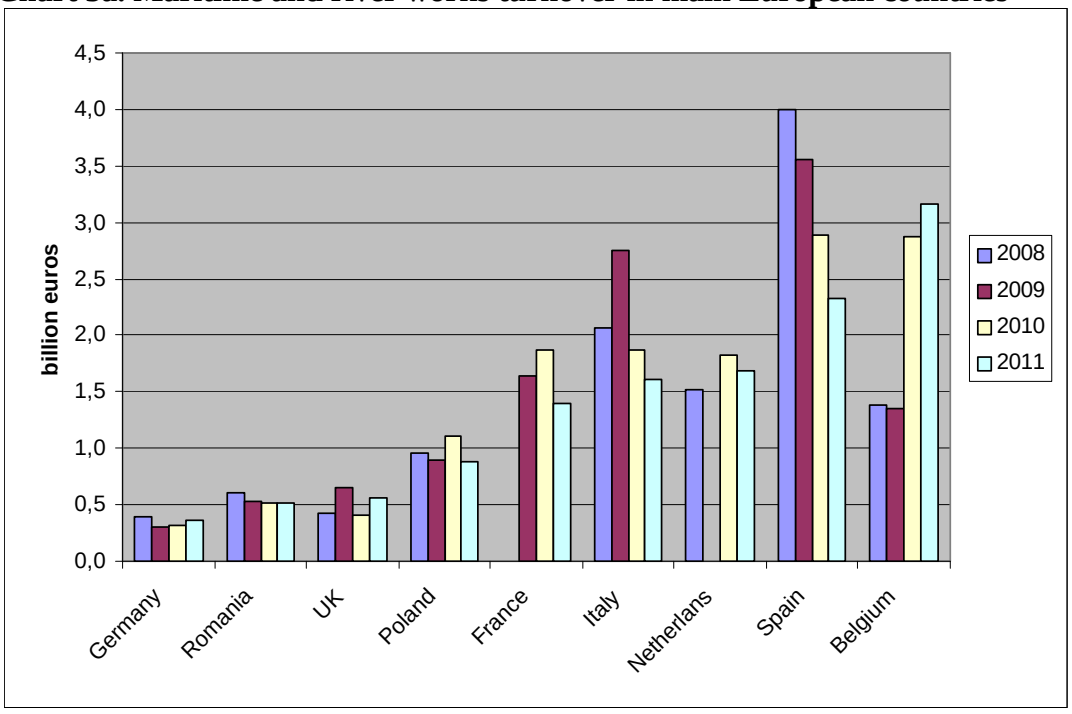
Source: FNTP - Annual member surveys.

5.3. European situation

In the EU-28 where almost all of the activity in Europe in performed, the public work sector has more than 4,500 enterprises active in maritime and river works with a cumulated turnover of €14bn in 2011, an overall value added (at factor costs) nearing €9bn, and more than 80,000 salaried jobs.

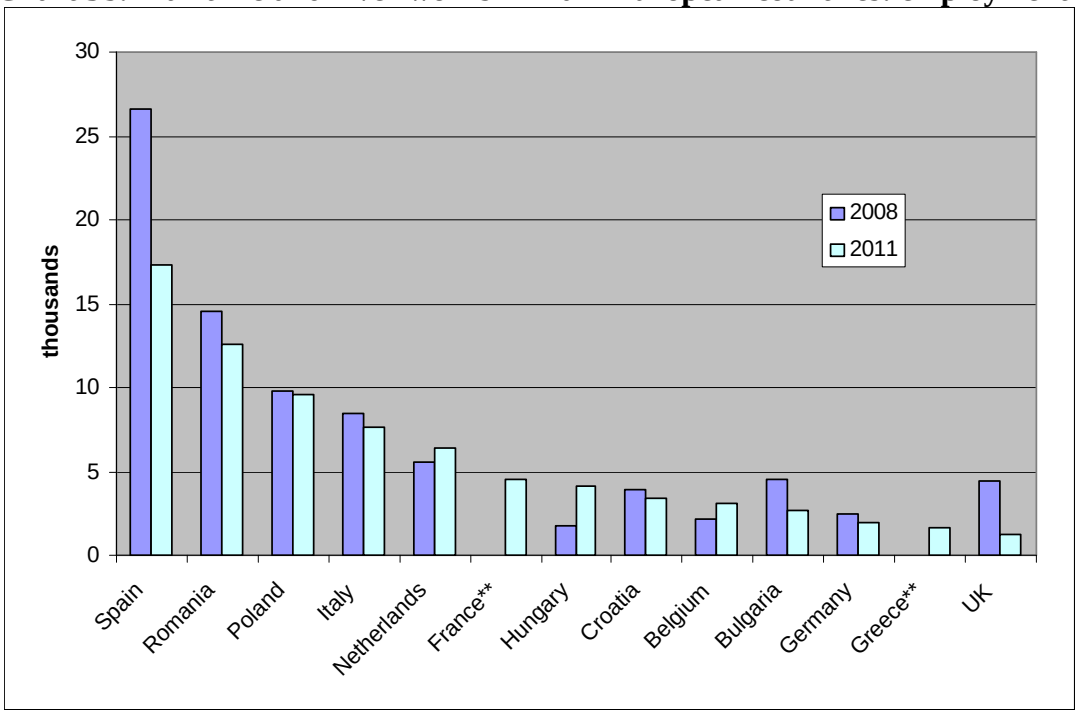
The impacts of the slowing down of the European economies have been sensitive on the situation of the activity; in Spain in particular, public works employment was severely adjusted from 2008 to 2011. Other explanations are not less important including the size and agenda of works in major harbours.

Chart 3a. Maritime and river works turnover in main European countries



2008 data not available for France, 2009 data not available for the Netherlands.
Source: Eurostat

Chart 3b. Maritime and river works in main European countries: employment*



*Number of salaried employees as of 31 December.
**2008 data not available.
Source: Eurostat

6. Submarine cables

The activity as a whole includes the manufacturing, laying and maintenance of submarine cables immersed at depth and generally buried, intended to carry communications or electric power. Commercial services associated with the setting up of projects are included in the activity. Umbilicals are not included in the absence of reliable statistics.

The sector includes very different activities with a small number of businesses involved. Cable manufacturing differs from laying and maintenance: the former is a high value-added engineering segment; the latter requires specialized and technical operations at sea. The electric and communication submarine cable markets are also quite different. The former generally concerns links between grids and islands or between European countries while the latter can concern intercontinental links.

Tab. 1. Submarine cable manufacturing, laying and maintenance key figures

Revised data

Units: million EUR, number of jobs

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Turnover	2301	647	288	316	595	519	765	1134	1338	1021	1104
Value added*	389	82	-26	-67	105	67	152	223	254	212	244
Employment*	4480	2377	1363	1369	1482	1220	1374	1964	2069	1733	2030

*Estimates

Sources: INSEE/SUSE (NAF 2003 31.3Z) for 2001-2007 ; INSEE/ESANE (NAF 2008 27.31Z and 27.32Z for 2009-2011) ; Sycabel and other companies (for turnover estimates), Ifremer (estimates of value added and employment based on INSEE data).

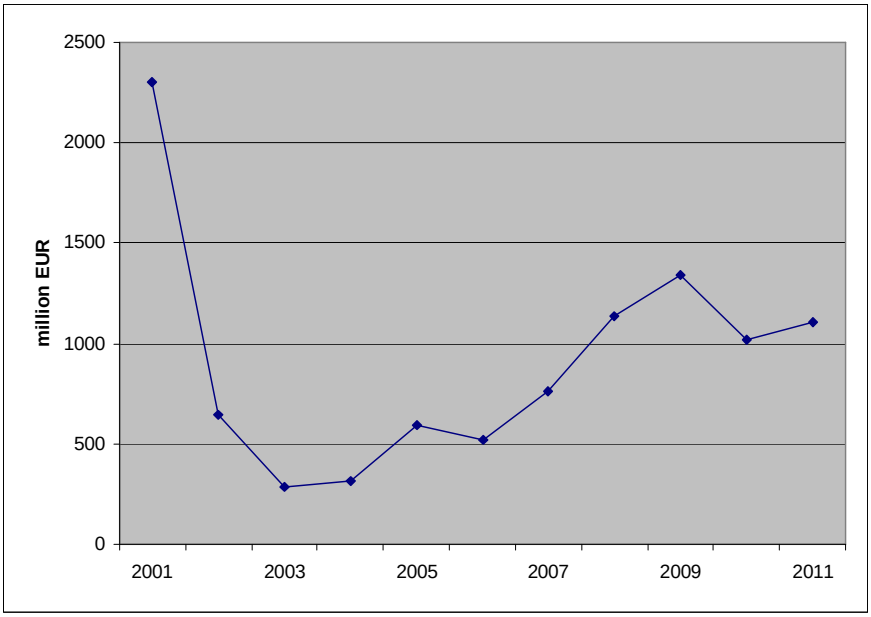
Remark: submarine cable manufacturing on the one hand and laying and maintenance on the other are included in larger, not specifically maritime, sectors of the NACE European classification of economic activities and of the NAF French classification. Practically, for each of these two activities, the only key indicator that can be collected is turnover. The other indicators are necessarily estimated.

- The activity is progressively recovering after its lowest in the early 2000s, but has not come back to its levels of the late 1990s explained by major international communication projects. According to information from the industry, after a growth period until 2011, the submarine cable manufacturing activity slightly went down in 2012-2013. Conversely laying and maintenance operations were steadily growing since their lowest in 2004-2005.
- At global scale, the demand for submarine communications links primarily comes from Sub-Saharian Africa, East and South-East Asia, Latin America (notably Brasil) and Australia-New-Zealand: according to the *Submarine Cable Industry Report*, March 2013 (© 2013 by Submarine Telecoms Forum, Inc.), “177 new projects, with a total value of $28.5billion, [were] either under construction or proposed” in 2013. A key driver of these projects is the growing requirements for optic fiber transmission capacity.
- There is a growing interest in international links through the Arctic marine zones.
- The international market in electric submarine cables is driven by the need for connecting islands and laying-out regions, by the development of marine energy units to be connected

to main grids and by the needs for interconnecting grids, explained in turn by the need for security of supply, the growing costs of electricity plants and the environmental constraints, notably on CO2 emissions. In Europe, several major links already exist, involving the Scandinavian countries, the Netherlands, the UK, Germany and France. New projects involve links between British islands and with Ireland, as well as a cable between the UK and the Netherlands. A Scotland-Norway cable project is being studied (1,400 MW, 570 km for £1.75bn) as well as an Iceland-Scotland link (1,000 km).

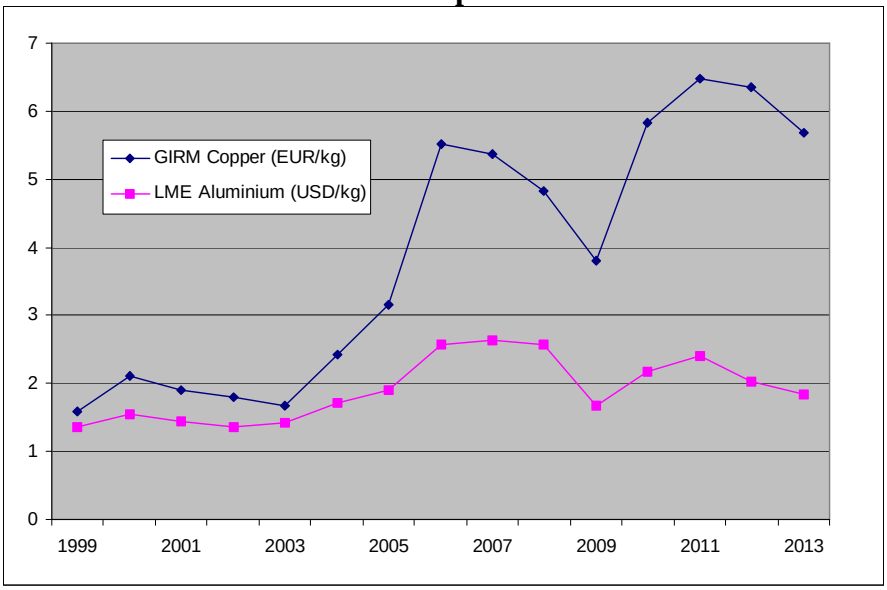
- The downward price corrections for cable making's key commodities (Copper, Aluminium) in 2008-2009 were largely driven by the economic slowdown.

Chart 2. Submarine cable turnover in France



Sources: Sycabel; INSEE; Ifremer estimates.

Chart 3. Prices of metals of critical importance for cable manufacturing



Sources: Sycabel, UNCTAD.

7. Offshore oil & gas services and equipment

The sector includes the supply of oil & gas-related services and equipment in the fields of exploration and production, refining and petrochemicals. Distribution, use and transport of oil and gas are not included. Work and facilities concerning transport (pipeline laying and LNG liquefaction, regasification and carriage) are included.

Tab. 1. French oil & gas services and equipment key figures

Units: million euros, thousand jobs

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Estimated turnover (onshore and offshore industry)	15800	17000	19000	24200	29000	31100	28100	na	31200	35000
Estimated turnover (offshore industry)	5500	5700	6100	7300	7900	9100	na	na	12500	14000
Estimated value added (offshore industry) (1)	1800	1800	2000	2400	2500	3100	na	na	4300	na
Estimated value added ratio (1)	33%	32%	33%	32%	31%	34%	na	na	35%	na
Estimated employment (2)	25,5	25,5	26	26,5	27	27	na	na	24	24

(1) Ifremer estimates revised, based on breakdown of turnover between equipment and engineering services (source: IFPEN, GEP-AFTP) and on value added ratios from INSEE for equipment manufacturing sectors and engineering services (NAF 2003 codes: EE, 74.2C; NAF 2008 codes: 26, 27, 28, 71.12B).

(2) Ifremer estimates for 2007-2012, based on IFPEN-GEP-AFTP data. Low estimates for 2011 and 2012 based on GEP-AFTP low estimates of employment in the onshore & offshore industry as a whole.

na: not available.

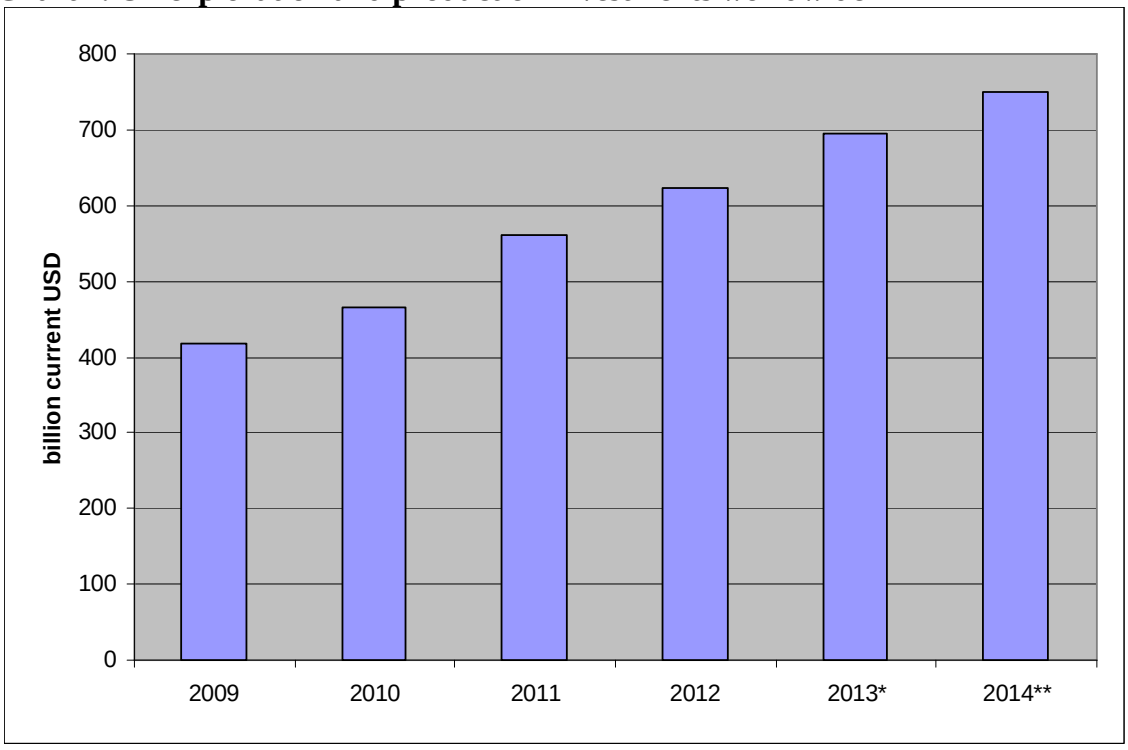
Sources: GEP-IFPEN (Annual surveys of the oil and gas service and equipment industry, 2004-2009); GEP-AFTP 2013 report ("Survey of the French oil and gas service and equipment industry. 2012-2013 Period", Paris: GEP-AFTP, 2013); INSEE/SUSE, INSEE/ESANE; Ifremer estimates.

- By definition, the offshore oil & gas service and equipment sector depends on exploration and production investments of the offshore oil & gas production activity.
- It includes a range of business categories: upstream services and equipment for exploration and drilling; downstream services and equipment principally supporting the refining business, and the major part of which is engineering; and the manufacture of equipment used all along the oil & gas chain (both upstream and downstream).
- A same company can be active in both the onshore and the offshore upstream segments as, in certain cases, the same equipment can be used for onshore and offshore operations. It is then difficult to assign part of the company's activity to either the onshore or the offshore segment. The same is true of refining-related services and equipment.
- In the above key figures, double accounts with figures presented on maritime and river works, shipbuilding and the marine equipment industry are not excluded: see chapter on Shipbuilding and its "Marine equipment" section, and chapter on Maritime and river civil engineering. For instance, GNL carrier building (currently part of shipbuilding in national statistics) was taken into account in the IFPEN surveys until 2008; some companies performing operations at sea or submarine operations, also included in the oil & gas service surveys, are usually included in the maritime and river works sector.

7.1. Drivers of the offshore oil & gas service and equipment activity's development: some remarks

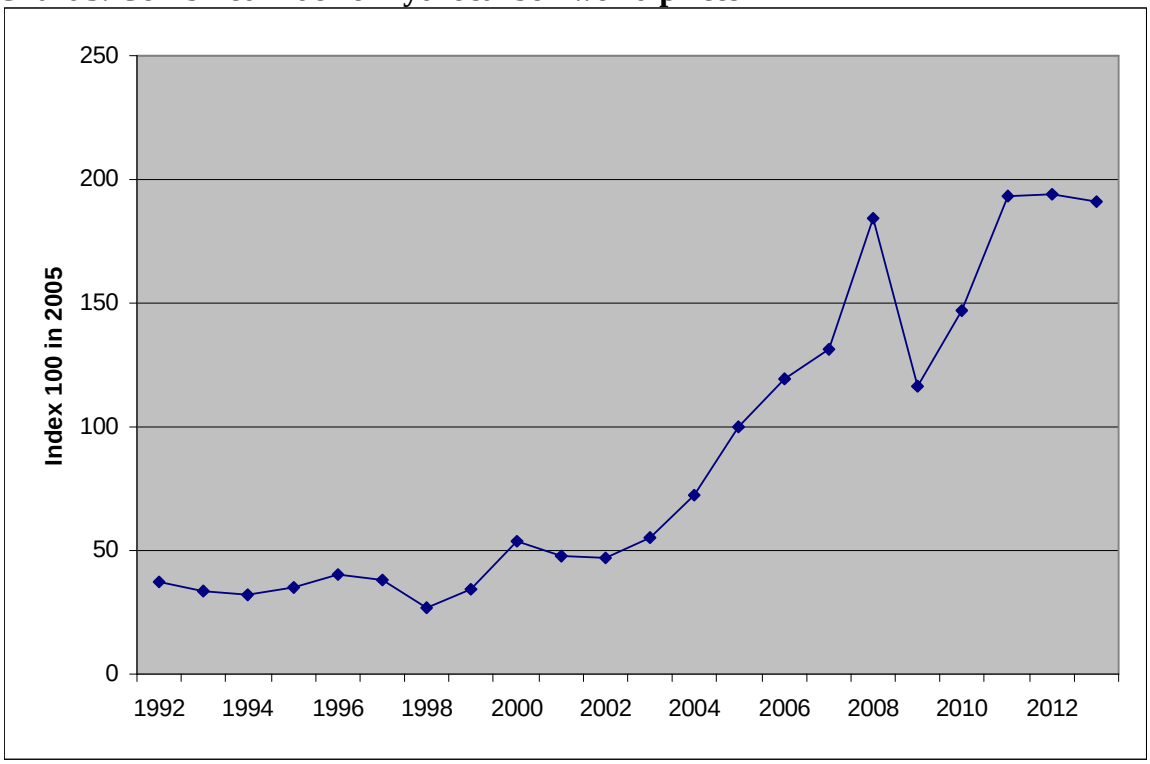
- Prior to the most recent downturn of 2014, oil and gas prices remained around the levels of 2012.
- Over the observed period, oil and gas exploration and production investments increased particularly in the US, Asia but also in the Middle East and Europe.
- The IFPEN data show that, after the 2009-2011 slowdown phase, several indicators related to the upstream sector were back on the increase: number of offshore wells drilled, number of rigs in operation and yearly average offshore rig utilisation rate, jackup rig renting price, but also geophysics and offshore construction market indicators including vessel, leasing, submarine equipment and floating platform markets.
- The global refining capacities, in barrels per day, steadily increased for more than ten years at around 1.5% per annum but with strong regional differences in the most recent time period: e.g. refining investments were impacted by the oil and gas consumption slowdown in Europe and rapid growth in Asia, Middle-East and Latin America. The new perspectives opened up by unconventional oil and gas production in the US are considered favourable to the US refining sector.

Chart 2. Oil exploration and production investments worldwide



*Estimate
**Forecast
Source : IFPEN

Chart 3. Combined index of hydrocarbon world prices*



*Index combining aggregated prices indices for oil, natural gas and coal, in current USD.
Source: IMF

8. Coastal tourism

The World Tourism Organisation (UNWTO) defines tourism as "all activities of people who travel and stay in places outside their usual environment not more than one consecutive year for leisure, business and other purposes". The term of "activity" herein means all kinds of individual business.

Tourism travellers are called "visitors". There are two categories of visitors: "tourists", who stay one night or more (and not more than one year) outside their usual environment; and "excursionists" who do not stay a night outside their usual environment.

In France, summer stays in seaside resorts are the main mode of French tourist consumption. The tourist offer comprises the different types of commercial accommodation and a range of services such as restaurants, cafés and travel agencies.

In the present report, coastal tourism is defined as the set of local and non-local activities supplying tourism in “coastal space” based on INSEE zoning. Summer beach and nautical activities represent the most important part of tourism expenditure in France. Tourism offer includes the different kinds of accommodation and a set of services to consumers including restaurants, beverage serving activities and travel agencies inter alia.

Tab. 1. Coastal tourism key figures*

Units: billion EUR, thousand jobs

	2005	2006	2007	2008	2009	2010	2011
Estimated coastal tourism consumption (1)	32,5	37,1	39,1	40,2	38,4	39,0	41,7
Estimated coastal tourism value added (2)	11,4	13,1	14,3	13,8	13,7	13,9	14,6
Estimated coastal tourism employment (3)	251,8	280,3	290,9	234,3	229,4	228,4	235,5
Coastal tourism share of tourism consumption (4)	26,4%	28,9%	28,8%	28,8%	28,8%	28,8%	28,8%

*Based on the revised version of France tourism accounts.

(1) Estimate as a function of the coastal share of internal tourism consumption (ITC) based on data from Tourism Accounts. Those of the maritime and river transport services which are included in the ITC are however excluded from the above key figures so as to avoid double accounts with maritime and river transport key figures (see next chapter).

(2) Value added of sectors covering ITC goods and services production and supply, using the breakdown of tourism spends by sectors and value added ratios of these sectors.

(3) Employment in sectors covering ITC goods and services production and supply, using the breakdown tourism spends by sectors and employment ratios of these sectors. Statistical disruption: number of salaried jobs as of 31 December from 2005 to 2007; number of salaried FTEs from 2008 to 2011.

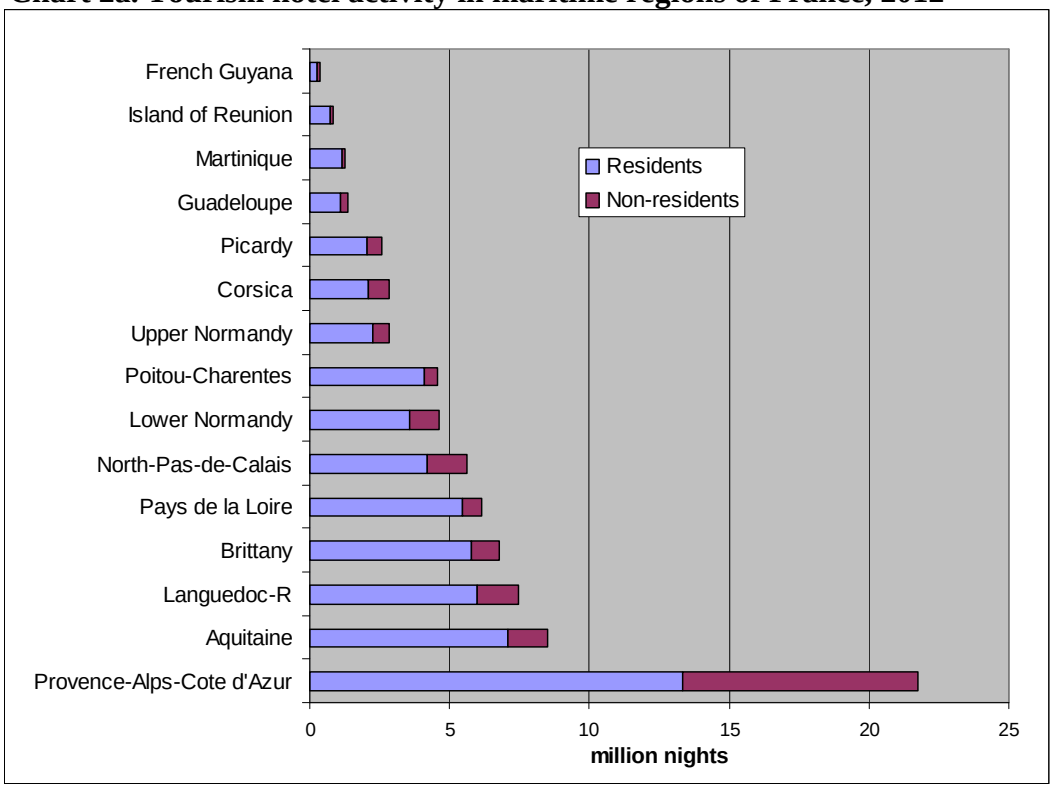
(4) 2007 ratio used as provisional ratio for subsequent years.

Source: Economy Ministry/DGCIS/Tourism Accounts; Unedic (Employment Association) for employment data.

The tourism satellite accounts have been revised from 2005 to 2011. The above key figures use the spatial breakdown of *domestic* tourist spends (activities of resident visitors in France); this breakdown has been extrapolated to *internal* tourism spends (activities of resident and non-resident visitors in France) in the absence of a similar breakdown for *inbound* consumption (consumption of non-resident visitors in France).

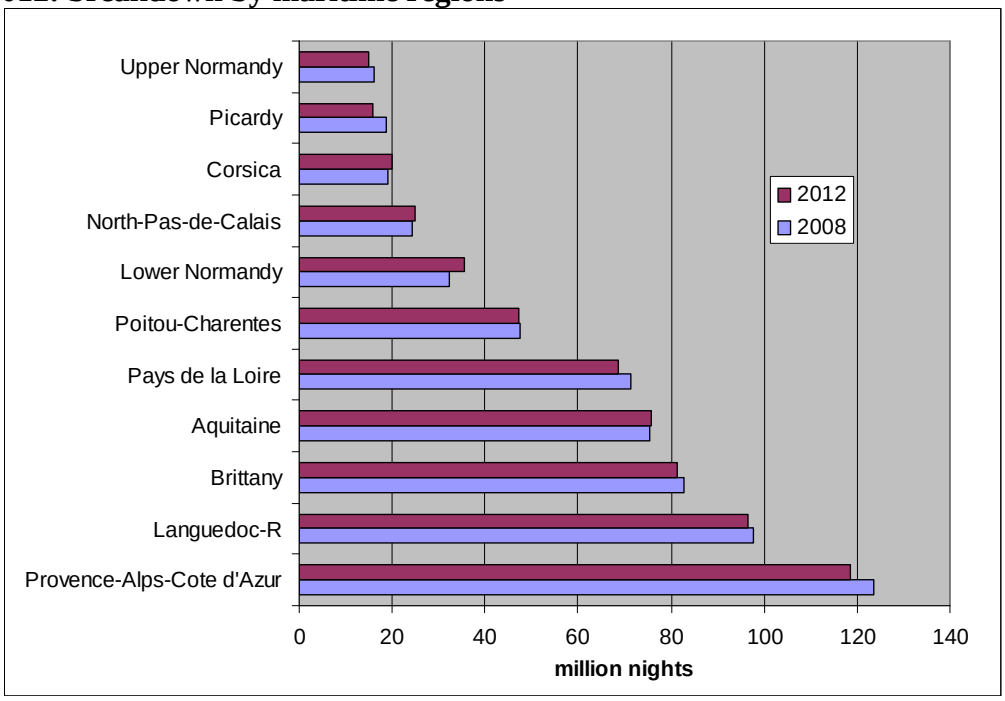
8.1. Regional breakdown

Chart 2a. Tourism hotel activity in maritime regions of France, 2012



Sources: INSEE, DGCIS (Tourism administration), local tourism agencies, hotel occupancy survey.

Chart 2b. Resident visitors' trips for personal purpose in metropolitan France, 2012: breakdown by maritime regions



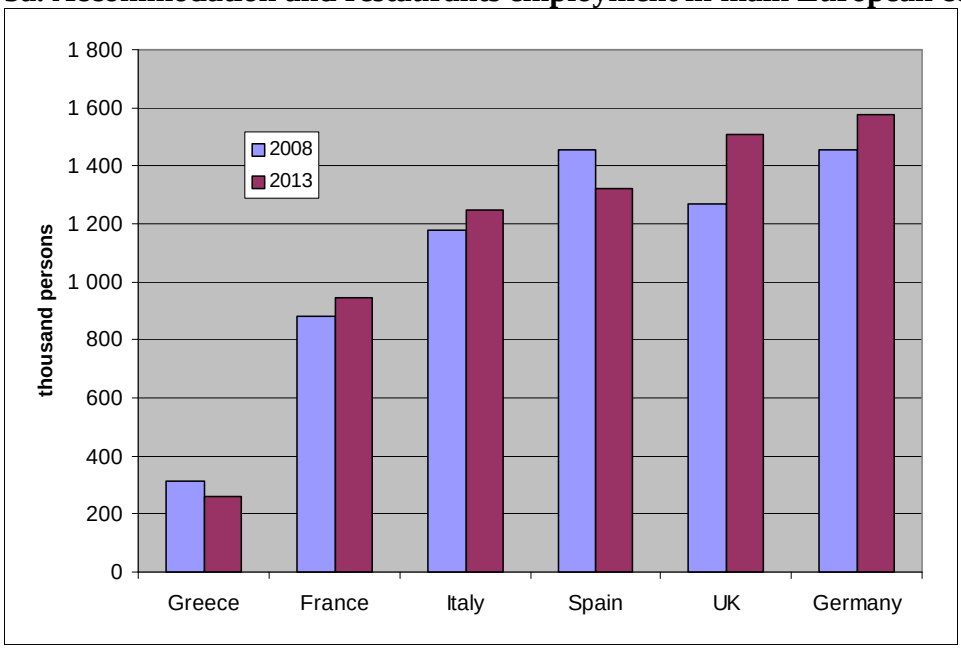
Source: DGCIS/Annual Resident Tourist Trip Survey

- The ranking of regions by number of nights did not significantly change over the recent years.
- Some regional specificities are noteworthy, e.g. the important share of camping grounds in the number of tourist visits in Languedoc-Roussillon and Brittany regions, as opposed to the importance of hotels in the accommodation capacity of Aquitaine region.
- The Provence-Alps-Cote d'Azur region receives nearly the half of non-resident tourist overnight stays in metropolitan France and overseas regions.
- 2011 and 2012 saw an increase in the number of tourist nights after a decrease in 2009-2010. Tourism spends were back on the increase in the recent past, and the number of nights in commercial accommodation on the decrease.

8.2. International and European tourism

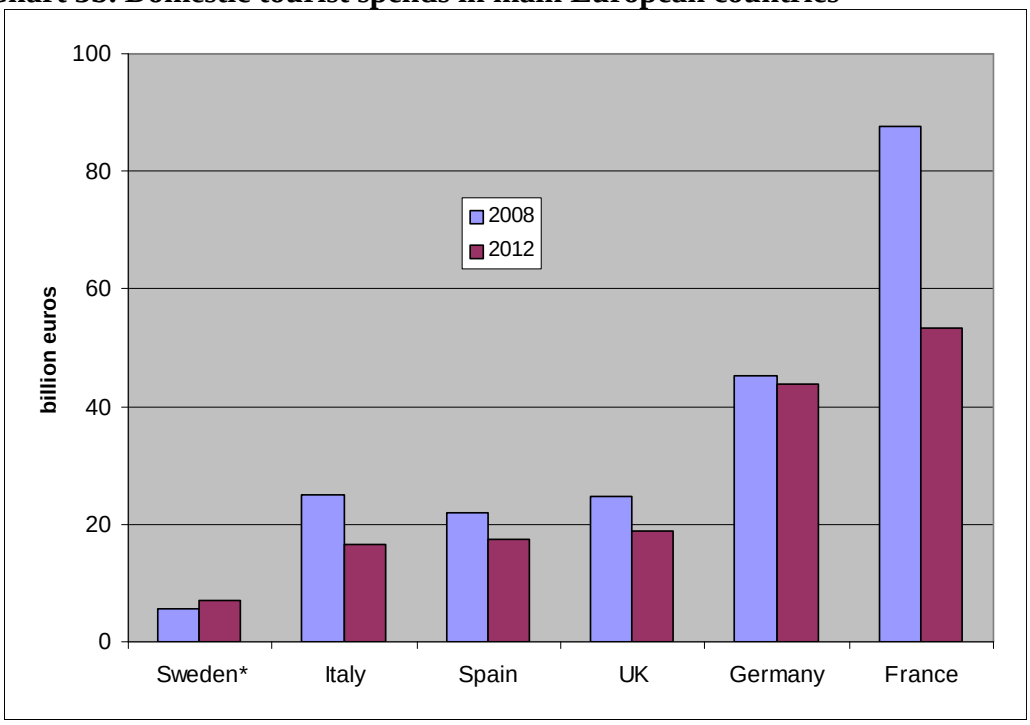
- Coastal tourism is not documented in details at Europe scale. The present chapter limits itself to some of the main data merging coastal and inland tourism.
- Europe includes several important international tourist receiving countries. The impacts of the 2008-2012 economic slowdown have been sizeable on tourist domestic spends and on employment in tourism specific activities, notably in Spain, France and Greece.
- China is of growing importance on international tourist markets both as a receiving country for non-residents (China's data on international inbound visits often include arrivals from Hong-Kong and Macao) and as an emitting country of outbound consumption. Since 2012, China has become the largest emitting country in this respect. France receives a larger number of non-residents, partly for transit, but the US remains the largest receiving country in terms of inbound spends ($140bn in 2013).

Chart 3a. Accommodation and restaurants employment in main European countries*



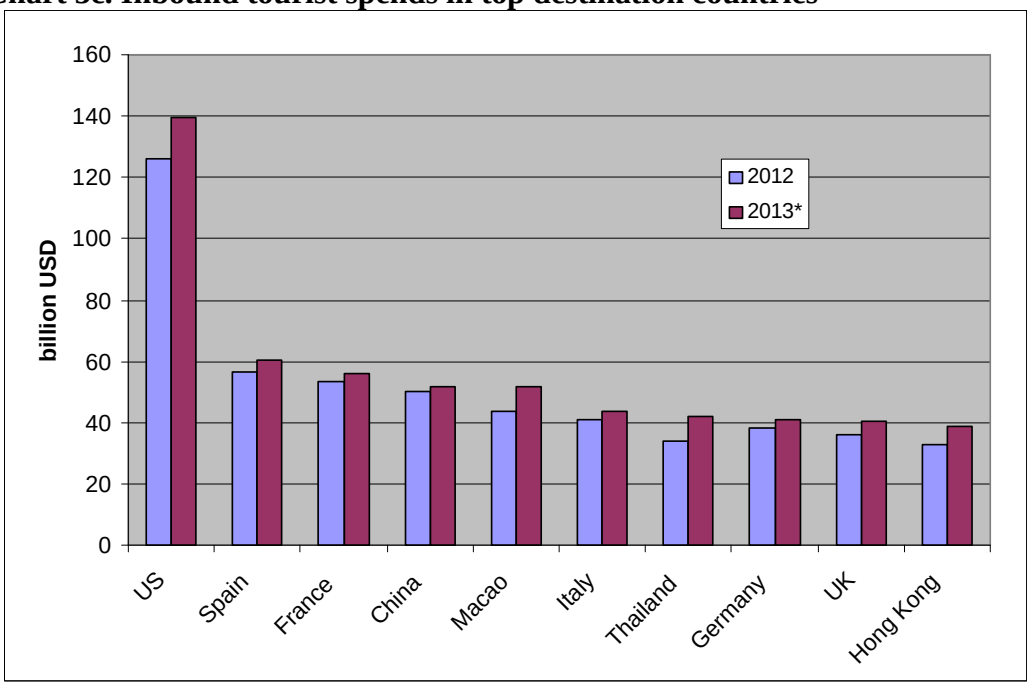
*Part time and full time, salaried and non salaried employees.
Source: Eurostat

Chart 3b. Domestic tourist spends in main European countries



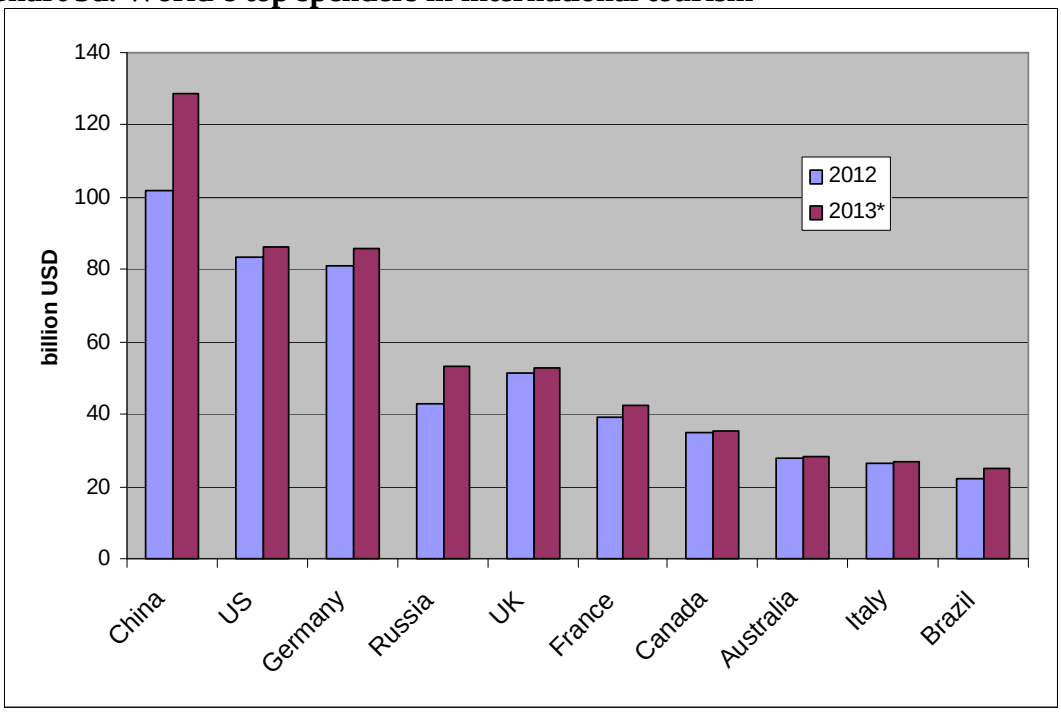
*2008 and 2011 data.
Source: Eurostat

Chart 3c. Inbound tourist spends in top destination countries



*Provisional data.
Source: UNWTO, Tourism Highlights 2014.

Chart 3d. World's top spenders in international tourism



*Provisional data.
Source: UNWTO, Tourism Highlights 2014.

8.3. Cruise tourism

- Cruise tourism is a more and more important segment of international tourism and a major component of coastal tourism.
- It is largely dominated by the US both on the offer and demand sides, but it is taking up an increasing importance in Europe by the number of clients and by growth in ports of call and ports of embarkation.
- In Europe, the market growth remained steady during the economic slowdown. In 2012-2013 the European cruise companies' market grew at an annual 3.6% to about 6 million passengers in 2013. These companies generated about 340,000 jobs in 2013 in all the supply chain (including cruise lines, European manufacturers, financial and business services, accommodation, restaurants and entertainment, and transportation and utility services). The direct cruise tourism expenditure in Europe (cruise passenger spends for transportation to and from ports of embarkation and for retail goods in call ports, port services and cruise industry employment, spending for tours and travel agency services, and supply purchases by cruise lines) amounted to €16.2bn in 2013 (a 4.5% increase from 2012), including 4.6bn in Italy, 3.1 in UK, 3 in Germany, 1.2 in Spain, 1 in France (source: European Cruise Council).
- In Europe, most embarkation and destination ports are Mediterranean and Baltic ports. Through passenger spends, embarkation ports generate higher incomes than call ports.

Tab. 4a. Cruise passengers

Unit: million passengers

	2003	2013
USA	8,23	11,82
Europe*	2,71	6,40
Rest of the world **	1,08	3,09
Total	12.02	21.31

*Inc. Russia, Central and Eastern Europe.

**Estimates.

Sources: CLIA, G.P.Wild International Ltd.

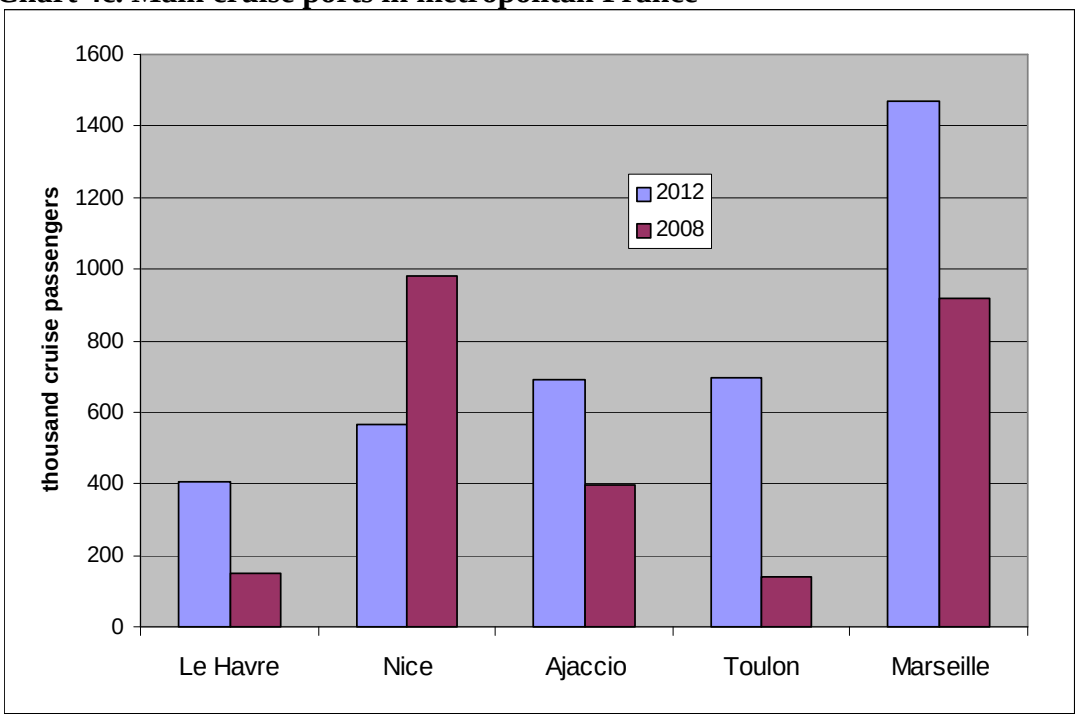
Tab 4b. Top European cruise ports in 2013

Unit: thousand passengers

Ports	Embarking	Disembarking	Call	Total
Mediterranean top 10				
Barcelona	754	752	1093	2599
Civitavecchia	496	494	1548	2538
Venice	752	761	303	1816
Piraeus	149	160	994	1303
Palma de Majorca	245	246	755	1246
Marseille	191	191	807	1189
Napoli	58	52	1064	1174
Dubrovnik	12	12	1112	1136
Genova	327	324	401	1052
Savona	337	333	269	939
Atlantic and Northern Europe				
Southampton	796	796	54	1646
Copenhagen	224	224	352	800
Lisbon	24	26	507	557
Hamburg	261	259	32	552
Saint-Petersburg	0	0	524	524
Tallin	8	8	503	519
Cadiz	2	2	487	491
Stockholm	32	32	421	485
Bergen	0	0	453	453
Helsinki	0	0	419	419

Sources: CLIA, MedCruise, Cruise Europe, ports.

Chart 4c. Main cruise ports in metropolitan France



Source: DGITM Transport administration, "Bilans des ports français" annual reports.

8.4. The boating sector in France

Tab. 5. Key figures for the boating sector in France

		Reference year
Occasional boaters (estimate)	9 000 000	2012
Regular boaters (estimate)	4 000 000	2012
Boating fleet: boats in operation (estimate)	512 370	2012
New licences	13 979	2012-2013
of which motorboats	64%	2012-2013
of which under 6 metre long	46%	2012-2013
Number of marinas	plus de 370	2012
Number of dry docks	38	2012
Number of berths in afloat marinas	250 000	2012
Number of places in dry docks	11 248	2012
Boat building turnover (million euros)	1 240	2011
Boat building employment (FTE)	6 800	2011
Number of enterprises in the boating supply chain*	5 090	2012
Employment in the boating supply chain (salaried employees)	40 326	2012
Boating supply chain turnover (million euros)	4 420	2012

*Building, imports, equipment, trade, maintenance, schools, security, architecture, consultancies, press, brokerage, insurance, transportation, renting, expertise, engineering, port services, fuel distribution. Some of these enterprises are active outside the boating supply chain.
Sources: FIN, DGITM, INSEE.

9. Maritime and river transport

Maritime and river transport includes the activity of the fleet and commercial maritime and river ports. The coverage is extended to inland navigation with the aim of getting our data set harmonised with the EC's coverage of maritime data. The activity of the fleet includes the transport of goods and passengers. The activities of maritime and inland ports include the exploitation and general organisation of ports, port services to vessels and goods. Military harbours are excluded.

9.1. Port activities

Tab. 1. Key figures for maritime and inland port services

Units: million euros, number of staff/FTEs

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Turnover	1350	1262	1329	1379	1316	nd	1170	1344	1261
Value added	822	799	830	869	840	nd	548	634	657
Employment (1)	10327	10183	9692	9841	8897	nd	8828	8795	7936
Employment FTEs	nd	nd	nd	nd	nd	nd	8606	8440	8141
Export ratio	30,1%	25,1%	24,5%	22,6%	20,9%	nd	1,2%	0,5%	1,6%
Number of enterprises	231	244	294	316	288	nd	169	252	155

(1) Number of salaried employees as of 31 December.
Source: INSEE/SUSE for 2003-2007, NAF 2003 code 63.2C: includes activities related to water transport, operation of terminal facilities (harbours and piers), operation of waterway locks, navigation, pilotage and berthing activities, lighterage, salvage activities, lighthouse activities, vessel maintenance and cleaning (outside repair and maintenance yards activities); enterprises with turnover under €76,300 excluded from 2003-2004 data; micro-entreprises excluded from 2005-2007 data. INSEE/ESANE for 2008-2011, NAF 2008 code 52.22Z: services activities incidental to water transport (excluding vessel maintenance outside yards activities: transfered to the ship repair NAF code); data not available for 2008; all active enterprises for 2009-2011. Customs for exports data (transactions valued at €1,000 or more, or of 1 tonne or more; intra-EU transactions from enterprises with turnover of €150,000 or more).

Tab. 2. Direct employment in the seven main seaports in metropolitan France (1)

	2004	2005	2006	2007	2008	2009
State services (2)	1282	1307	1477	1477	1673	1528
of which: Customs	484	484	608	608	789	898
Port authorities	5408	5415	5203	5203	5079	5052
Port businesses (3)	22644	22455	22571	24578	28441	29271
of which:						
Pilotage	523	521	510	515	522	541
Towage	645	725	664	664	705	702
Boatage & berthing	382	353	360	360	369	361
Total	29334	29177	29251	31258	35193	35851

(1) Representing more than 75% of France's total port freight traffic in tonnage.
(2) Including local services of Maritime Affairs administration
(3) Pilotage, towage, boatage & berthing, handling, shipping companies, shipping agencies, consignment, brokerage, transit.
Sources: Transport Ministry/DGITM/Annual survey of seaports, Maritime Affairs, Customs.

Port activities involve a diversity of services to vessels and to goods. Seaport Ministry services survey direct employment in main ports; the latest update of this data was carried out in 2009. Part of the set of covered activities has to be excluded to avoid double accounts: a) the activities taken into account in the port service key figures of this chapter, b) port handling (see below), c) public activities linked to state intervention at sea and maritime affairs, examined in chapter 12. Customs services and other private services than services to vessels and port handling remain included. However maritime consignees and shipping companies staff are inevitably subject to double accounts. A realistic figure is therefore 22,758 jobs as of 2009 (in addition to the employment figures included in the above key figures): this figure is used for 2010-2011 in the absence of any later update.

Tab. 3. Port handling key figures

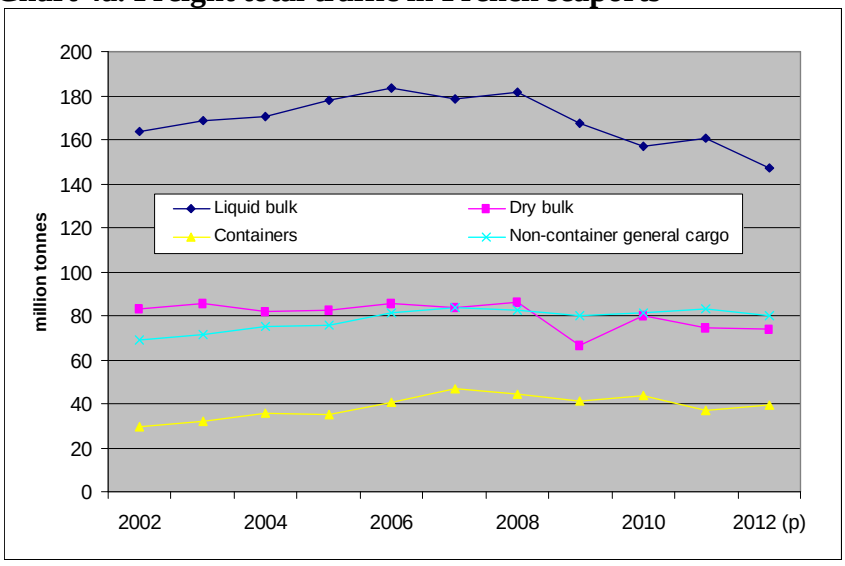
Units : million euros, number of persons/FTEs

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Turnover	954	1 009	1 063	1 152	1 294	na	1339	1476	1260
Value added	398	417	465	474	547	na	469	580	413
Employment (1)	5 925	5 892	6 068	6 116	6 385	na	5807	6187	5591
Employment FTE	na	na	na	na	na	na	4986	5090	4628
Number of enterprises	153	155	181	186	188	na	208	215	191
Export ratio	25,1%	24,5%	20,2%	15,8%	17,4%	c	c	c	1,8%

(1) Number of salaried employees as of 31 December.
na: not available.
c: confidential.
Source: INSEE/SUSE for 2003-2007, NAF 2003 code 63.1A; enterprises with turnover under €76,300 excluded from 2003-2004 data; micro-entreprises excluded from 2005-2007 data. INSEE/ESANE for 2008-2011, NAF 2008 code 52.24A; all active enterprises; 2008 data not available. Customs for exports (transactions valued at €1,000 or more, or of 1 tonne or more; intra-EU transactions from enterprises with turnover of €150,000 or more).

9.2. Goods traffic in French seaports

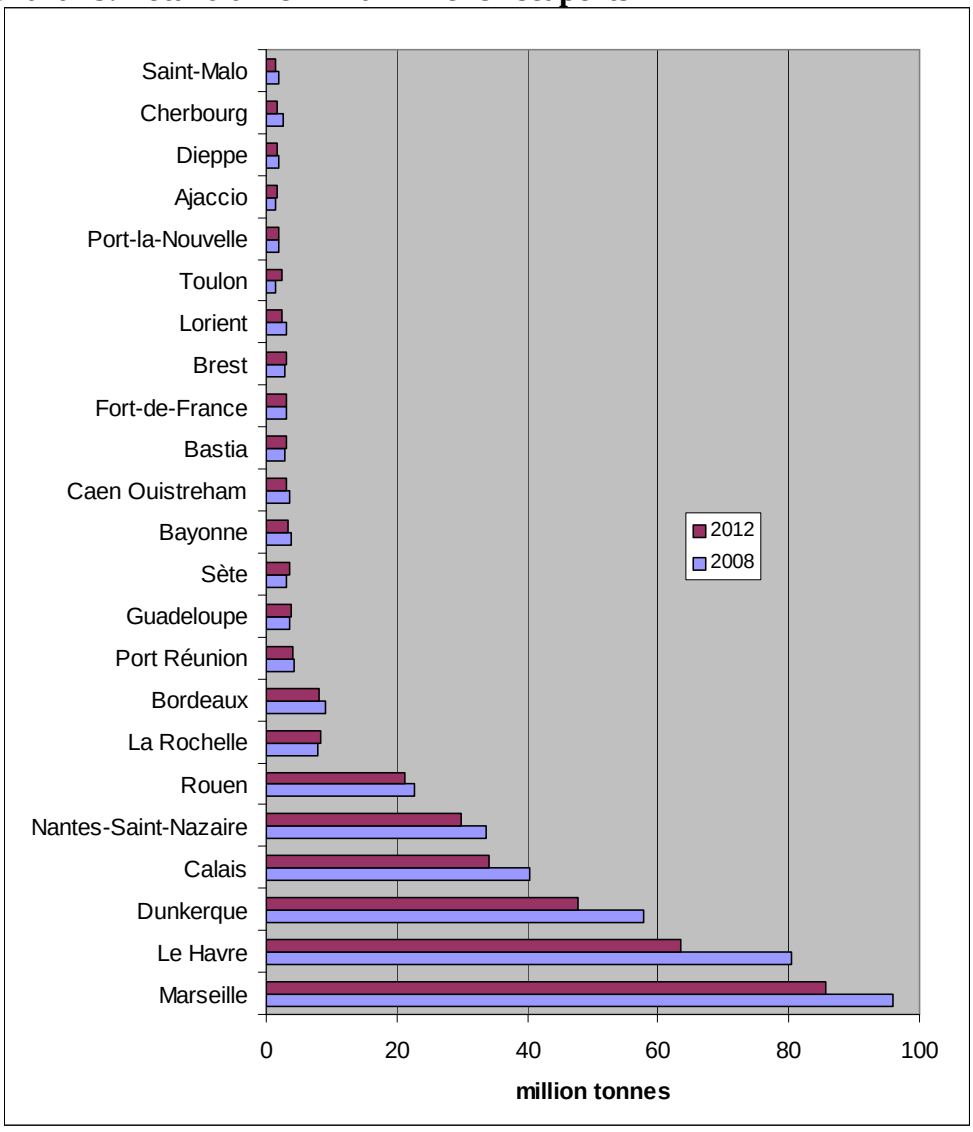
Chart 4a. Freight total traffic in French seaports



(p) provisional data.
Source: Transport Ministry/Annual reports on maritime and inland ports and waterways.

- The economic slowdown impacted French ports' traffic tonnage which dropped by 14% from 2008 to 2012.
- After a slow growth period until 2007, general cargo traffic (notably container traffic) showed a stagnating trend from this date. After a recovery in 2010, dry bulk traffic remained stable too.
- Liquid bulk traffic, the largest component of seaport traffic in France (43% of France's total tonnage in 2012) shrank by 20% from 2006 to 2012. This drop was driven by the difficulties of the oil refining sector in Europe in general and in France in particular: decrease in domestic refined product demand; intensifying competition with Persian Gulf refineries; and export losses due to the development of the US competitive unconventional oil and gas production.
- The performance of the French seaports in 2013 indicated a modest recovery in dry bulk traffic (cereals and ores), general cargo and container, while liquid bulk traffic remained on the decrease.

Chart 4b. Total traffic in main French seaports

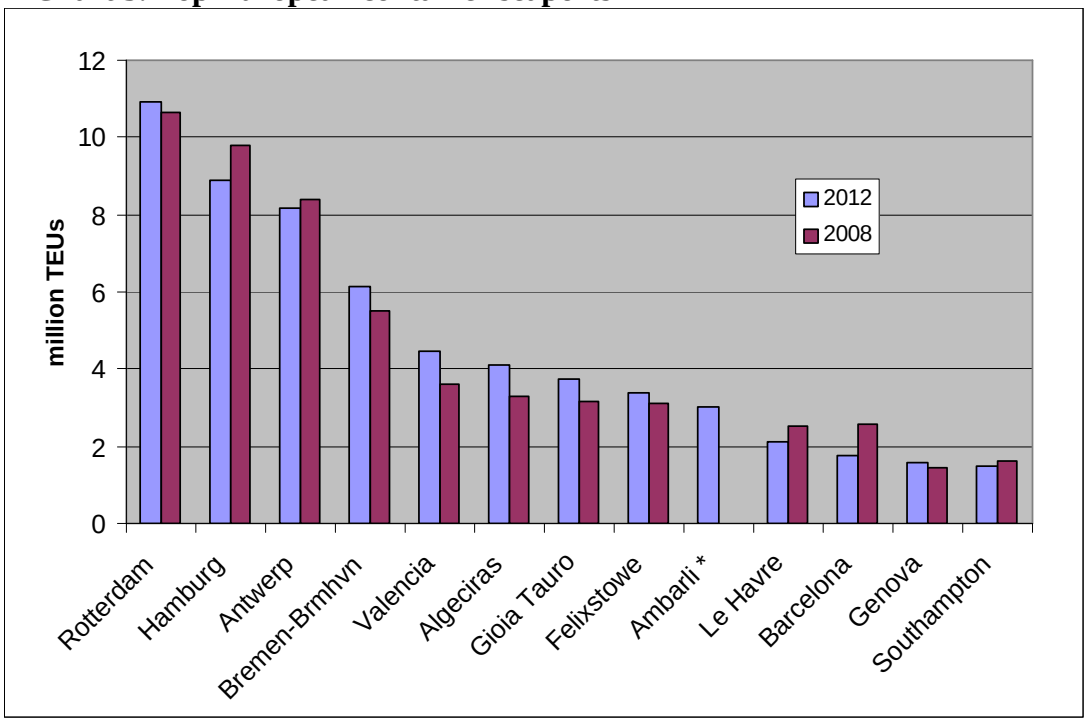


Source: Transport Ministry/Annual reports on French seaports

9.3. Goods traffic in European and world seaports: focus on container traffic

Container traffic tonnage was impacted by the economic situation but, by and large, the ranking of world ports has not been modified. In Europe, the North Sea ports dominated the market. In West Mediterranean, the Spanish port and, less importantly, the Italian ports were the most active. In East Mediterranean, Turkey's Ambarli recorded a rapid growth.

Chart 5. Top European container seaports

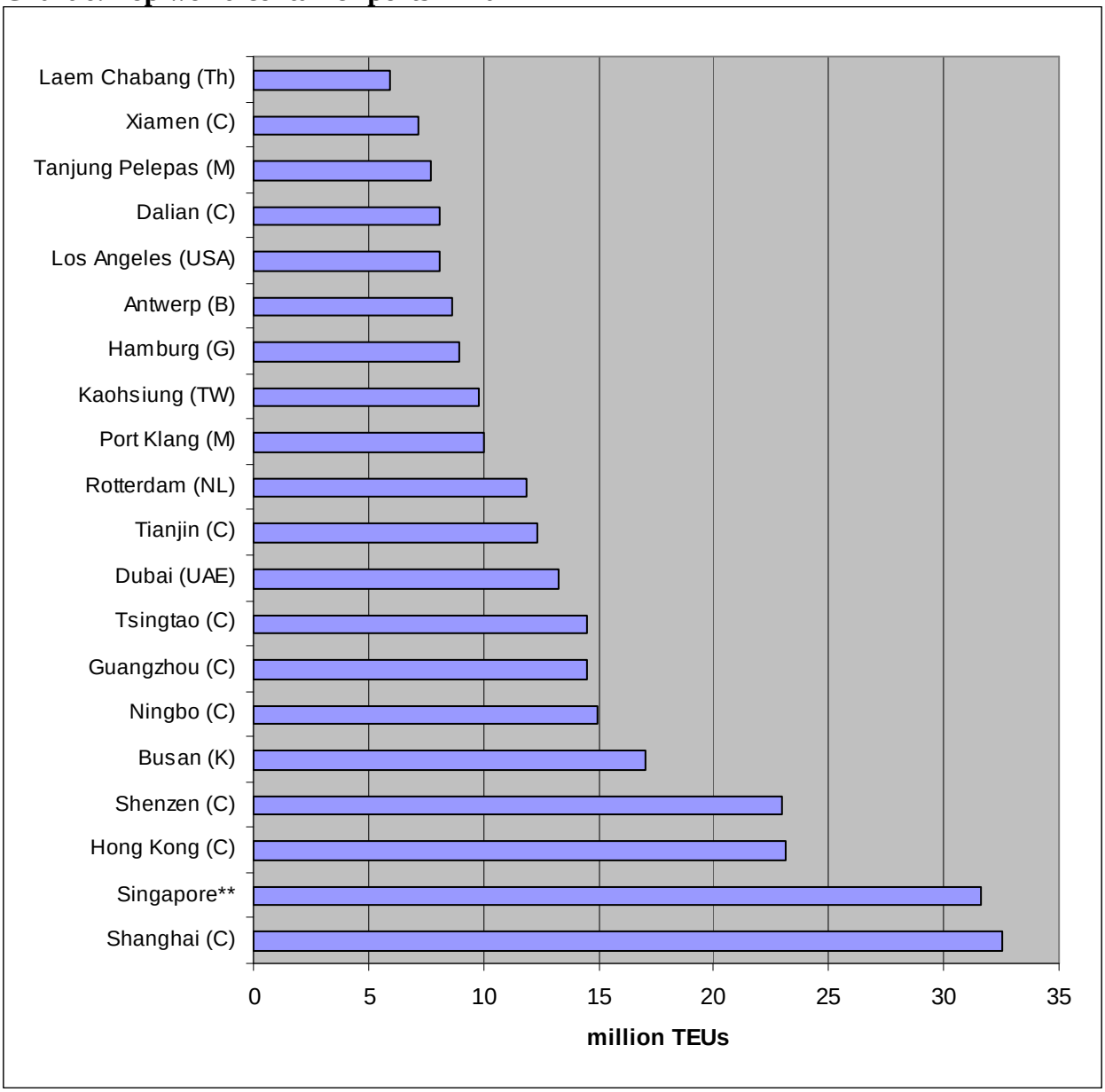


* 2008 data not available
Source: Eurostat.

International container traffic

- After a continuous growth nearing an annual 10% over the past two decades, container traffic decreased in 2009 by about 9%, driven by Europe's economic situation; Asia-Europe even recorded a 9.5% drop. From 2010 onwards growth is uneven in the different world regions but continues, in a context of Europe's slow recovery.
- At global scale, the Asian, principally Chinese, ports dominate the container traffic.

Chart 6. Top world container ports in 2012*



*Provisional data.
**Excluding data from Jurong port.
C: China. K: South Korea. TW: Taiwan. UAE: United Arab Emirates. NL: Netherlands. G: Germany.
B: Belgium. M: Malaysia. Th: Thailand.
Source: UNCTAD/Review of maritime transport.

9.4. Shipping companies and merchant fleets

Tab. 7a. Key figures for maritime and coastal shipping

Units: million euros, number of persons/FTEs.

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Turnover	5586	6686	7735	8767	10416	c	9903	12654	12693
Value added	881	1204	1391	1037	1646	c	4	1940	461
Employment (1)	12926	12949	13209	13606	14057	c	13556	14151	12559
Employment FTE	na	na	na	na	na	c	12956	12917	12577
Number of enterprises	321	325	506	560	561	c	481	727	692
Export ratio	70%	74%	77%	22%	80%	c	1%	c	1%

(1) Number of salaried employees as of 31 December.
na: not available.
c: confidential.
Source: INSEE/SUSE for 2003-2007, NAF 2003 codes 61.1A (sea water transport) and 61.1B (coastal water transport); enterprises with turnover under €76,300 excluded from 2003-2004 data; micro-entreprises excluded from 2005-2007 data. INSEE/ESANE for 2008-2011, NAF 2008 codes 50.10Z (sea and coastal passenger water transport) and 50.20Z (sea and coastal freight water transport); all active enterprises with one salaried employee or more. Customs for exports (transactions valued at €1,000 or more, or of 1 tonne or more; intra-EU transactions from enterprises with turnover of €150,000 or more).

Tab. 7b. Key figures for maritime and river ship renting

Units: million euros, number of persons/FTEs.

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Turnover	141	128	156	245	344	na	660	484	c
Value added	71	84	47	102	135	na	496	413	c
Employment (1)	91	129	144	216	183	na	6	26	c
Employment FTE	na	na	na	na	na	na	6	24	c
Number of enterprises	71	88	408	546	613	na	345	515	c
Export ratio	63%	66%	27%	41%	27%	na	7%	c	c

(1) Number of salaried employees as of 31 December.
na: not available.
c: confidential.
Source: INSEE/SUSE for 2003-2007, NAF 2003 code 71.2C (renting of water transport equipment); enterprises with turnover under €76,300 excluded from 2003-2004 data; micro-entreprises excluded from 2005-2007 data. INSEE/ESANE for 2008-2011, NAF 2008 code 77.34Z (renting and leasing of water transport equipment); all active enterprises with one salaried employee or more. Customs for exports (transactions valued at €1,000 or more, or of 1 tonne or more; intra-EU transactions from enterprises with turnover of €150,000 or more).

The above key figures inform on maritime transport and ship chartering activities but the activities of maritime and river transport logistics, customs brokerage and freight forwarder are not documented herein. In the national statistics these are included in a NAF sector together with similar activities for other transport modes: this heterogeneous sector is not reported herein. Table 2 above (direct employment in main seaports) however takes into account the staff involved in these activities in port zones.

9.4.1. Main development trends of international maritime transport

- The key figures presented in this report do not allow assessing the more recent "uneven global recovery" described by the IMF. The contraction in western economies since 2008 and China's slowing growth in 2011-2012 had combined effects while an important flow of new ships entered the fleet. The growing tonnage of ageing ship dismantling - which reached an unprecedented level in 2012 - was not sufficient to significantly mitigate the overcapacity problem.
- The impacts of the general economic situation on maritime transport depended on markets. The dry bulk transport market and that of oil products were particularly hit by low freight rates in 2011 and 2012; these difficulties also impacted container shipping (a quite different market where overcapacities are considerable); a slow recovery in transport demand combined with a decreasing number of new ships entering the fleet suggested that a slight recovery was possible from 2013. On the cruise market a decrease in demand and prices was recorded but an upturn was sensitive in the end of 2013. LPG and LNG transport is on a favourable trend driven by Asia's increasing demand and the growing competitiveness of the US unconventional oil and gas production.
- The development of maritime routes is critical for shipping. Initial experiments in ship movements were conducted on Arctic routes (Northeast and Northwest Passages): the further increase in global warming could allow exploiting these routes part of the year in the future, but the technical and economic feasibility remains very uncertain to date. In a quite different region, the widening of the Panama Canal, now opened again to navigation, will have a significant impact on Atlantic-Pacific lines.
- Another important driver of maritime transport development and costs will be the new regulation on the emissions from ship exhausts. The new 0.1% cap on sulphur emissions will enter into force in Sulphur Emissions Control Areas (SECAs) in the beginning of 2015 in compliance with Annex VI of the Marpol Convention. For Europe, SECAs include the English Channel and the North and Baltic Seas. Directive 2012/33/EU has reinforced and generalized this cap to all EU's maritime zones and will enter into force in the start of 2020. In addition, the IMO International Maritime Organization recently adopted an energy efficiency package aiming at decreasing greenhouse gas emissions from ships, including mandatory technical measures for new ships and operational reduction measures for all ships over 400 GT. This package is to be added to Marpol Annex VI.

9.4.2. The French merchant fleet

- The French flag ships classification as published by the Transport Ministry now includes a list of maritime service vessels, of which oceanography research vessels.
- Since January 2009, the over 100 GT merchant fleet lost 18 vessels and more than 20% of its total deadweight capacity; the average unit capacity decreased by 15% over the same period. This trend was mainly explained by the oil tanker fleet which lost nearly a third of its deadweight capacity since 2009. The overall number of cargo carriers decreased from 79 to 64 with an unchanged overall capacity; the number and overall capacity of passenger ships remained at the same level.
- The average age of the French flag merchant fleet was 7.7 years as of 1 Jan 2014 (merchant ships of 100 GT and above). By contrast, the average age of the world fleet was 20.34 years as of 1 Jan 2013, but its deadweight weighed average age was 9.6 years: new ships are often of larger size than those which are decommissioned (source: UNCTAD/RMT, merchant ships of 100 GT and above).

Tab. 8. French flag merchant fleet as of 01/01/14

Over 100 GT passenger and cargo, deep and short sea shipping vessels. Over 100 GT deep and short sea service vessels.

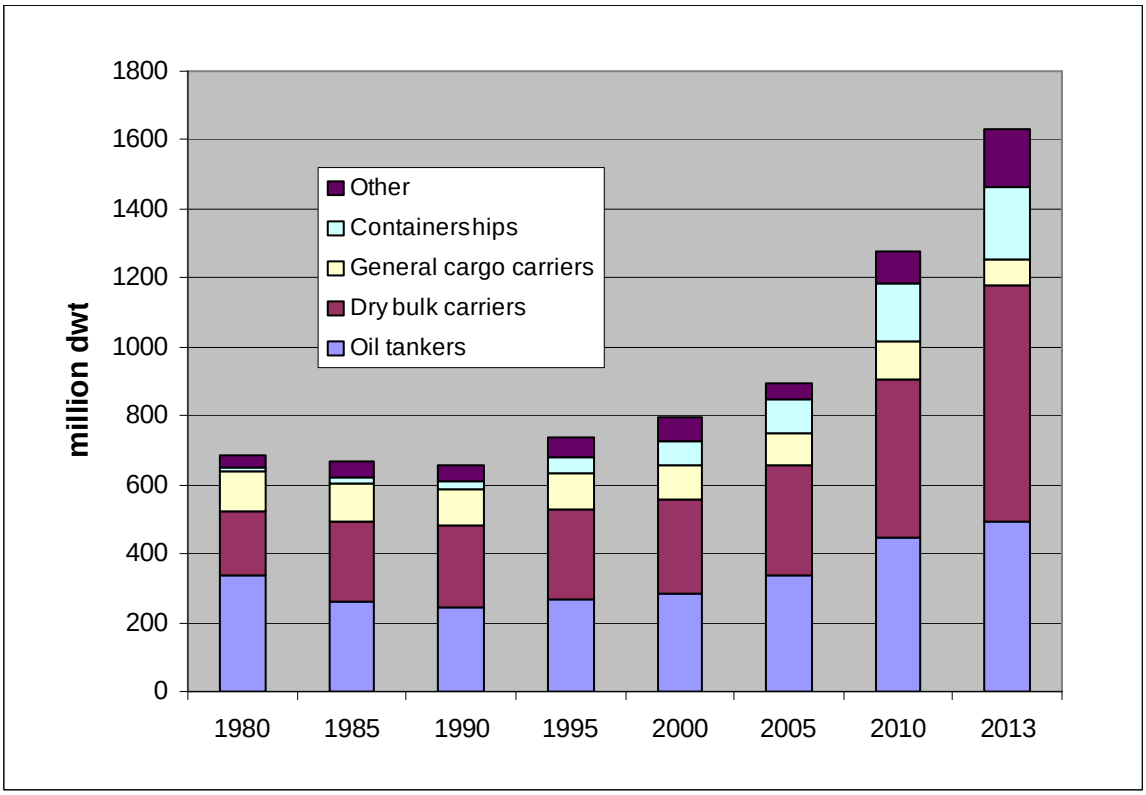
Catégories	Number of vessels	Capacity ('000 GT)	Deadweight ('000 dwt)
Oil & gas carriers	**52**	**2 248**	**3 792**
Oil carriers	43	1 863	3 455
LNG carriers	9	385	337
Cargo carriers	**64**	**2 208**	**2 253**
Bulk carriers	-	-	-
Other dry bulk carriers	1	2	3
Containerships (fully containerized)	24	1 991	2 142
Ro-ro ships	23	180	82
Cargo ships	15	26	21
Other	1	9	5
Passenger ships	**74**	**895**	**152**
Cruise ships	5	49	6
Ro-pax (passengers ro-ro)	44	833	143
Pasenger launches	7	2	0
Other	18	10	3
Total cargo and passenger ships	**190**	**5 351**	**6 197**
Specialized service vessels	**18**	**153 131**	
Cableships	10	111 033	
Maritime work support vessels	4	2 153	
Seismic research vessels	4	39 945	
Offshore service vessels	**55**	**100 429**	
Platform supply vessel	14	31 458	
Anchor handling tug supply vessels	14	29 468	
Multi-purpose supply vessels	6	25 952	
Special-purpose vessels	8	7 724	
Special-purpose passenger transport vessels	11	3 688	
Other	2	2 139	
Other service vessels	**38**	**43 815**	
Dredgers	3	12 337	
Seagoing tugboats	29	18 368	
Research vessels	6	13 110	
Service vessels - Total	**111**	**297 375**	

Source: MEDDE/ DGITM, DAM, MFC, *Merchant fleet under French flag. Situation as of 1 January 2014*, Paris: MEDDE, 2014.

The world merchant fleet

- In a period of economic difficulties in Europe, the US and Japan, the world merchant fleet recorded a increasing capacity in terms of deadweight tonnage, driven by the orders placed until 2007 and despite ship withdrawals from the fleet and the drop in new orders. The total deadweight tonnage doubled from 2001 to early 2013. 2012 saw a decrease in the number of ships entering the fleet for the first time since 2001.
- The structure of the world fleet has substantially changed over the past three decades. The capacity shares of dry bulk carriers and containerships have increased while that of oil tankers dropped from 50% to 30% since 1980.

Tab. 9. World merchant fleet



Units of 100 GT and above, data as of 1 Jan. FPSO and drilling ships included. River, fishing and defence ships, yachts, offshore platforms and barges excluded.
Source: UNCTAD/RMT.

9.5. Inland navigation

Inland shipping is the transport of goods and passengers by navigable waterways. The latter are defined as rivers, lakes and canals on which vessels with a carrying capacity of 50 tonnes or more can sail normally when laden (source: Eurostat). Inland shipping is part of the maritime economy as presented herein, in line with the coverage proposed by the European Commission (in relation to its Integrated Maritime Policy adopted in 2007). This option is also justified by the significance of inland navigation and sea-river shipping for a range of European seaports (Belgium, the Netherlands, Germany, UK and France).

Tab. 10. Inland shipping key figures

Units: million euros, number of persons/FTEs

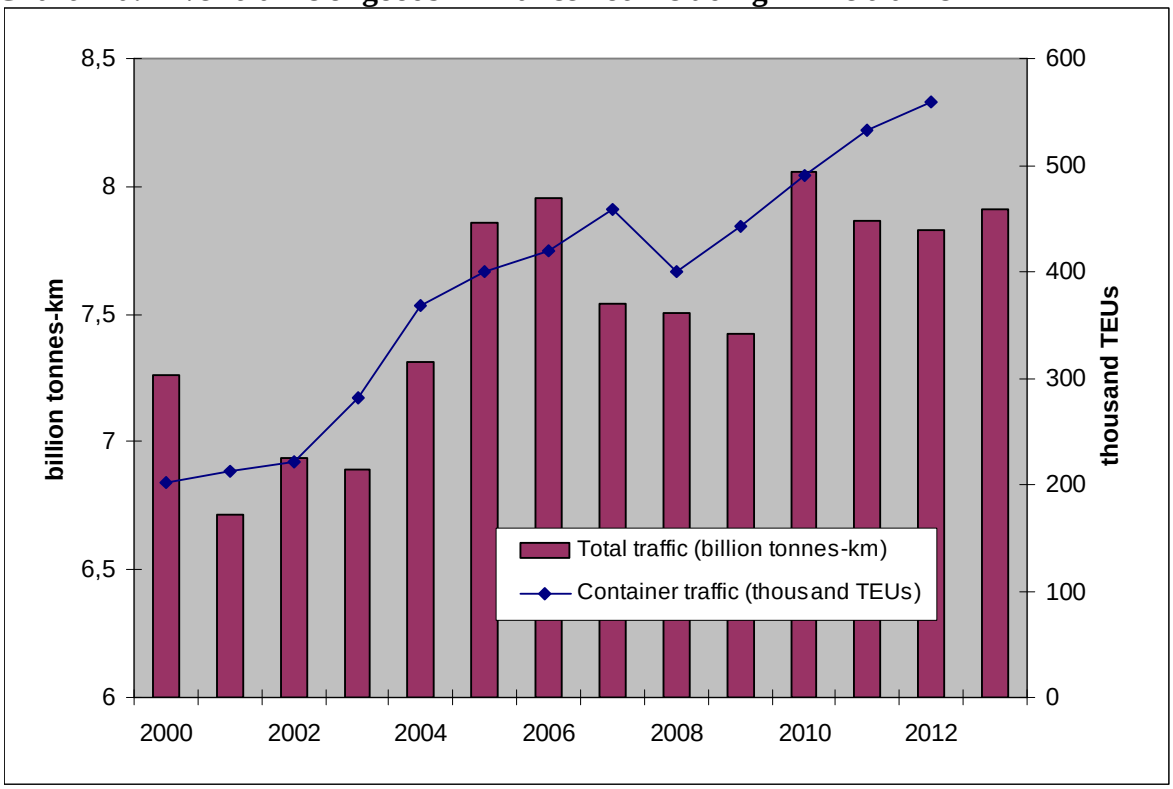
	2003	2004	2005	2006	2007	2008	2009	2010	2011
Turnover	490	538	613	551	681	738	653	706	774
Value added	149	153	175	179	209	366	207	224	234
Employment (1)	2461	2616	2758	2873	3116	2869	c	3071	3099
Employment FTEs	na	na	na	na	na	2821	c	2870	2963
Number of enterprises	549	584	1004	1051	1057	1096	1061	1023	1086
Export ratio	28%	31%	31%	21%	30%	c	c	c	c

(1) Number of salaried employees as of 31 December.
na: not available
c: confidential
Source: INSEE/SUSE for 2003-2007, NAF 2003 codes 61.2Z (inland water transport); enterprises with turnover under €76,300 excluded from 2003-2004 data; micro-enterprises excluded from 2005-2007 data. INSEE/ESANE for 2008-2011, NAF 2008 codes 50.30Z (inland passenger water transport) and 50.40Z (inland freight water transport); all active enterprises with one salaried employee or more. Customs for exports (transactions valued at €1,000 or more, or of 1 tonne or more; intra-EU transactions from enterprises with turnover of €150,000 or more).

9.5.1. Inland shipping in France

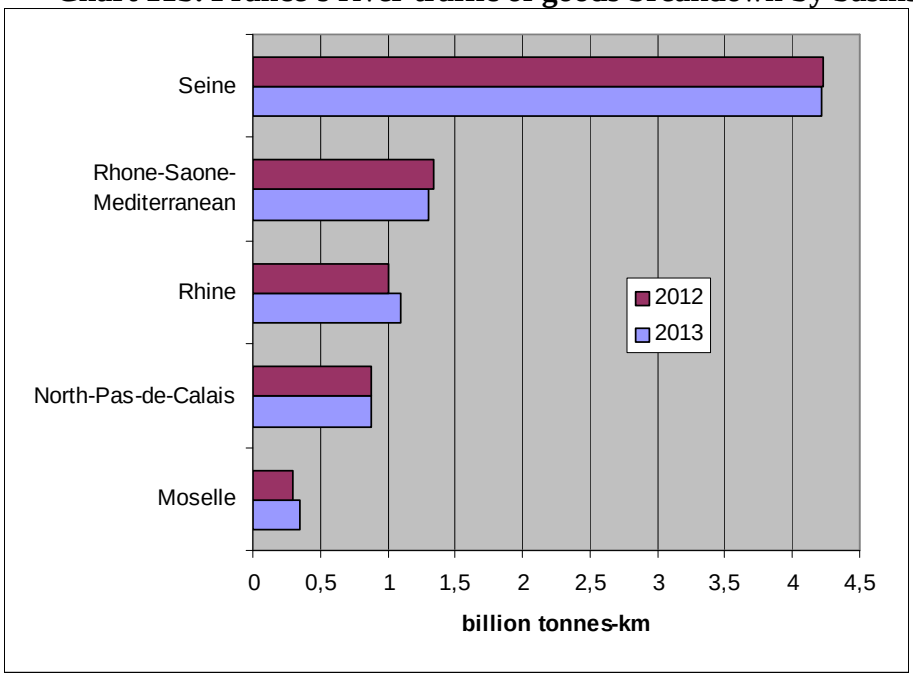
- Freight inland water transport slowly increased by about 15% over the 2000s decade with important cycles. After a decrease from 2010, the overall traffic tonnage grew in 2013.
- Container traffic, with a modest tonnage, doubled from 2000 to 2010 and keeps on increasing despite the slow economic growth. It accounted for about 10% of total traffic in tonnes-km in 2012.
- The market share of foreign flag ships has slightly decreased since 2006 to 34% in 2012.
- In France, the main activity areas is by far the Seine river basin with 53% of the national traffic as of 2013 in tonnes-km.
- The "Seine-Escaut link": this project is a component of the North Sea-Mediterranean corridor, one of the 9 European multi-modal corridors which will contribute to the "Core Network" of the Trans-European Transport Network by 2030. The French part of the project, "Seine-Nord Europe Canal", is a 185 km-long waterway of high capacity which will link the Oise river (part of the Seine basin) and the Dunkirk-Escaut Canal. This project will substantially increase the navigation capacity between the Seine basin and the Belgian and North-European waterway systems, with the objective of fostering the modal switch from road to inland navigation. Initially planned for 2017, the project will be re-formatted to reduce the costs (now estimated at about €4.5bn) while its main technical specifications in terms of navigation capacity will not be modified. It is eligible for a financial contribution from the EC under the "Connecting Europe Facility" scheme whereby an overall amount of €26bn is made available to EU transport infrastructure projects for the 2014-2020 period.
- River passenger traffic, largely similar to a form of inland tourism, is of secondary importance for the present report. The activity grew over the recent period with a 7% turnover increase from 2008 to 2011.

Chart 11a. River traffic of goods in France not including Rhine traffic



Sources: VNF, Transport Accounts.

Chart 11b. France's river traffic of goods breakdown by basins

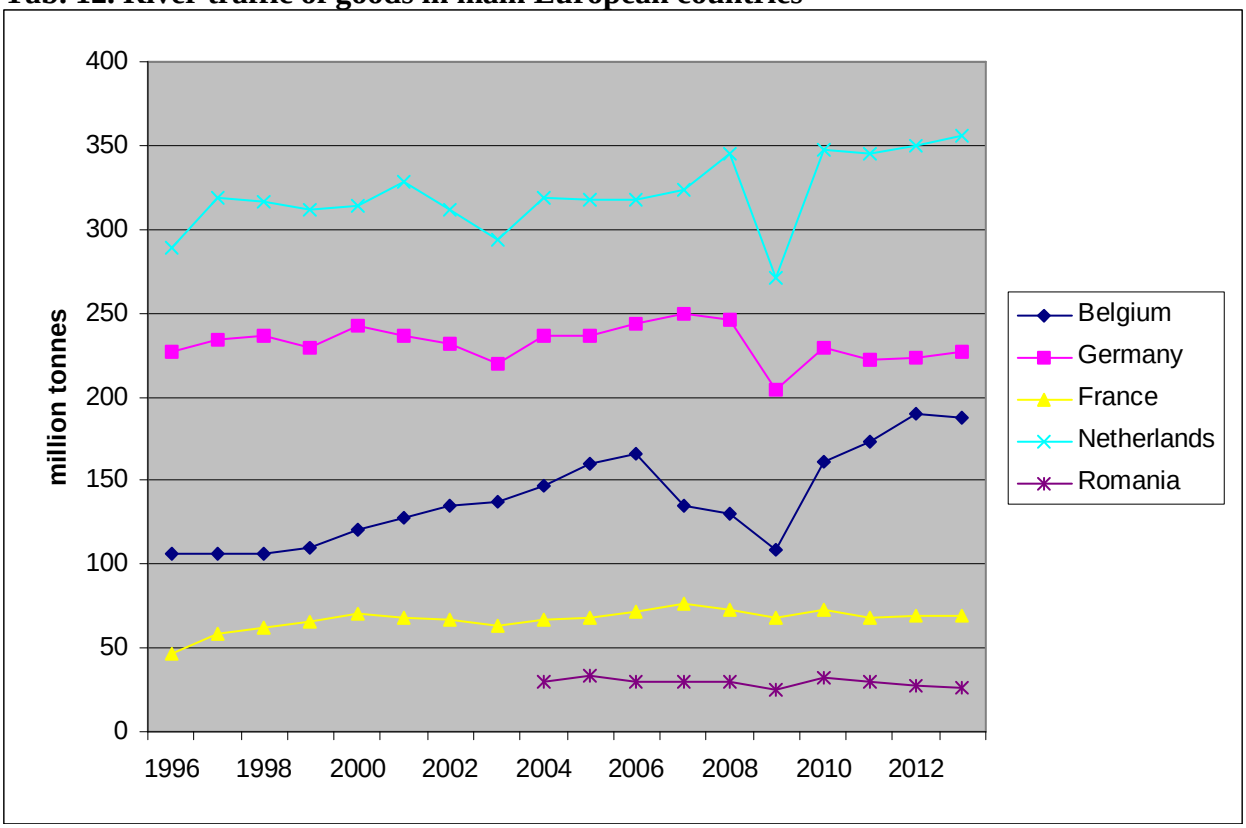


Source: VNF

9.5.2. River traffic of goods in Europe

- Europe has major waterway systems in terms of traffic capacity: Rhine, Lower Danube, and the Netherlands; and several, more modest though significant ones: Belgium, Seine, Elbe, Mittelland-Kanal, Middle and Upper Danube, Ruhr, Rhone-Saone.
- In 2012, the European river traffic was still impacted by the general economic difficulties. The resulting overcapacities impacted the companies' financial situation. The situation was however contrasted by type of traffic, by country and by basin: decrease in ores and steel industry-related metals traffic, increase in agriculture products and solid fuels traffic in several basins, contrasted trends in chemical products traffic depending on basins.
- Some European inland ports are directly connected to maritime transport through sea-river shipping: this transport mode avoids transhipment in seaports; it is only feasible on certain waterways and using certain types of ships with technical characteristics adapted to maritime and inland navigation. In Europe, sea-river shipping is important in the UK (Thames, Humber and Forth corridors): 40 million tonnes in 2011; in Russia (Volga and Neva rivers): 20 mt in 2013; Sweden: about 8 mt per annum; France (Lower Seine river): 3.5 mt; Finland: nearly 2 mt; Belgium: 1.5 mt; Germany: 1.3 mt; and Romania (Lower Danube) (source: CCNR Central Commission for Navigation on the Rhine).

Tab. 12. River traffic of goods in main European countries



Source : Eurostat

10. Marine Insurance

Marine insurance includes direct and inwards (reinsurance), domestic and cross-border business for two main insurance classes:

- Hull (ocean hull, fishing vessel, inland hull and pleasure craft), including road hull liability and energy/offshore insurance: the class covers container terminals, harbours, offshore platforms and submarine pipelines;
- maritime, inland waterway and road carried cargo and CMR-based carrier liability (CMR: "Convention on the Contract for the International Carriage of Goods by Road").

Marine insurance is thus defined as marine and transport-related, and covers a share of inland operations.

The yearly amount of premium income is the only published indicator characterizing the industry as a whole and broken down by insurance class.

Tab. 1. Marine and transport insurance key figures

Units: million euros (all currencies converted), number of FTEs

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Hull (gross premiums)	483	451	498	495	498	538	542	576	629
Cargo (gross premiums)	783	734	758	746	779	873	845	826	883
Total marine and transport (1)	1267	1185	1256	1241	1277	1411	1387	1402	1512
Estimated turnover (2)	na	na	na	279	292	346	575	591	624
Estimated value added (3)	na	na	na	113	107	115	150	143	154
Estimated employment FTEs (4)	na	na	na	2825	2970	3458	2677	2115	2069

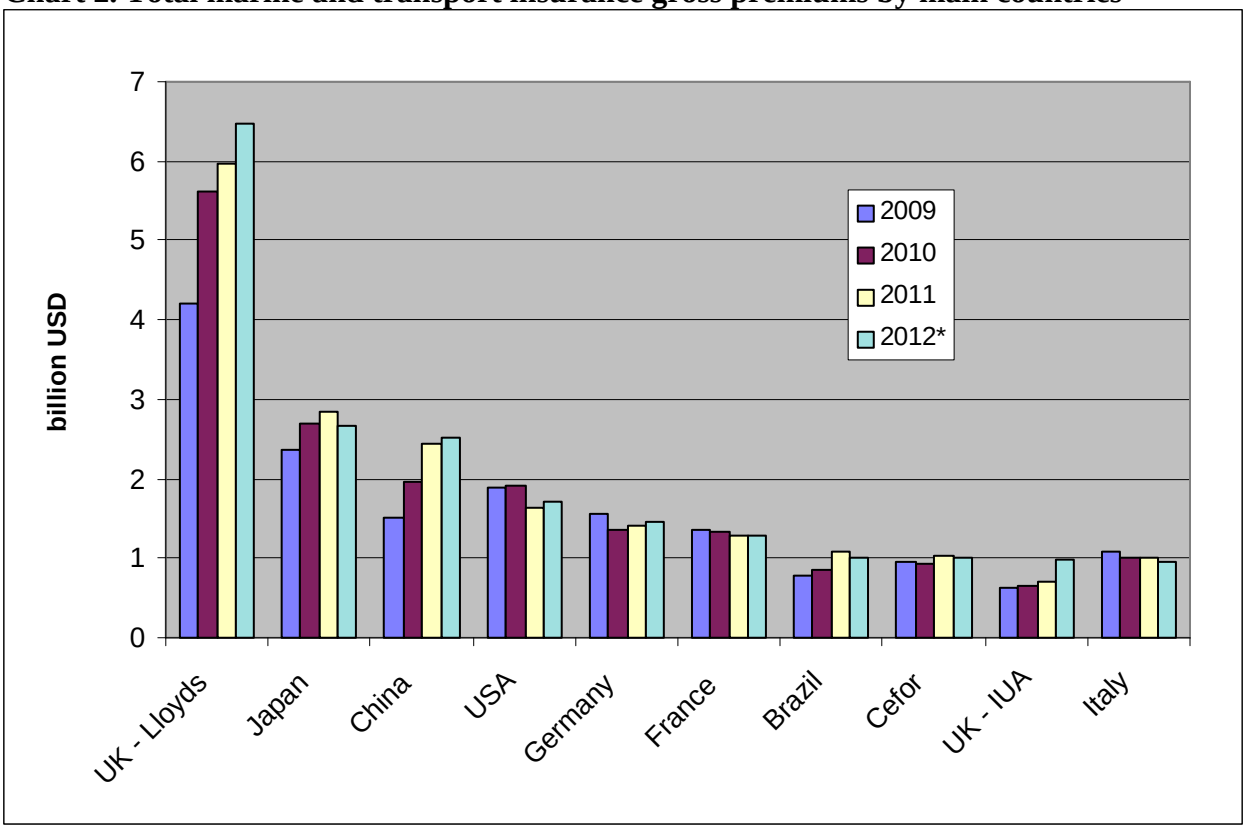
(1) Gross premium income. Ordinary and war risks, direct and inwards business, including inland hull and pleasure craft, inland waterway and road cargo, and road hull liability.
(2) Estimated share of the insurance sector production, based on gross premiums of marine insurance and statistics on the insurance sector.
(3) Estimated share of the insurance sector value added. Estimation methodology similar to that of turnover.
(4) Estimated share of the insurance sector employment (FTEs). Estimation methodology similar to that of turnover.
na: not available.
Sources: FFSA for marine and transport gross premiums; INSEE for insurance gross premiums, production, value added and employment. Statistical disruption in 2009: the 2005 base of national accounts was used until 2008; the 2010 base is used since 2009.

10.1. International markets

- The marine and transport insurance markets represented a gross premium income of about USD 33bn in 2012. It included cargo insurance (53.4% of total income in 2012), hull (nearly 26%), offshore energy (mainly offshore drilling platforms but also marine renewable energy - nearly 16%) and marine liability (5%) - source: IUMI.
- The French companies operate on the cargo and hull markets in France and abroad. The French insurance policy for hull in construction covers vessels during construction.
- Over the recent years at global scale, hull insurance premiums did not reach profitable levels according to the industry, and several companies withdrew from the market in 2012-2013. The French companies' total hull insurance premiums increased in 2011; their

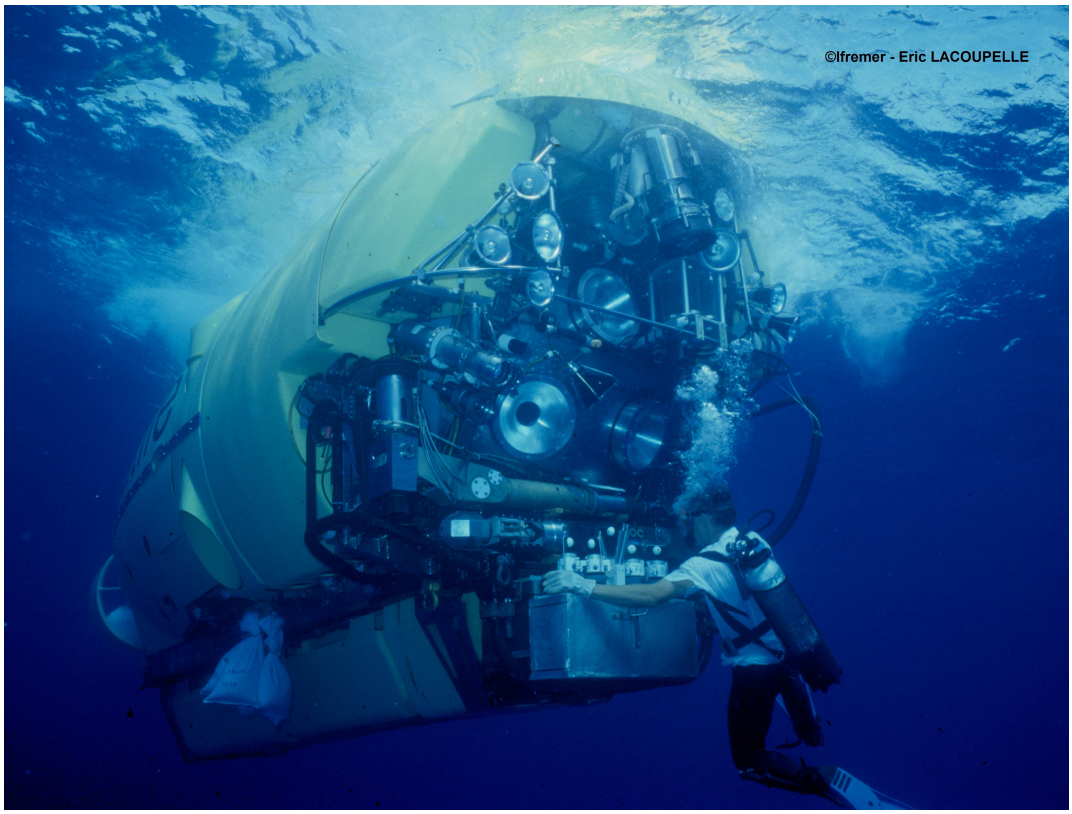
cargo insurance activity benefited from the modest recovery of maritime transport. Overall, based on data from FFSA (French Association of Insurance Companies), the French companies recorded a growth in total premiums in 2011.

Chart 2. Total marine and transport insurance gross premiums by main countries



*Provisional.
Note: IUMI gross premiums data on France differ from those of FFSA (see key figures above) due to EUR/USD exchange rate effects.
Source: IUMI.

Non-market public sector



11. French Navy

The Navy contributes to national defence and security at sea through the operational deployment of naval forces. It has permanent remits and non-permanent remits:
Permanent remits:

- dissuasion,
- maritime security, including state intervention at sea: protection against threats (e.g. terrorism, illegal product trafficking), defence of the state sovereignty at sea, control of maritime related risks (e.g. prevention of incidents, rescue, response to pollution),
- knowledge and anticipation, and prevention: knowledge and understanding of context; anticipation of developments and crises; autonomous assessment, decision and action capacity; positioning in strategic zones.

Non-permanent remits:

- intervention: operations of coercion, operations of crisis management (deployment of combat or support units within short time limits, capable of long duration missions).

Tab.1. French Navy budget
Units: million euros

	2010	2011	2012	2013	2014
Payroll and social contributions	2619	2492	2337	2471	2489
Current operations	393	306	350	352	324
Deterrence*	170	284	339	319	336
Maintenance of equipment	870	933	1036	1067	1167
Staff clothing and other staff consumables	20	42	39	25	19
Accompanying equipment	176	169	106	75	121
Total	4248	4227	4207	4308	4456

*Maintenance of nuclear-powered ballistic missile submarines and related support facilities.
Source: Naval Staff.

Since 2008 the Navy implements an important staffing reduction. Its size will continue to decrease until 2019 so as to match with the operational requirements defined by the 2013 White Paper and the draft Military Programming Law 2014-2019.

Tab. 2. Average yearly personnel of the Navy (employed by the Defence Ministry)

	2009	2010	2011	2012	2013	2015*
Military personnel	40 641	39 899	38 835	37 839	36 784	35 484
Civilian personnel	7 410	6 305	4 955	3 084	2 912	2 912
Total	48 051	46 204	43 790	40 923	39 696	38 396

*Forecast.
Source: Naval Staff.

The large proportion of petty officers (about 65% of military personnel) is due to the technical nature of jobs in the Navy. The share of the civilian personnel, mainly employed in support

services (supply, fleet support service, naval air bases), is decreasing and will finally represent 7.5% of the personnel. The operational reserve (6,400 in 2008 and 7,100 in 2012), provides the Navy with the additional human resources required in times of crisis or for specialists needed on an ad hoc basis.

The Military Programming Law 2009-2014 provides an adaptation of the size of the Army to the objectives defined in the White Paper of 2013. As regards the Naval component, the investment effort is maintained in terms of equipment renewal. Its aim by 2025 is a downsizing of the Navy staff with four nuclear-powered ballistic missile submarines, six nuclear-powered attack submarines, one aircraft carrier and its air wing, 15 first rate frigates, three command and force projection ships, a mine warfare capability, maritime patrol aircrafts, helicopters, light units for marine zone control purposes, and logistics and command capabilities.

Tab. 3. Naval and naval aviation equipment of the Navy

Main equipment	31/12/2013	31/12/2019*
Aircraft carrier	1	1
Carrier-based aircrafts	49	47
Maritime patrol aircrafts	22	18
Combat helicopters	47	45
Nuclear-powered ballistic missile submarines	4	4
Nuclear-powered attack submarines	6	6
Anti-aircraft frigates	4	4
Multi-missions frigates, anti-submarine and La Fayette frigates	12	12
Surveillance frigates	6	6
Amphibious ships: TCDs and BPCs (1)	4	3
Mine countermeasures ships	11	10
Support ships: supply tankers	4	3 (+1 in reserve)
Patrol boats and overseas supply ships (2)	20	18

*End of Military Programming Law 2014-2019.
(1) TCD: landing platform dock; BPC: command and force projection ship.
(2) Including light transport boats, multi-mission ships, ocean-going patrol boats, overseas patrol boats and metropolitan France public service patrol boats.
Source: draft Military Programming Law 2014-2019.

12. Public intervention

State administrative services intervene in several aspects of maritime activities: economic and social aspects (seafarers' labour scheme, social protection), regulations (concerning seafarers in particular) and education (seafarer training). They fulfill technical missions such as signalling, surveillance and safety at sea. These interventions are herein assessed in terms of the national budget outlays.

12.1. Public outlays on maritime affairs

An important share of public intervention concerns maritime safety and security, seafarers and maritime training, support to the merchant fleet, fisheries control, nautical leisure and water sports, and response to marine pollution episodes. Public intervention also concerns seaports and coastal zones with transport intermodality development purposes. Social protection of seafarers is a third important domain of public intervention.

Public intervention budgets in maritime affairs

Unit: million euros.

Actions	2010	2011	2012
Maritime safety and security	25.17	24.42	26.55
Seafarers and maritime training	11.61	13.95	27.15
Support to merchant fleet	78.51	76.19	75.20
Inter-ministerial action for the sea	10.24	10.79	9.79
Support to actions programme	9.26	6.70	6.81
Total	134.79	132.05	145.50

Source: Maritime Affairs administration / Initial budgets.

Remarks

- The increase in the "Seafarers and maritime training" 2012 budget resulted from the additional outlays on the new “Ecole nationale superieure maritime” (“High national maritime school” - merchant fleet officers training institute).
- Overall, Maritime Affairs staff costs were of €165.42 m in 2012, and public intervention budgets on the maritime domain amounted to €313.42 m.

12.2. Maritime Affairs administration

Maritime Affairs services fulfill:

- Administrative missions to the benefit of seafarers (labour scheme; social, disciplinary and criminal-law protection; and training);
- Technical missions on vessel safety (safety centres) and navigation (CROSS and MRCCs);
- Economic missions to the benefit of the Fisheries and Aquaculture State administration (regulation of the fishing industry and mariculture, management of state concessions to fish farms, seafood health and technical control, fisheries statistics and quotas);
- Police functions as well as functions in Maritime and Commercial Courts;

- Signalling functions: studying, proposing and implementing signalling techniques, maintaining marine aids to navigation and contributing to the dissemination of nautical information (maritime works, defects, repair);
- In terms of response to marine pollution: management of 11 centres for the storage of oil spill response special equipment; participation in training sessions organized at local (county) level.

The number of Maritime Affairs administration staff was 3,228 in 2010; 3,101 in 2011; and 2,892 in 2012.

12.3. Maritime safety and security

Maritime safety and security budget
Unit: million EUR

	2010	2011	2012
Operating expenses	12.48	12.38	14.54
Investment expenses	10.33	8.71	9.70
Intervention expenses (1)	2.36	3.33	2.30
Total	25.17	24.42	26.55

(1) Economic and social accompanying support.
Source: Maritime Affairs administration / Initial budgets.

12.3.1. Signalling: the Lighthouse and Beacon department

The system of aids to navigation on the coasts of France and its overseas territories comprises about 6,450 maritime signalling establishments (ESM), including 120 lighthouses and 1,381 lights, 2,350 marker buoys (1,309 of which are light buoys), and 2 radio-navigation systems (8 DGPS stations and 2 Loran-C stations). These navigational aids for shipping fulfill France's commitments under the convention for Safety of Life at Sea (SOLAS).

The maritime signalling policy (creating, removing or modifying ESMs, modernisation, maintenance, nautical information, control and inspection) is implemented with the assistance of a technical and training administrative service. The 45 operations vessels have been managed since 2007 by the Lighthouse and Beacons corporation, which is also responsible for seagoing personnel (training and equipment).

12.3.2. Safety, surveillance, rescue

The “CROSS” regional operational search and rescue centres are specialised services, placed under the line authority of the DIRM (Inter-Regional Directorates for the Sea). There are five CROSS in Metropolitan France (Gris-Nez, Jobourg, Corsen, Etel and La Garde) and two overseas (West Indies-French Guyana and Reunion Island). They have six missions in their zones of jurisdiction:
- search and rescue of people in distress at sea
- shipping surveillance
- surveillance of maritime fisheries
- marine pollution surveillance
- disseminating information for maritime safety
- monitoring vessel security alerts.

Two MRCC "Maritime Rescue Coordination Centres" at Papeete and Noumea co-ordinate rescue operations in the zones under French authority in the Pacific.

The CROSS centres are equipped for detection, transmission and communications. The network's radio component is extended by a satellite segment with global coverage which is integrated with the global maritime distress and safety system (GMDSS). They can make use of naval and airborne facilities of the administrations which contribute to the State action at sea (French Navy, Air Force, "Gendarmerie nationale", Customs, Civil security and Maritime affairs), and the means of the National sea rescue society (SNSM).

12.3.3. National sea rescue society (SNSM)

The French SNSM sea rescue society, a State-approved private body, carries out a large part of rescue operations on a volunteer basis under CROSS control. It secures prevention of risks, offshore rescue operations by volunteer crewmen, and train volunteer lifeguards who ensure safety on beaches. As a non-profit organisation, the SNSM is financed for nearly half by private donations and the rest by subsidies from State, regional and local authorities.

SNSM key figures (2013)

Permanent volunteer crew members specialised in offshore rescue operations	4400
Volunteer lifeguards	1397
Rescue stations	219
Beach aid posts	273
Training and intervention centres	32

Source : SNSM

12.4. Seafarers and maritime training

Seafarers and maritime training budget

Unit: million EUR

	2012	2011	2012
Operations	0.20	1.05	0.70
Investment	0.69	0.50	0.48
Intervention	10.72	12.41	8.71
Support to ENSM			17.26
Total	11.61	13.95	27.15

Source : Maritime Affairs administration / Initial budgets.

The seafarer training system trains seamen for the maritime sectors trade, fisheries, commercial yachting and aquaculture. All levels of training are offered, from secondary to higher education courses (from the vocational training certificate for basic fisheries jobs to degrees for Masters of merchant vessels) and in both initial and further training, in metropolitan and overseas France for some courses. These training courses are prepared within the network of maritime establishments formed by:

- the twelve maritime vocational high schools (LPM) providing initial and further training for qualified seamen, aquaculture professionals and some fisheries officers;
- private schools or approved associative establishments;
- the ENSM - "Ecole nationale supérieure maritime" (High national maritime school - merchant fleet officers training institute), created in 2009, which brings together the four

French merchant navy schools (ENMM) in Le Havre, Saint-Malo, Nantes and Marseilles; these train officers who will serve aboard merchant vessels.

Funding allocated to seafarer training

Unit: million EUR

	2010	**2011**
Subsidy to ENMMs (ENSM since 2011)	3.74	3.40
Including operations	*3.05*	*2.90*
Including capital expenditure	*0.69*	*0.50*
Subsidies for maritime vocational high schools	2.40	3.23
Including operations	*2.40*	*3.23*
Including capital expenditure	*0*	*0*
Private schools	1.05	1.17
Seafarers sub-total	**7.19**	**7.80**
Grants and further vocational training	*1.56*	1.077
Total Maritime training	**8.75**	**8.88**

Source: Maritime Affairs administration / Initial budgets.

Initial training in maritime and aquaculture training high schools

Unit: number of students as of 30 September

	2010/11	**2011/12**	**2012/13**
Fisheries	467	548	267
Shellfish farming	190	208	191
Merchant seaman	437	469	362
Fisheries and merchant navy	685	622	798
Commercial yachting		23	48
Total	1779	1870	1666

Source: Maritime Affairs administration.

Breakdown of enrolment by school

Unit: number of students as of 30 September

	2009/10	**2010/11**	**2011/12**
LPM initial training	1643	1779	1870
ENMM initial training (ENSM since 2011)	1246	1177	1097
Total	2889	2956	2967

Source: Maritime Affairs administration.

12.5. Resources implemented for merchant fleet

Intervention budget for merchant fleet

Unit: million EUR

2010	2011	2012
78.50	76.19	75.20

Source: Maritime Affairs administration / Initial budgets

Intervention for the merchant fleet involves:
- a subsidy to the “Compagnie générale maritime et financière” to supplement retirement pensions paid to the personnel of the former maritime company CGM;
- subsidies to ENIM, the state agency for unemployment and the Central Agency for Social Security, to compensate for exonerations or reimbursements of employer contributions for crew working on French-flagged merchant vessels, assigned to maritime shipping activities subject to international competition.

12.6. Resources for inter-ministerial action for the sea

Inter-ministerial action for the sea
Unit: million EUR

	2012	2011	2012
Operations	6.25	5.97	4.92
Investments	3.98	4.81	4.87
Total	10.23	10.78	9.79

Source: Maritime Affairs administration / Initial budgets

12.6.1. The control and surveillance system (DCS)

The DCS, as well as taking part in State action at sea and in implementing contingency plans (POLMAR, passenger rescue plans, etc.), mainly carries out its remit in the following frame of activities:
- marine fisheries (including the onshore supply chain and mariculture);
- shipping,
- yachting and recreational water sports;
- ship safety policing;
- marine environment policing.

The DCS has 27 operational units divided into two components, one offshore (2 Maritime Affairs patrol boats and 3 regional surveillance launches) and the other, more multipurpose, working in inshore waters and on shore (22 coastal units of the Maritime Affairs services).

Located on the three seafronts of metropolitan France (19 units) and overseas (3 units), the Maritime affairs coastal units (ULAM) have 7 agents on average and mainly work to police fisheries (60% to 70% of their activity on land and at sea), shipping, or inspecting vessel safety standards. They have different types of seagoing facilities (coastal launches from 7 to 17 metres LOA, semi-rigid high speed crafts from 5 to 7.5 metres) and other specialized vehicles.

12.6.2. POLMAR-terre onshore contingency plan

POLMAR action has two components: POLMAR-mer at sea and POLMAR-Terre for shore. The aspects of the latter which fall under the aegis of the ministry in charge of the sea, are managed by the Maritime Affairs administration.

In each county, a POLMAR correspondent, working in collaboration with the head of "crisis management" or "safety-defence", is in charge of:
- keeping the ORSEC/POLMAR-Terre county-level contingency plans up to date, as concerns aspects under the jurisdiction of the ministry in charge of the sea, i.e.,

determining which sites can be protected by floating booms, helping organise shoreline clean-up and the waste treatment supply chain;
- organising training exercises to deploy equipment and material. The Maritime Affairs finances these exercises. The "post-Erika" regulations provide for their being scheduled once every three years per county (this includes "head of staff exercises", which comes under the Prefectures alone).

In crisis periods, the POLMAR correspondent or his line manager will be the Prefect's technical advisor.

In addition, the Maritime Affairs administration, with the assistance of the Marine and river technical studies centre (CETMEF) - now merged with CEREMA Study and expertise centre on risks, environment, mobility and spatial planning (created in 2013) -, manages eight "inter-county centres for storage and POLMAR-terre intervention" in metropolitan France and five centres overseas. This action mainly consists in ensuring the maintenance of the special equipment and materials stored, adding to the lengths of floating booms available and replacing ageing equipment. These objectives require an important amount of investments.

To keep the POLMAR-terre network operational, the Maritime Affairs finances training for county correspondents and the personnel in the 13 inter-county centres for storage and intervention. Most training courses are provided by the CEDRE (Centre for documentation, research and experimentation on accidental water pollution).

12.7. ENIM

The provident fund for naval personnel (ENIM) is a public administrative entity, manned by civilian staff and financially independent. It manages the special social security and retirement system for seafarers.

The ENIM is the social security scheme for all professional seagoing personnel, in the merchant fleet, fisheries and commercial yachting. This special scheme covers all branches, except family insurance and offers protection for:
- risks of illness, maternity, invalidity, death and occupational accidents;
- and old age coverage.

Those insured are
- seamen working on merchant vessels and commercial yachts (13,311 in 2011), fishing and shell fishing vessels (16,706) and seamen who are authorised to validate their services on shore, and their beneficiaries;
- students in maritime courses (ENSM, occupational high schools);
- pensioned seafarers (179,507) and their beneficiaries.

ENIM budget

Unit: million EUR

	2010	2011	2012
Costs	**1650**	**1604**	**1611**
Benefits, health and social action, transfers	1612	1565	1575
Other costs and operations	39	39	36
Including staff costs	*23*	*23*	*23*
Products	**1651**	**1603**	**1589**
Contributions and other income	660	505	448
State subsidy	778	818	856
CNAMTS subsidy (1)	212	280	284

(1) Financially secured with the general scheme. The CNAMTS (general health and illness scheme for salaried employees) covers part of the subsidy for the "Health and illness" aspect.

Source: ENIM.

13. Coastal and marine environment protection

Coastal and marine environment is subject to numerous natural or man made disturbances. To address the consequences of these disturbances, environmental protection policies have been set up both nationwide and in the framework of international institutions where France takes part. They focus on preventing, reducing and eliminating pollution; repairing damage; collecting, processing and disseminating environmental data.

Coastal and marine environmental protection is estimated herein through:

- expenditure indicators which translate how much public effort is dedicated to protection objectives,
- indicators on the operations of public agencies and private enterprises involved in the treatment of marine- and land-originating waste impacting coastal and marine environment.

13.1. Main components of public expenditure

The amounts of budget dedicated to the "Landscape, water and biodiversity" programme are an indicator of the state support to marine environment management and protection policies. The institutional and legislative framework of the programme combines national and European regulatory schemes:

- the national sustainable development strategy and biodiversity 2011-2020 strategy,
- the roadmap to ecological transition, published after the Environmental Conference of September 2012,
- the Environment Forum of 2008-2009 and the decisions, in terms of regulation, which followed the event, including the laws 2009-967 of 3 August 2009 and 2010-788 of 12 July 2010,
- the Marine Environment Forum of 2009-2012 and its conclusions and follow-up,
- the Water Framework Directive 2000/60/EC and the Marine Strategy Framework Directive 2008/56/EC and the Council Directive 91/271/EEC of 21 May 1991 urban waste-water treatment,
- the Birds and Habitats Directives 2009/147/EC and 92/43/EEC,
- the French mining laws.

The composition of the programme changed over time in the recent past. It included an important urban planning component; it now includes four "actions" among which the "Management of environment and biodiversity" action represents 95% of the total expenditure.

Tab. 1. Budgets for "Landscape, water and biodiversity" Programme
Unit: million EUR

	2011		2012	
Actions	Budget	Staff*	Budget	Staff*
Urban planning and management	73,1	4 323	73,6	4 204
Technical support	0,0	6 546	0,0	6 123
Environment and biodiversity management	272,1	2 516	273,1	2 562
Total	345,2	13 385	346,7	12 889

	2013		2014	
Actions	Budget	Staff*	Budget	Staff*
Sites, landscapes and information publishing	6,4	314	6,2	309
Logistics, training, and dispute management (1)	3,8	629	6,2	618
Environment and biodiversity management	266,9	2 201	264,1	2 162
Fund for biodiversity and ecological restoration (2)	2,1	0	2,0	0
Total	279,2	3 144	278,5	3 089

(1) Equivalent to "Technical support" action in 2011-2012 budgets.
(2) Includes budget for the Fund for biodiversity and ecological restoration created in October 2011.
*Administrative staff assigned to the Programme (FTEs).
Source: Initial budgets for 2011-2014.

13.2. Environmental management costs: examples

Some examples of coastal zone and marine water management costs help to illustrate what the marine environment protection policy involves in terms of public effort and public expenditure.

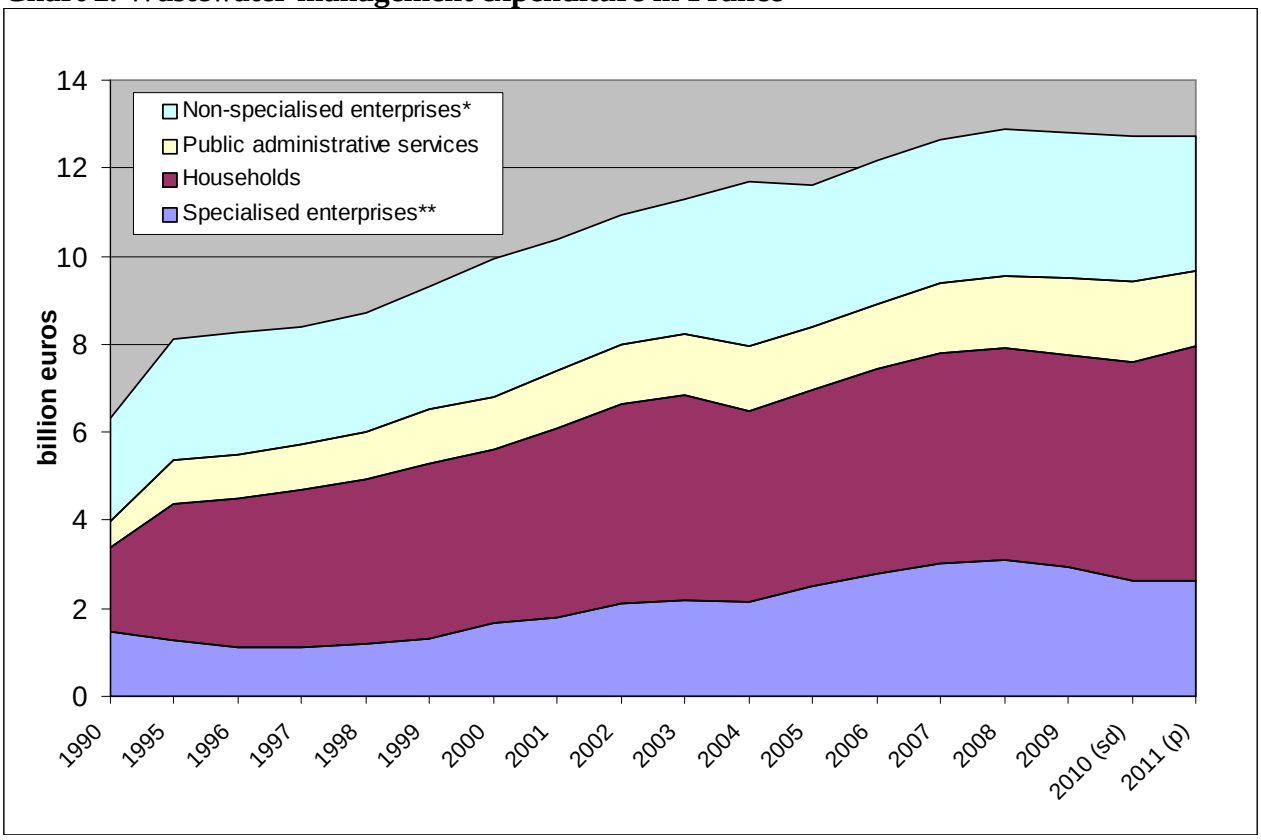
13.2.1. Wastewater management

Wastewater management involves collection, transport and treatment of wastewaters. It includes collective treatment by companies specialised in these operations, by effluent emitting companies (not specialised in these operations), or autonomous treatment by households not connected to collective water treatment systems.

The overall expenditure for wastewater treatment dropped in 2009 and 2010, mainly due to a decrease in water consumption and in the amount of industrial effluent discharges, the latter resulting from the economic slowdown. The amounts of expenditure stabilised in 2011 as a result of a decrease in collective and industrial wastewater treatment investment, parallel to increasing operation expenses. Wastewater management effort thus tended to shrink in the recent period of economic difficulties.

Over a longer period of time, a decrease in the proportion spent on industrial wastewater treatment with respect to overall expenses could be observed as well as a significant increase in the share of collective wastewater treatment expenses since 1995.

Chart 2. Wastewater management expenditure in France



*Non-specialised enterprises: all enterprises except enterprises specialised in collective treatment (delegated companies).
**Specialised enterprises: communal and inter-communal wastewater treatment services and delegated companies.
(sd) semi-definitive; (p) provisional.
Source: Report of the Environmental economy and accounts committee, misc. years.

13.2.2. Management and prevention of marine pollution

Accidental marine pollution and green algae proliferation are two important examples of management strategy. The former case involves the mobilisation of resources that have been taken into account in the expenditure figures presented in the preceding chapters.

Accidental marine pollution

As part of the ORSEC (Organisation of Civilian Safety Response) Plan (Law 2004-811 of 13 Aug. 2004 on civil security, and subsequent decrees), the Maritime ORSEC Plan includes general provisions on the operations, course of action, co-ordination, information exchange, international co-operation agreements and post-event measures. It equally includes specific provisions which existed before the Law of 2004 and in themselves constituted real marine contingency plans:

- POLMAR-mer: seagoing action component of the POLMAR accidental marine (chemical or oil products) pollution response plan, POLMAR-terre being the onshore action component;
- SAMAR (Maritime rescue of aircrafts) for aircrafts in distress;

- NUCMAR-mer: response to incidents involving waterborne transport of radioactive material;
- SAR (Rescue of persons);
- ANED (Assistance to vessels in difficuty).

Under POLMAR-mer (see preceding chapters) the mobilisation of pollution response and safety at sea resources is organised, i.e. principally the French Navy Operation Centres and the CROSS. These are taken into account in the budget lines of the French Navy and Maritime Affairs administration (see chapters 11 and 12 above).

The CEDRE

The CEDRE (Centre for documentation, research and experimentation on accidental water pollution), is a non-profit organisation created in 1979, in charge of the permanent documentation, research and experimentation on accidental sea water pollution response techniques, material and equipment as well as of operational consulting in emergency situations. It is involved with marine waters and internal surface waters.

The budget of CEDRE is about €5m (5.7m in 2009, 4.4 in 2011, 5.0 in 2013); its main budget component was a €2m support from the Environment Ministry in 2012 (€1.5m in 2011, €1.8m in 2013), as part of the resources provided to the budget Programme on “Prevention of risks”. The CEDRE has a staff of about 50 FTEs.

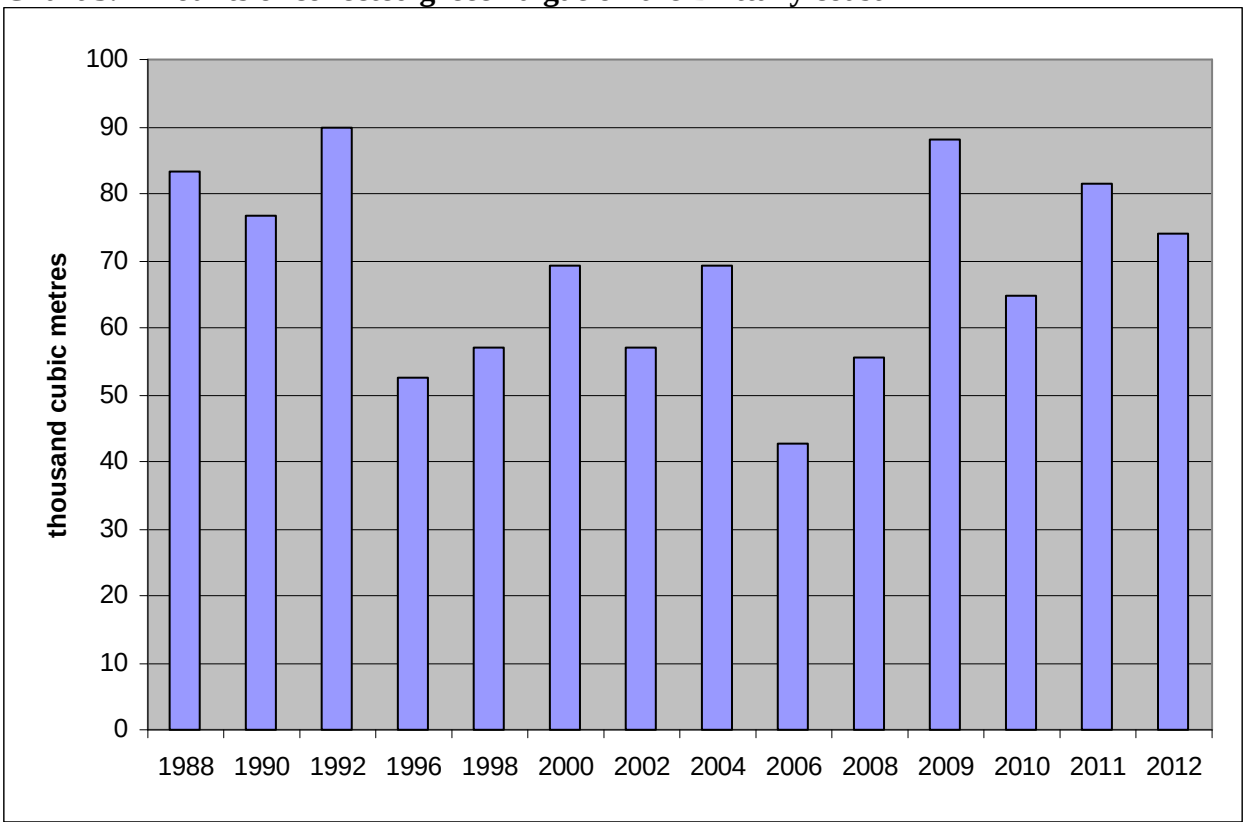
Green algae proliferation on the northern coast of Brittany

Blooms of macrophytic green algae (notably ulva and enteromorphs) mainly occur in late spring and early summer, affecting many coastal sites in Europe. In France they have affected lagoons in the Languedoc, the Arcachon basin and above all the shores of Brittany.

Their proliferation is fostered by the combined action of human and natural factors: physical and climate-related coastal features, with excessive nutrient inputs carried by streams into the sea. Along with the complex ecological consequences on the foreshore and in the benthic ecosystem, green algae blooms have far-reaching economic and social consequences for regional tourism: they release foul-smelling volatile sulphur compounds into the air and physically hinder recreational activities on the coast. They affect shellfish farming and certain fisheries by making harvesting difficult and through ecological disturbances resulting from high densities of macroalgae.

The cost of algae collection operations provides an indicator of the effort made by communes, depending on their financial constraints, to respond to this type of pollution at local scale. The yearly amounts of collected algae have been more or less cyclical so far, but the unit collection cost has steadily increased: from €4/cubic metre in 1988 to €10 in 2006 and more than €19 in 2012.

Chart 3. Amounts of collected greeen algae on the Brittany coast



Source: Algae Study and Processing Centre (CEVA)

The Brittany regions funds management programmes on marine water quality. The latest one, GP5 (2007-2013) was in line with the guidelines of the Water Framework Directive (WFD: 2000/60/EC):

- its water quality indicators included not only nitrates and pesticides but also other criteria following the WFD, e.g. phosphorus and organic matter content, river hydro-morphology and microbiological quality of coastal waters;
- the watershed limits have been extended to the entire river basin and catchment area (and not only to water intake sites and drinking water production facilities) and, for coastal river basins, to the coastline.

The cumulated 2007-2013 budget of GP5 was around €200m including €77m from the state and €48m from the Brittany regional council.

Prevention of pollution from ship dismantling

Merchant, supply, fishing and pleasure vessel dismantling is carried out by a number of yards, often involved in recycling operations targeting a diversity of scrapped material - and not only water transport equipment.

Estimates of ship dismantling economic indicators are difficult to infer from the available statistics. The activity is of modest importance in Europe and mainly performed in Belgium, Italy and the Netherlands as far as the largest yards are concerned, but also in the UK, in Denmark, Greece, Lithuania, Poland, Spain and Bulgaria. Most EU countries have dismantling yards for small size units, namely fishing vessels and pleasure boats. The US

yards are closed to foreign vessels. The most important dismantling capacities, for large ships, notably merchant ships, are outside the OECD countries, namely Bangladesh, China, India and Pakistan. These four countries and Turkey recycled 98% of the world tonnage in 2009 (source: IMO).

Ecological and health risks are involved with open air dismantling and recycling facilities as ships may contain polluting or hazardous waste materials (asbestos, paints and anti-fouling compounds, metals, hydrocarbon wastes, or PVC). The first bill of global scope dedicated to ship dismantling is the Hong Kong convention, prepared by the International Maritime Organisation and adopted in May 2009: it foresees a control of ship lifecycle (design, running, maintenance and recycling) and of building yards. The convention is in process of ratification; to date, it has been ratified by three countries representing less than 2% of the world tonnage: Congo, France (in 2014) and Norway.

13.2.3. Protection of marine and coastal zones

Protection of marine zones: the Agency for protected marine areas

Under the aegis of the Environment Ministry, the Agency for marine protected areas (AAMP) was created by Law 2006-436 of 14 April 2006 concerning national parks, regional nature parks and marine nature parks. Its creation went along with the State project to create ten marine nature parks (five have been created so far) and to develop a national network of marine protected areas. The Agency's main functions are:

- supporting public policies to create marine protected areas,
- co-ordinating the network of marine protected areas,
- allocating resources for marine nature parks,
- participation in setting up Natura 2000 (EU network of protected areas) at sea,
- participation in implementing the Marine Strategy Framework Directive (see above),
- technical assistance to ministries and participation in international partnerships on the protection of marine environment.

Resources of the AAMP: €21.81m and 146 FTEs in 2013; €23.08m and 173 FTEs in 2014. The Parliament noted that the yearly costs of marine environment protection are likely to increase from €100m in 2015 to an estimated €500m in 2020 (source: Initial 2013 budget).

Protection of coastal zones by public land acquisition

The Coastal and lakeshore conservatory (CELRL), a public establishment created in 1975 under the aegis of the Environment Ministry, implements a land-buying policy to protect wildlife and coastal landscapes. It purchases threatened land, which is then restored to be made accessible to the public. The land acquired is usually considered inalienable: alienation is actually subject to a heavy procedure.

- The Conservatory has about 120 staff in Rochefort, Paris and in regional delegation offices.
- Total cumulated protected domain: the Conservatory bought up 154,000 ha from 1975 until 2014. The Environment Conference of September 2013 confirmed the 2013-2030 acquisition strategy at a rate of 2,500 to 3,500 ha per annum.
- The management of sites is proposed to local authorities, sometimes to public agencies such as the National Park of Port-Cros, or to State approved associations such as the Bird

Protection Society or the National Society for the Protection of Nature. A third of the Conservatory's investment expenditure is used for restoration and management (two thirds being used for land acquisition) and is often complemented by support from land managers and the Conservatory's partners.

- Consolidated land management budget: estimated at €50m/year, thus equivalent to the Conservatory's annual budget resources.
- 580 coastal wardens employed by local authorities and other management entities monitor and maintain the sites.

Costs and resources of the Conservatory:

- Expenditure for land acquisition from 1975 until 2014: around €800m.
- Annual acquisition costs: around €20m.
- Annual restoration and maintenance costs: €10m.
- The Conservatory does not receive direct state support. About 80% of its budget resources come from 90% of the boat and yacht license tax proceeds, i.e. €37m in 2012.
- Complementary contributions (€10 to 20m per annum) come from EC funds and outside partners (local authorities, water agencies, companies, donors and sponsors).
- Resources from land use tax proceeds: €1.2m per annum.

14. Marine research

Marine research covers several specialities, most often developed within international programmes, in keeping with the scale of the problems for ocean and environmental status. The activity involves a small number of public organisations, some of which work in several fields.

- Ifremer, university and CNRS (National Centre for Scientific Research) oceanography laboratories, the SHOM French Navy hydrographic and oceanographic service, the IRD Research Institute for Development and the IPEV Paul-Emile-Victor Polar Research Institute are the main scientific organisations in public-sector ocean and marine research.
- Earth-observation satellites provide an additional spatial component for oceanographic research. They are financed by CNES National Centre for Space Studies, generally in the framework of bilateral or multilateral co-operation.
- The other principal research bodies involved in ocean studies are: Météo-France (French Meteorological office), INRA (National Agronomy Research Institute), CIRAD Agricultural Research Centre for Development, BRGM Office for Geological and Mining Research.
- Genavir, economic interest group, operates a large part of the ocean research fleet on its own and other partners' behalf, including the research vessels of Ifremer and IRD and the submarine equipment of Ifremer.

The assessment of marine research effort requires a detailed assessment of the staff working on marine science in research organisations. Most of these are not exclusively dedicated to marine science; estimates are thus necessary to value staff costs.

Tab. 1. Civil marine research effort in main French research organisations: 2011 data and estimates

Units : million EUR, number of staff

	Total expenditure (m€)	of which staff costs (m€)	Labour force (3)
IFREMER (1)	218,5	110,6	1479
CNRS-universities (2)	180,0	120,0	1350
IPEV	11,3	0,3	9
IRD (4)	33,3	24,0	147
INRA (4) (5)	12,8	7,1	134
Genavir	40,7	24,5	363
of which Genavir seamen			247
Total	496,6	286,5	3482

(1) All Ifremer activities, scientific and administrative staff, not including Genavir.
(2) Scope limited to research activities of the Ocean-Atmosphere section. Based on estimations carried out in 2007.
(3) Number of salaried research scientists, engineers, teachers and technicians.
(4) Expenditure estimated as proportional to number of staff.
(5) 2013 data.
Sources: main research organisations.

Glossary

AAMP	Agency for marine protected areas
AFTP	French Petroleum Technicians and Professionals Association
AHTS	Anchor handling tug supply vessel (navire ravitailleur remorqueur releveur d'ancre)
BPC	Command and force projection ship
BRGM	Office for Geological and Mining Research
BRS	Barry Rogliano Salles SAS
CCNR	Central Commission for Navigation on the Rhine
CEDRE	Centre for documentation, research and experimentation on accidental water pollution
CEFOR	Nordic Association of Marine Insurers
CELRL	Coastal and lakeshore conservatory
CEREMA	Study and expertise centre on risks, environment, mobility and spatial planning
CESA	Community of European Shipyards Associations
CETMEF	Marine and river technical studies centre
CEVA	Algae Study and Processing Centre
CFP	Common Fisheries Policy
CIRAD	Agricultural Research Centre for Development
CLIA	Cruise Lines International Association
cm	Cubic metre
CNAMTS	General health and illness scheme for salaried employees
CNES	National Centre for Space Studies
CNRS	National Centre for Scientific Research
CROSS	Regional operational search and rescue centre
DAM	Maritime Affairs Administration
DCS	Control and surveillance system
DGCIS	Competitiveness, industry and services administation
DGITM	Infrastructure, Transport and Sea administration
DGPS	Differential Global Positioning System
EC	European Commission
ECU	Former "European Currency Unit"
EEC	European Economic Community
ENIM	Provident fund for naval personnel
ENMM	French merchant navy school
ENSM	High national maritime school
ESANE	Annual business statistics database
ESM	Maritime signalling establishment
EU	European Union
EUR / €	Euro
EWEA	European Wind Energy Association
FFSA	French Association of Insurance Companies
FIN	French Nautical Industries Federation
FNTP	Public Works Industry National Association
FPSO	Floating production, storage and offloading unit
FranceAgriMer	National Agency of the food and seafood industry
FTE	Full time equivalent
Genavir	Economic interest grouping for research vessel management
GEP	Oil and gas services industry association
GICAN	French Marine Industry Group
GIRM	Metal import and exchange group

GMDSS	Global maritime distress and safety system
GT	Gross tonnage
HELCOM	Helsinki Commission (Baltic Marine Environment Protection Commission)
ICES	Internation Council for the Exploration of the Sea
IFPEN	IFP (Institut français du pétrole) Energies nouvelles
Ifremer	French Research Institute for the Exploitation of the Sea
IMF	International Monetary Fund
IMO	International Maritime Organisation
INRA	National Agronomy Research Institute
INSEE	National Institute of Statistics and Economic Studies
IPEV	Paul-Emile-Victor Polar Research Institute
IRD	Research Institute for Development
ISEE	New Caledonia Institute of Statistics and Economic Studies
ISPF	French Polynesia Statistical Institute
ITC	Internal tourism consumption
IUA	International Underwriting Association
IUMI	International Union of Marine Insurance
LME	London Metal Exchange
LNG	Liquefied natural gas
LPM	Maritime vocational high school
mcm	Million cubic metres
MEDDE	Environment and Transport Ministry
MFC	Merchant Fleet administrative section (Environment and Transport Ministry)
MRCC	Maritime Rescue Co-ordination Centre
mt	Million tonnes
MW	Megawatt
NACE	Statistical classification of economic activities in the European Community
NAF	French statistical classification of economic activities
OECD	Organisation for Economic Co-operation and Development
Orsec	Organisation of Civilian Safety Response
OSPAR	Oslo-Paris Commission for the protection of marine environment of the North-East Atlantic
POLMAR	Marine pollution response scheme
RMT	Review of Maritime Transport (UNCTAD)
SAMAR	Maritime rescue of aircrafts
SAR	Maritime Search and Rescue
SDSIM	Marine information systems administration (Environment and Transport Ministry)
SESSI	Former "Service of industrial studies and statistics" (Industry Ministry)
SHOM	French Navy hydrographic and oceanographic service
SIH	Fisheries Information System and Database (Ifremer)
SIRENE	National System of Identification and Directory of Enterprises and their Establishments
SNSM	National Sea Rescue Society
SOLAS	Safety of Life at Sea
SUSE	Unified system of business statistics (INSEE)
Sycabel	Electric and communication cable making industry association
TCD	Landing platform dock
TEU	Twenty-feet equivalent unit
ULAM	Maritime affairs coastal units
UMS	Universal Measurement System
UNCTAD	United Nations Conference on Trade and Development
Unedic	Employment Association
UNPG	National aggregate production industry association
UNWTO	World Tourism Organisation
VNF	French Inland Waterway Agency