

# ***PwC HELM*** ***Circumnavigation:*** An integrated approach to the economy of the sea

*HELM*

*PwC Economy of the  
Sea Barometer (World)*

*December 2015*





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# ***Introduction***







# Introduction

The seas have always been one of mankind's biggest and most significant natural resources. In the past, primarily for food, shipbuilding, transport, and naval defences; more recently for oil and gas, and tourism; and now, increasingly, for 'blue' biotechnology, robotics, seabed mining, and renewable energy. It's no surprise, then, that coastal nations see their seas as vital national assets, and are putting an ever greater emphasis on protecting them. More countries are applying to the UN to extend their continental platform, and more companies are competing for the opportunity to explore and exploit them. The potential is as vast as the sea itself: over 70% of the planet is covered by water, and yet even now, only 5% of the seabed has been mapped and photographed.

But the more industries the seas support, the more potential there is for conflict – conflict between industries, conflict between human exploitation and marine conservation, and even conflict between nations. In many cases, these tensions can arise because of the different ways the seas are used – some industries operate on the surface (like shipping, fishing, and cruise ships), others on the seabed (like oil and gas), and others use the winds above the water. The interests of those working within each of the dimensions are often in direct opposition, and in many cases the three dimensions sit uneasily together. For example, sometimes tourist marinas co-exist uneasily with fishing ports – they often compete for the same locations and have different objectives. But a more integrated approach could find ways to make these activities more mutually supportive, and the skills more transferable. Likewise ports and fish farming have previously been mutually exclusive, but it could be possible to find ways to share space and resources to their mutual benefit.

In summary, the sustainable growth and development of the economy of the sea need an integrated approach.

Only such **an integrated approach** to the seas can ensure they are used responsibly, effectively, and equitably. International bodies like the EU are starting to recommend such an approach, and individual countries are also looking at ways to integrate their own maritime industries. For example, by understanding how reductions in a nation's fishing fleet affect the port economy, shipbuilding, and employment opportunities in coastal communities.

PwC Portugal has been assessing the usage of the seas for 10 years, as part of the international HELM project. It's a unique barometer of the health of the various industries that depend on the oceans, and captures the new and emerging trends affecting them. In this report we look in particular at the challenges and advantages of taking an integrated approach to the oceans: the issues that arise, the practicalities that need to be addressed, and the size of the prize if this can be achieved. We also provide a snapshot of the state of play in the maritime industries, and between the maritime nations.

## *The new economy of the sea*

*As technology advances, we can harvest more from the sea than fish. 'Blue biotechnology' is exploring the potential to apply genetic engineering to marine lifeforms for use in food production, pharmaceuticals, cosmetics and other industrial compounds. It's also becoming possible to mine the seabed for minerals, opening up new sources of supply and relieving the pressure on scarce resources. Both industries rely on sea robotics, using submarine 'drones' that can operate at depth and in extreme environments.*





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# ***Into the 'Blue': The value of an integrated approach***







# Into the 'Blue': The value of an integrated approach

Taking an integrated approach to the oceans ensures a proper balance between all those who have a stake in it: governments, academia, businesses, individuals, and the environment. It takes into account the differing and sometimes conflicting needs of employment, biodiversity, commerce, and national security, ensuring that decisions are made in the full knowledge of their wider impact.

The advantages of this 'blue' thinking are clear: it's a more sustainable and inclusive approach, it promotes growth and employment, and it fosters innovation, both by supporting the development of new industries and by encouraging new ideas in established sectors like fishing. It allows mature economies to secure more value from their maritime zones, and opens up new opportunities for developing economies. And it's a positive response to global megatrends like climate change, and demographic shifts. To take just two examples: the world will need to feed 9 billion people by 2050, and a growing number of them will want a protein-rich Western-style diet. We cannot hope to provide that from conventional farming or from meat alone: fishing and aquaculture will be vital in bridging the gap, with the by-products from seafood processing providing useful raw material for biotechnology. Likewise the world of 2050 will require around 50% more energy than it does now, and offshore wave and wind power will be important sustainable ways to meet that new demand.

There are some significant challenges in achieving an integrated approach. The first is to understand that the timescales at sea are longer than the new digital world is happy to tolerate. The resources of the sea are perhaps the ultimate example of 'patient capital': it's an environment where change takes time, which demands a long-term perspective. It's perhaps no surprise, therefore, that over 70% of the companies working on the sea are family businesses, which are able to plan in terms of generations rather than quarters.

The other significant challenges are a lack of awareness about the scale of the opportunity, which in turn means that investment in this area is seen as a low priority, both by governments and businesses alike. But the opportunities are there, and many of them will be more significant if they are managed holistically. For example, a more integrated and sustainable approach to fishing and marine conservation will create opportunities for sea-related tourism.

But because the seas are shared, the strategy must likewise be shared. In other words, the economy of the sea needs to be integrated not just across industries, but across countries and regions. We need international co-operation if we are to make the most of this vast resource.

So what would this approach look like in practice? Some countries are already taking this pioneering approach: Norway manages its extensive maritime industries holistically, from the production of gourmet seafood products, to tourist trips to aquaculture plants in the fiords. Ireland has an Integrated Marine Plan, *Harnessing Our Ocean Wealth*, which covers seafood production, tourism, and offshore energy, and brings together the key stakeholders from all of these industries. In Germany, there's a highly developed financial services sector offering marine insurance and other services for the shipping and shipbuilding sectors, while New Zealand is capitalising on its spectacular coastal locations to become a venue for international sailing events, and a centre for the building and maintenance of these specialist craft.

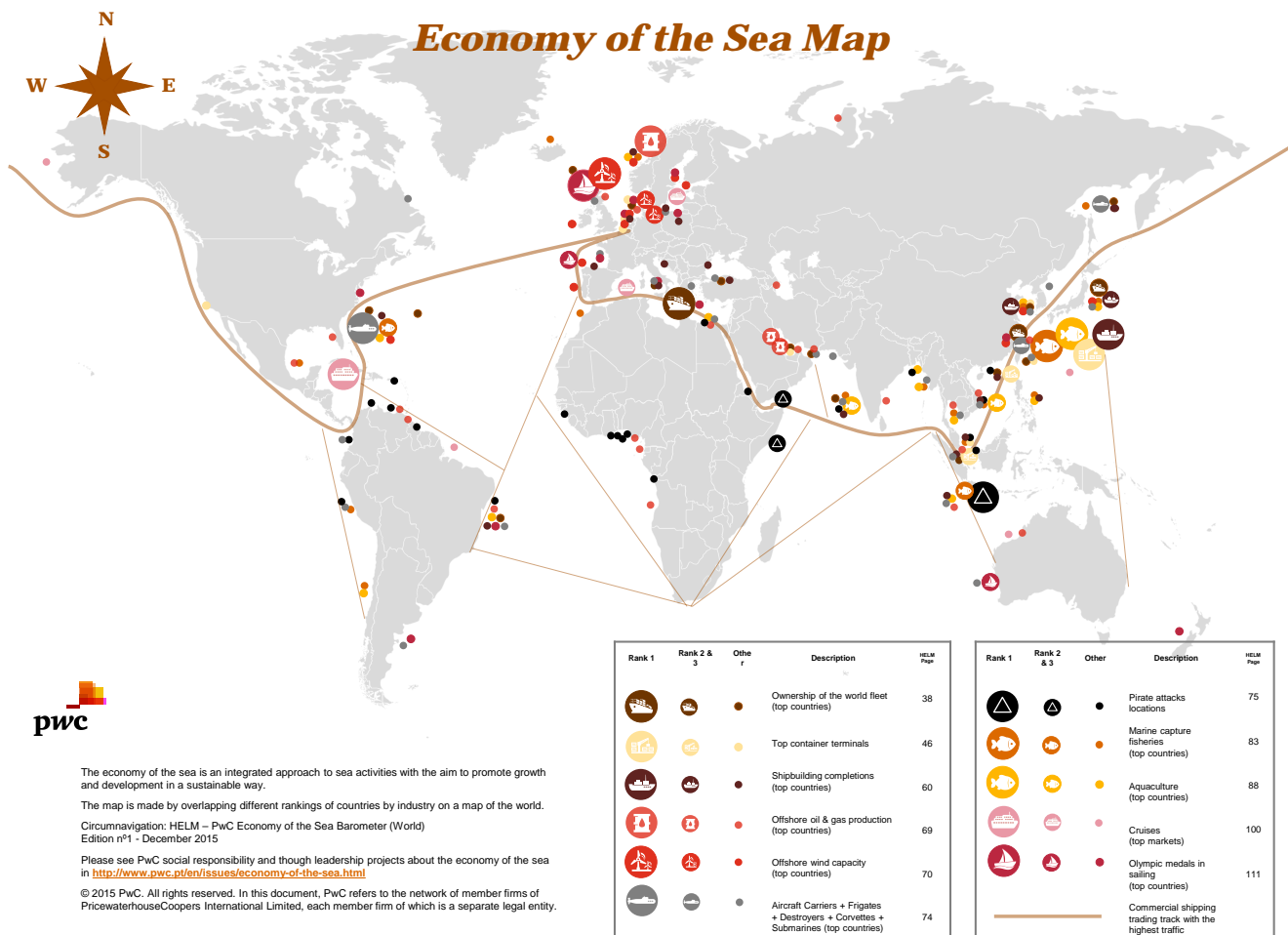
## Strategy to execution

There are, at least, three essential elements required to put an integrated approach into action: the right **framework**, the right **people**, and the right **technology and equipment**.

The framework is the basic governance foundation, ensuring there is clarity on the different rights and responsibilities of those operating on the seas, and a shared commitment to standards of safety and security, especially at a time when piracy is rising. It should cover everything from regulatory systems to the legal status of specific assets and geographical areas (the land and mineral resources of the Antarctic, for example, are the subject of many competing claims). Such a framework is essential to ensure adequate protection, minimize bureaucracy, and give greater confidence to investors, especially in emerging industries.

The people dimension centres on training. The sea once generated thousands of relatively low-skilled jobs in industries like fishing. The new economy of the sea demands – and creates – jobs with much higher levels of skill, from engineers to scientists to information technologists. This is related to the third success factor: fully exploiting the potential of the sea requires highly specialized equipment, from oil rigs, to ships, to wind turbines. In the last twenty years we have seen a significant shift in both how and where such equipment is manufactured: shipbuilding, for example, was once led by Europe and Japan, but while the volume of output has moved to China and Korea, Europe and Japan still build the most technologically advanced vessels. And as shipping evolves, ports must evolve too – either by adapting to the needs of new, larger vessels, or by building new facilities.

The HELM tool is designed to help governments, industries, policy-makers and coastal communities move towards the goal of an integrated approach, by gathering together data and trend analysis, so they can plan for the long term. It's crucial to understand the mix of industries within a region, and the issues within each industry, before major decisions can be made.




Between 2005 and 2015, Asia – and in particular China – was the dominant region in terms of fisheries, aquaculture, cargo handling at ports, and shipbuilding. The world's top 10 container ports are in Asia and seven of these are in China. Only in off-shore energy, merchant shipping, and seagoing tourism do America and Europe remain ahead of Asia. The ten years to 2015 also saw increasing environmental problems (particularly oil spills) and sea piracy (more than 3,670 people were taken hostage and 27 killed by pirates, mainly in Somalia, Nigeria and Indonesia). The US, China and Russia have the three main navies. South America and Africa are the most obvious examples of regions which are yet to explore the huge potential of the economy of the sea.

### The economy of the sea is shifting from West to East

The world's top **10** container ports are in **Asia** and **Seven** of these are in **China**.



**China** represented **17%** of **fisheries** and **62%** of **aquaculture** of the total world output in **2012**



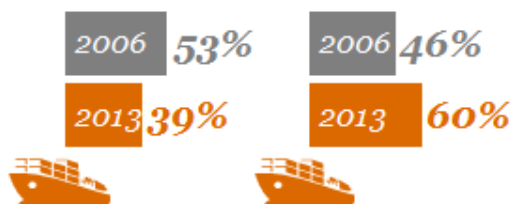

**America** and **Europe** remain ahead in **offshore energy**, **merchant ships**, **cruise tourism** and **sports**



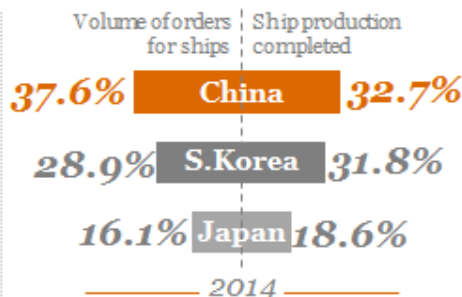


### Shipping and shipbuilding are moving from developed to developing markets

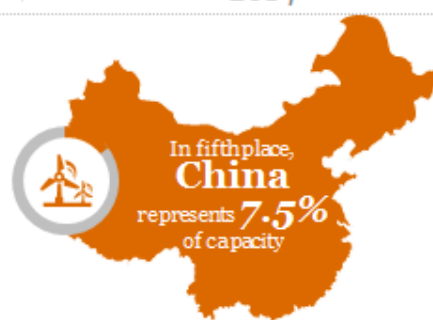
Tonnage of cargo **Transported by sea**  
Developed economies Developing economies



**Greece, Japan, China** and **Germany** have the greatest concentration of ship ownership



### Europe still leads the way on offshore renewable energy



### Fishing is under pressure, but aquaculture has huge promise

From **1974** to **2011** increased pressure on **fish stocks**, increased number of **species** that are in danger of **overfishing**





In **2012** **88%** of world aquaculture was in **Asia** which was responsible for the **significant** growth of aquaculture **globally**



Onshore aquaculture is the main contributor to this growth and **China** has **61.7%** of global aquaculture production



Significant opportunity exists in **Africa** and **Latin America** with the lowest per capita consumption of fish and other sea products




### Tourism is a major growth area

The **Caribbean** still holds the largest marketshare of **Cruise ships**



The largest cruise consumers are **North Americans** Immediately followed by the **British** and the **Irish**



The **USA, Australia, New Zealand, France, Italy** and the **UK** are the benchmark in recreational **boating** and **marinas business** Tourism and marine sports are a fundamental part of an integrated approach to the seas because of the huge numbers of people involved.





## Exclusive Economic Zones

Countries with the largest exclusive economic zones have a bigger potential to have benefits from the oceans. Below is presented the ranking of the 25 countries with the largest exclusive economic zones.

### Top 25 Exclusive Economic Zones (in millions of square kilometres), 2015

EEZ 2015 (Millions of Km <sup>2</sup> )			
USA	12.2	Federated States of Micronesia	3.0
France	10.1	Denmark	2.6
Australia	9.1	Norway	2.4
Russia	7.6	Papua New Guinea	2.4
United Kingdom	6.8	India	2.3
Indonesia	6.0	Marshall Islands	2.0
Canada	5.7	Philippines	1.8
New Zealand	4.1	Portugal	1.7
Japan	4.0	Solomon Islands	1.6
Brazil	3.7	South Africa	1.5
Chile	3.7	Mauritius	1.3
Kiribati	3.5	Seychelles	1.3
Mexico	3.3		

Source: Marineregions.org



## ***Maritime transport, ports and logistics***

Greece, Japan, China and Germany are the countries with the highest concentration of ship ownership.

### **Ownership of the world fleet, as of 1 January 2014 (dwt and n° of ships)**

	Dead-weight tonnage (thousand dwt) Beneficial Owner Location <sup>a</sup>	Number of ships
Greece	258,484	3,826
Japan	228,553	4,022
China	200,179	5,405
Germany	127,238	3,699
Republic of Korea	78,240	1,568
Singapore	74,064	2,120
United States	57,356	1,927
United Kingdom	52,821	1,233
Taiwan	47,481	862
Norway	42,972	1,864
Denmark	40,504	955
Bermuda	36,793	250
Turkey	29,266	1,547
Hong Kong SAR	26,603	610
Italy	24,610	851
India	21,657	753
Brazil	19,510	346
United Arab Emirates	19,033	716
Russian Federation	18,883	1,734
Iran (Islamic Republic of)	18,257	229

Note: Vessels of 1,000 GT and above.

a "Beneficial ownership location" indicates the country/economy in which the company that has the main commercial responsibility for the vessel is located.

Source: UNCTAD – Review of Maritime Transport 2014



**Ranking  
included in the  
economy of the  
sea map.**



## Maritime transport, ports and logistics

The world's ten largest container ports are Asian, seven are Chinese.

### Top 20 container terminals and their throughput for 2011, 2012 and 2013 (Million TEUs and percentage change)

Port Name	Country	2011	2012	Preliminary figures for 2013	Percentage change 2012-2013	Percentage share in the world
		Million TEUs				
Shanghai	China	31.7	32.5	36.6	12.57%	5.6%
Singapore	Singapore	29.9	31.6	32.6	3.00%	5.0%
Shenzhen	China	22.6	22.9	23.3	1.48%	3.6%
Hong Kong (China)	Hong Kong, China	24.4	23.1	22.4	-3.31%	3.4%
Busan	Republic of Korea	16.2	17.0	17.7	3.75%	2.7%
Ningbo	China	14.7	15.7	17.4	10.73%	2.7%
Qingdao	China	13.0	14.5	15.5	7.01%	2.4%
Guangzhou	China	14.4	14.7	15.3	3.83%	2.3%
Dubai	United Arab Emirates	13.0	13.3	13.6	2.8%	2.1%
Tianjin	China	11.5	12.3	13.0	5.69%	2.0%
Rotterdam	Netherlands	11.9	11.9	11.6	-2.06%	1.8%
Port Klang	Malaysia	9.6	10.0	10.4	3.48%	1.6%
Dalian	China	6.4	8.1	10.0	24.19%	1.5%
Kaohsiung	Taiwan	9.6	9.8	9.9	1.6%	1.5%
Hamburg	Germany	9.0	8.9	9.3	4.45%	1.4%
Long Beach	United States	6.1	6.0	8.7	44.4%	1.3%
Antwerp	Belgium	8.7	8.6	8.6	-0.66%	1.3%
Xiamen	China	6.5	7.2	8.0	11.2%	1.2%
Los Angeles	United States	7.9	8.1	7.9	-2.58%	1.2%
Tanjung Pelepas	Malaysia	7.5	7.7	7.6	-0.94%	1.2%
Total top 20		274.5	284.0	299.4	5.4%	46.0%

Note: In this list Singapore does not include the port of Jurong.

Source: UNCTAD - Review of Maritime Transport 2014



Ranking included in the economy of the sea map.





## ***Shipbuilding, maintenance and equipment***

In 2014, Asia (China, South Korea and Japan), completed more than 80% of the production of ships in that year (32.7%, 31.8% and 18.6% respectively).

In the European Union 28 + Norway finished only 6% of all finished ships worldwide.

### **Completions by Countries 2014**

Country	NO.	1.000 GT	%	1.000 CGT	%
Croatia	7	41	0.1%	57	0.2%
Germany	15	519	0.8%	489	1.3%
Italy	10	312	0.5%	320	0.9%
Netherlands	29	108	0.2%	160	0.4%
Poland	45	136	0.2%	226	0.6%
Romania	44	326	0.5%	322	0.9%
Spain	32	69	0.1%	159	0.4%
Other EU-28	26	130	0.2%	189	0.5%
<b>EU-28</b>	<b>208</b>	<b>1,641</b>	<b>2.5%</b>	<b>1,922</b>	<b>5.3%</b>
Norway	21	67	0.1%	114	0.3%
Russia	15	53	0.1%	75	0.2%
Turkey	92	175	0.3%	319	0.9%
Other	10	23	0.0%	45	0.1%
<b>Other European</b>	<b>138</b>	<b>318</b>	<b>0.5%</b>	<b>553</b>	<b>1.5%</b>
<b>Japan</b>	<b>522</b>	<b>13,421</b>	<b>20.8%</b>	<b>6,768</b>	<b>18.6%</b>
<b>South Korea</b>	<b>343</b>	<b>22,580</b>	<b>34.9%</b>	<b>11,606</b>	<b>31.8%</b>
<b>China</b>	<b>911</b>	<b>22,715</b>	<b>35.2%</b>	<b>11,907</b>	<b>32.7%</b>
Brazil	26	212	0.3%	167	0.5%
India	41	96	0.1%	145	0.4%
Indonesia	219	197	0.3%	469	1.3%
Malaysia	119	76	0.1%	236	0.6%
Philippines	45	1,878	2.9%	989	2.7%
Singapore	50	97	0.2%	184	0.5%
Taiwan	47	600	0.9%	396	1.1%
USA	85	293	0.5%	443	1.2%
Vietnam	92	375	0.6%	383	1.1%
Others	104	108	0.2%	281	0.8%
<b>Rest of World</b>	<b>828</b>	<b>3,932</b>	<b>6.1%</b>	<b>3,693</b>	<b>10.1%</b>
<b>World Total</b>	<b>2,950</b>	<b>64,607</b>	<b>100.0%</b>	<b>36,450</b>	<b>100.0%</b>

Source: Sea Europe, Shipbuilding Market Monitoring 2014



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## Offshore energy

From 2010 to 2014 the top 3 countries in offshore oil and gas production were Norway, Qatar and Saudi Arabia.

### Offshore Oil & Gas Production (Million kbbl/d)

Country	2010	2011	2012	2013	2014	Total
Norway	3,971.7	3,780.1	3,883.4	3,708.9	3,769.1	<b>19,113.2</b>
Qatar	3,357.0	3,866.8	3,962.0	3,949.3	3,915.7	<b>19,050.8</b>
Saudi Arabia	3,206.8	3,230.3	3,275.0	3,587.0	3,695.8	<b>16,995.0</b>
Mexico	2,528.2	2,484.7	2,480.7	2,484.3	2,454.1	<b>12,432.1</b>
Iran	2,325.1	2,447.6	2,455.4	2,516.4	2,683.0	<b>12,427.6</b>
United States	2,849.9	2,350.7	2,142.6	2,086.0	2,073.8	<b>11,502.9</b>
Brazil	2,057.8	2,100.7	2,125.0	2,139.5	2,326.5	<b>10,749.5</b>
Nigeria	2,063.8	2,037.8	2,069.7	1,896.7	1,973.9	<b>10,041.8</b>
Angola	1,904.2	1,795.9	1,916.8	1,858.2	1,836.1	<b>9,311.2</b>
United Kingdom	2,294.3	1,895.8	1,626.1	1,478.4	1,476.5	<b>8,771.2</b>
UAE	1,556.9	1,662.5	1,731.7	1,725.4	1,795.1	<b>8,471.6</b>
Malaysia	1,622.2	1,487.5	1,448.1	1,458.6	1,442.6	<b>7,459.0</b>
Azerbaijan	1,309.1	1,245.0	1,215.0	1,183.1	1,130.8	<b>6,083.0</b>
Australia	1,209.7	1,104.3	1,137.3	1,138.6	1,210.3	<b>5,800.2</b>
Indonesia	1,222.9	1,129.3	1,082.7	1,051.1	1,060.0	<b>5,546.0</b>
China	1,028.1	980.8	940.9	966.4	1,024.2	<b>4,940.4</b>
India	1,135.4	1,031.2	955.0	807.2	838.0	<b>4,766.8</b>
Egypt	1,023.6	1,020.0	1,010.1	918.4	762.3	<b>4,734.4</b>
Venezuela	924.0	847.3	816.9	772.6	725.3	<b>4,086.0</b>
Trinidad and Tobago	753.8	711.0	714.3	751.4	735.4	<b>3,666.0</b>
Thailand	647.8	629.5	746.8	718.7	712.9	<b>3,455.6</b>
Russia	540.9	578.6	588.8	598.0	626.6	<b>2,932.9</b>
Vietnam	471.2	459.6	525.6	516.5	506.7	<b>2,479.6</b>
Equatorial Guinea	467.0	443.8	480.3	459.2	443.8	<b>2,294.1</b>
Netherlands	402.5	360.8	337.9	330.0	296.3	<b>1,727.5</b>
Other Countries	3,905.7	3,803.3	3,816.1	3,831.6	3,689.5	<b>19,046.3</b>
<b>Total</b>	<b>44,779.6</b>	<b>43,484.9</b>	<b>43,484.0</b>	<b>42,931.6</b>	<b>43,204.4</b>	<b>217,884.4</b>

Source: FLAD and Rystad Energy



Ranking included in the economy of the sea map.



## Offshore energy

Offshore wind power capacity in the world is led by four European countries (UK, Denmark, Germany and Belgium), representing 85.9% of total installed capacity in the world. Fifth, China represents 7.5% of capacity.

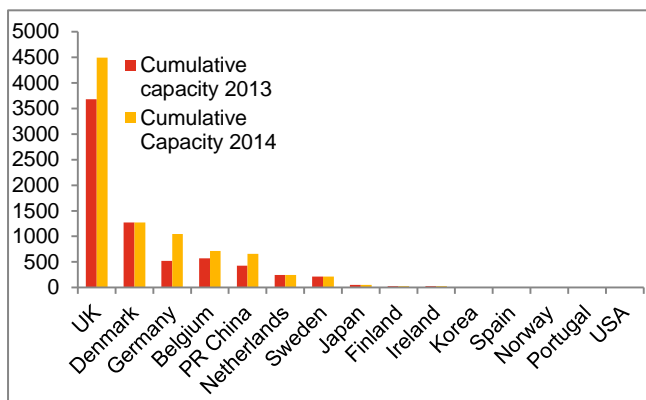
### Global cumulative offshore wind capacity

	Total 2011	Total 2012	Total 2013	Total 2014	Share of the total
	(MW)				
UK	2,094	2,948	3,681	4,494	51.3%
Denmark	874	921	1,271	1,271	14.5%
Germany	200	280	520	1,049	12.0%
Belgium	195	380	572	713	8.1%
PR China	263	390	429	658	7.5%
Netherlands	247	247	247	247	2.8%
Sweden	164	164	212	212	2.4%
Japan	25	25	50	50	0.6%
Finland	26	26	26	26	0.3%
Ireland	25	25	25	25	0.3%
Korea	2	5	5	5	0.1%
Spain	-	-	5	5	0.1%
Norway	2	2	2	2	0.0%
Portugal	2	2	2	2	0.0%
USA	-	-	0	0	0.0%
Total	4,119	5,415	7,047	8,759	100.0%

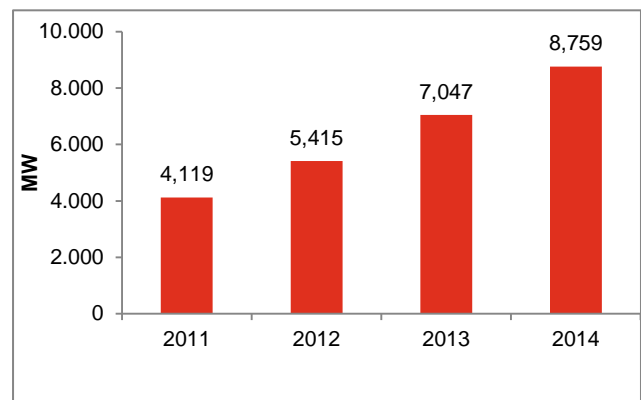
Source: Global Wind Report Market update 2014

Ranking included in the economy of the sea map.

### Global cumulative offshore wind capacity



### Annual cumulative capacity (2011-2014)





## ***Naval security power, piracy and maritime disasters***

In 2015, the country with the largest navy fleet (aircraft carriers, frigates, destroyers, corvettes and submarines) is the US with 164, closely followed by China with 163. Russia is the third with 146 large naval craft.

### **Total Naval Ship Power by Countries, 2015 (Sum of the number Aircraft Carriers, Frigates, Destroyers, Corvettes and Submarines)**

	Top 25 Year 2015	Total (Aircraft Carriers + Frigates + Destroyers + Corvettes + Submarines)
1	USA	164
2	China	163
3	Russia	146
4	North Korea	76
5	India	66
6	Japan	61
7	Republic of Korea	55
8	Iran	41
9	Turkey	37
10	France	35
11	Indonesia	34
12	Italy	31
13	UK	30
14	Taiwan	30
15	Greece	25
16	Brazil	21
17	Germany	20
18	Australia	19
19	Egypt	19
20	Vietnam	19
21	Peru	19
22	Thailand	18
23	Pakistan	18
24	Singapore	18
25	Canada	17

Source: Global Firepower – September 2015

Ranking  
included in the  
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sea map.





## ***Naval security power, piracy and maritime disasters***

Somalia, Nigeria and Indonesia are countries with greatest incidence of attacks in the period 2010-2014.

### **Locations of actual and attempted attacks (2010-2014)**

Locations		2010	2011	2012	2013	2014	Total
South East Asia	Indonesia	40	46	81	106	100	373
	Malaysia	18	16	12	9	24	79
	Singapore Straits	3	11	6	9	8	37
	Other Asia	9	7	5	4	9	34
Far East	South China Sea	31	13	2	4	1	51
	Vietnam	12	8	4	9	7	40
	Other Far East	1	2	1	0	0	4
Indian Sub Continent	Bangladesh	23	10	11	12	21	77
	India	5	6	8	14	13	46
South America	Brazil	9	3	1	1	1	15
	Colombia	3	4	5	7	2	21
	Ecuador	3	6	4	3	0	16
	Guyana	2	1	0	2	1	6
	Haiti	5	2	2	0	0	9
	Peru	10	2	3	4	0	19
	Venezuela	7	4	0	0	1	12
	Other South America	1	3	2	1	0	7
Africa	Benin	0	20	2	0	0	22
	Egypt	2	3	7	7	0	19
	Guinea	6	5	3	1	0	15
	Gulf of Aden <sup>a</sup>	53	37	13	6	4	113
	Ivory Coast	4	1	5	4	3	17
	Nigeria	19	10	27	31	18	105
	Red Sea <sup>a</sup>	25	39	13	2	4	83
	Somalia <sup>a</sup>	139	160	49	7	3	358
	Togo	0	6	15	7	2	30
	The Congo	1	3	4	3	7	18
	Other Africa	10	9	12	11	14	56
<b>Rest of the World</b>		<b>4</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>8</b>
<b>Total</b>		<b>445</b>	<b>439</b>	<b>297</b>	<b>264</b>	<b>245</b>	<b>1,690</b>

Source: ICC International Maritime Bureau - Piracy and Armed Robbery Against Ships  
All Incidents with "a" above are attributed to Somali pirates

**Ranking  
included in the  
economy of the  
sea map.**



## Fishing and aquaculture

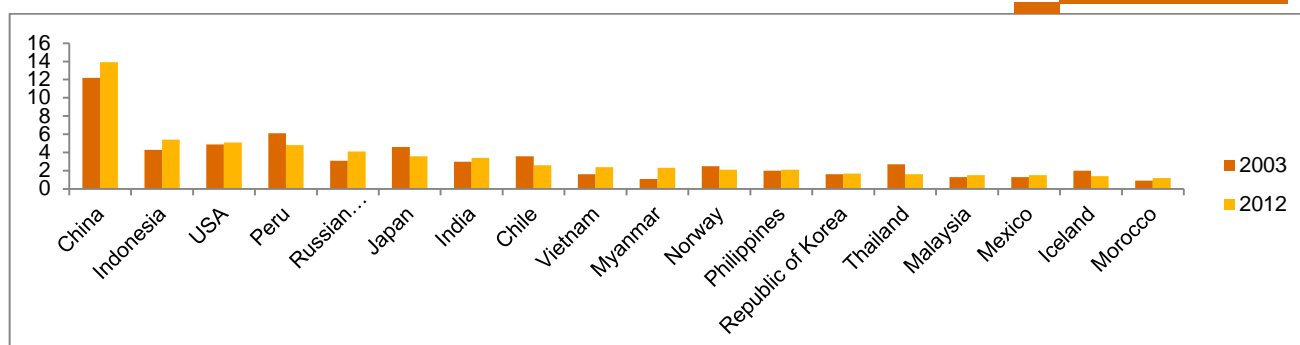
The top ten countries in terms of fishing, led by China with 17.4% of the catch, represent about 60% of the total global fishing.

### Marine capture fisheries: major producer countries

2012 Ranking	Country	2003	2011	2012	Weight 2012	Variation 2003/2012
		(Million tonnes)			(Percentage)	(Percentage)
1	China	12.2	13.5	13.9	17.4%	13.6%
2	Indonesia	4.3	5.3	5.4	6.8%	27.0%
3	USA	4.9	5.1	5.1	6.4%	4.0%
4	Peru	6.1	8.2	4.8	6.0%	-20.6%
5	Russian Federation	3.1	4.0	4.1	5.1%	31.6%
6	Japan	4.6	3.7	3.6	4.5%	-21.9%
7	India	3.0	3.3	3.4	4.3%	15.1%
8	Chile	3.6	3.1	2.6	3.2%	-28.8%
9	Vietnam	1.6	2.3	2.4	3.0%	46.8%
10	Myanmar	1.1	2.2	2.3	2.9%	121.4%
11	Norway	2.5	2.3	2.1	2.7%	-15.6%
12	Philippines	2.0	2.2	2.1	2.7%	4.6%
13	Republic of Korea	1.6	1.7	1.7	2.1%	0.7%
14	Thailand	2.7	1.6	1.6	2.0%	-39.2%
15	Malaysia	1.3	1.4	1.5	1.8%	14.7%
16	Mexico	1.3	1.5	1.5	1.8%	16.7%
17	Iceland	2.0	1.1	1.4	1.8%	-27.0%
18	Morocco	0.9	1.0	1.2	1.5%	26.3%
<b>Total 18 major countries</b>		<b>58.8</b>	<b>63.5</b>	<b>60.7</b>	<b>76.2%</b>	<b>3.3%</b>
<b>Rest of the world</b>		<b>20.9</b>	<b>19.1</b>	<b>19.0</b>	<b>23.8%</b>	<b>-9.2%</b>
<b>World total</b>		<b>79.7</b>	<b>82.6</b>	<b>79.7</b>	<b>100.0%</b>	<b>0.0%</b>
<b>Share 18 major countries (percentage)</b>		<b>73.8</b>	<b>76.8</b>	<b>76.2</b>		

Source: FAO - The State of the World Fisheries and Aquaculture in 2014

### Marine capture fisheries: major producer countries (in Million Tonnes)





## Fishing and aquaculture

Onshore aquaculture is the main contributor to the growth of aquaculture and China represents 61.7% of global aquaculture production.

### Farmed food fish production by top 15 producers and main groups of farmed species in 2012

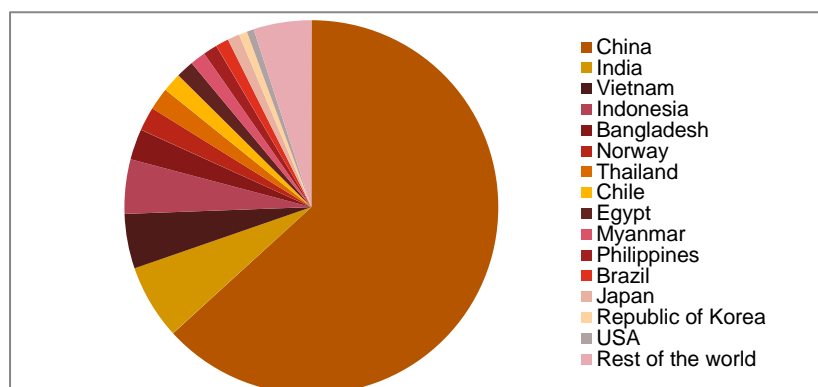
	Finfish		Other species <sup>a</sup>	National total	Share in world total
Producer	Inland aquaculture	Mariculture			
	(Million Tonnes)		(Million Tonnes)		(Percentage)
China	23.34	1.03	16.74	41.11	61.7%
India	3.81	0.08	0.32	4.21	6.3%
Vietnam	2.09	0.05	0.95	3.09	4.6%
Indonesia	2.10	0.58	0.39	3.07	4.6%
Bangladesh	1.53	0.06	0.14	1.73	2.6%
Norway	0.00	1.32	0.00	1.32	2.0%
Thailand	0.38	0.02	0.83	1.23	1.9%
Chile	0.06	0.76	0.25	1.07	1.6%
Egypt	1.02	...	0.00	1.02	1.5%
Myanmar	0.82	0.00	0.06	0.89	1.3%
Philippines	0.31	0.36	0.12	0.79	1.2%
Brazil	0.61	...	0.10	0.71	1.1%
Japan	0.03	0.25	0.35	0.63	1.0%
Republic of Korea	0.01	0.08	0.39	0.48	0.7%
USA	0.19	0.02	0.21	0.42	0.6%
Top 15 subtotal	36.30	4.62	20.84	61.76	92.7%
Rest of the world	2.30	0.93	1.64	4.87	7.3%
World	38.60	5.55	22.48	66.63	100%

Note: The symbol "..." means the production data are not available or the production volume is regarded as negligibly low.

<sup>a</sup> Other species includes crustaceans, molluscs and other species.

Source: FAO - The State of the World Fisheries and Aquaculture in 2014

### Farmed food fish production share of the top 15 producers in 2012 (in percentage of the total)



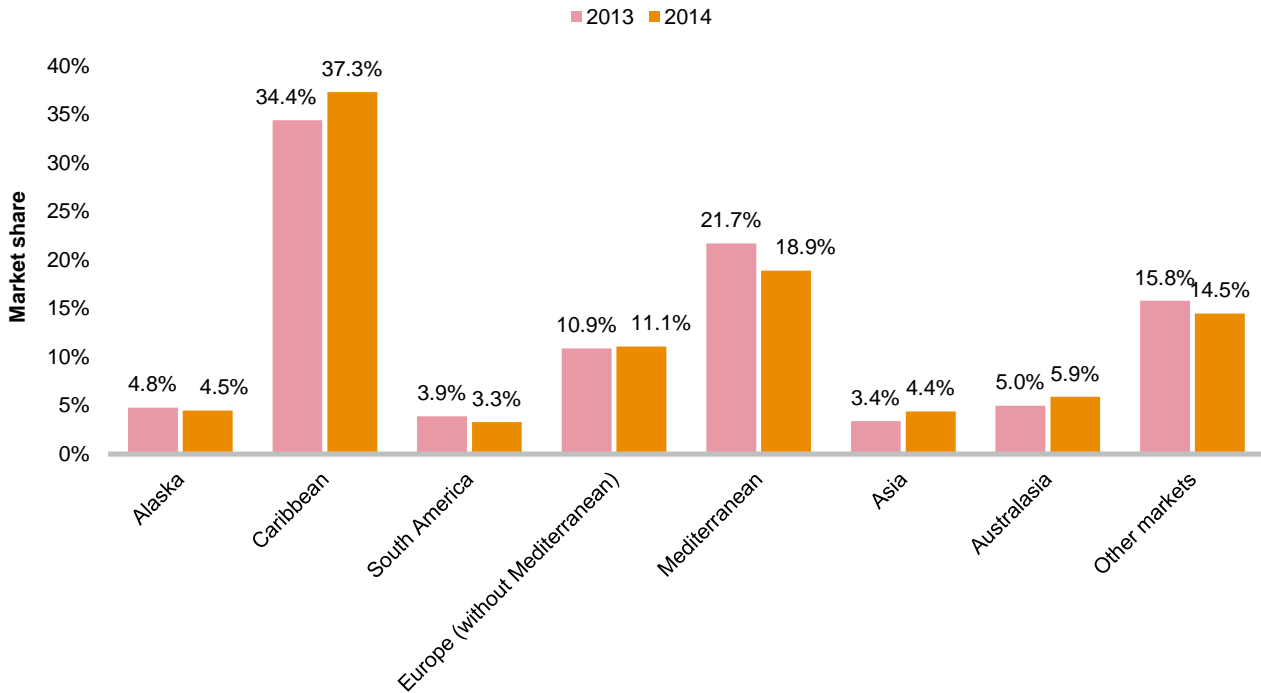
Ranking included in the economy of the sea map.



## *Entertainment, sports, tourism and culture*

The Caribbean still holds the largest market share in the business of cruise ships, closely followed by the Mediterranean and the rest of Europe. Between 2013 and 2014, the Caribbean and Europe (excluding the Mediterranean) enjoyed an increase in their overall market share in this business, while the Mediterranean region saw a reduction in its market share from 21.7% to 18.9%.

### Global cruise industry deployment market share in 2013 and 2014, by region



Source: Cruise industry – Statista Dossier



Ranking included in the economy of the sea map.





Contribute to a culture of safety at sea!  
In leisure or work, follow the safety rules for lives at sea.  
Go to sea and return safely.

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*Circumnavigation: HELM – PwC Economy of the Sea Barometer (World)*  
*Edition nº1 - December 2015*

*is a PwC social responsibility and thought leadership initiative that includes three documents:*

- Circumnavigation: HELM – PwC Economy of the Sea Barometer (World) Summary
- Circumnavigation: HELM – PwC Economy of the Sea Barometer (World) In-depth
- Economy of the Sea Map

The economy of the sea is an integrated approach to sea activities with the aim to promote growth and development in a sustainable way.

Please see PwC social responsibility and thought leadership projects about the economy of the sea in

<http://www.pwc.pt/en/issues/economy-of-the-sea.html>

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