



# STUDY ON BLUE GROWTH AND MARITIME POLICY WITHIN THE EU NORTH SEA REGION AND THE ENGLISH CHANNEL

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# 1. General overview

## **Morphological structure of the coastline**

The North Sea coastline of the Netherlands has a length of 451 kilometres which is 0,33% of total EU-22 coastline. The main economic maritime activities are geographically divided into four regions: Northern sea ports (Delfzijl, Harlingen, Den Helder); North Sea Canal (Amsterdam and surroundings); Rhine and Meuse (Rotterdam and surroundings); and the Scheldt basin (Vlissingen and Terneuzen).

## **Macro economic overview**

The Netherlands has a total population of nearly 16,8 million people of which 2,5 million live in the four maritime regions. In 2012, the total gross value added was 538 billion euro, of which industry (€68 billion), trade (€67 billion) and healthcare (€56 billion) are the most important sectors. The unemployment rate was 6,4% of the labor force.

## **Maritime sector**

In 2011, the maritime sector had an added value of €13.8 billion, employing 181.000 people (2.2% of national employment) in more than 12,000 enterprises. The most important maritime sectors are the harbour sector (€4.5 billion), offshore (€2 billion), shipbuilding (€1.6 billion) and maritime suppliers (€1.5 billion). Other sectors are sea transport, inland shipping, navy, fishery, water related engineering, maritime service and aquatic sports. Since the beginning of the economic crisis in 2008, the size of the maritime sector decreased with 2%<sup>1</sup>.

The Netherlands have formulated a strategy for the future development of the maritime sector. The aim of the strategy is to improve the safety, sustainability and economic competitiveness of the maritime sector. To this purpose six knowledge areas have been identified wherein fundamental and applied scientific research will be conducted.

Below, different marine and maritime economic activities and sectors will be discussed, where applicable to the Dutch situation.<sup>2</sup>

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<sup>1</sup> The source of the information and statistics in this paragraph is the 'Nederlandse Maritieme Cluster – Monitor 2012', which used data from Statline CBS.

<sup>2</sup> The desalination sector and the sector catching fish for animal consumption will not be discussed, as it is not relevant for the Netherlands. The Marine minerals mining sector is also not discussed, because no relevant information for this specific sector was found. The relevant statistics are included in the aggregate mining sector.

## 2. Marine and maritime economic activities

This section provides an overview of the main maritime activities and their related socio-economic impacts of the most relevant maritime economic activities in the North Sea region at NUTS 0 level. The following table reports per economic activity the gross value added at factor costs, number of persons employed and the number of enterprises. In addition to this table a qualitative overview of each economic activity will be provided.

**Table 1 - Overview of relevant maritime economic activities in a MS at NUTS-0 level**

Maritime economic activity		GVA (€, million)	Employment (*1000)	Number of enterprises	Further indicators	Source & Reference year
<b>0. Shipbuilding</b>						
0.1	Shipbuilding (excl. leisure boats) and ship repair	609	7.7	560	75 yards, 185 vessels delivered	Maritime Monitor, 2011
0.2	Construction of water projects <sup>3</sup>	627	5.2	75	2.1 billion turnover	Maritime Monitor, 2011
<b>1. Maritime transport<sup>4</sup></b>						
1.1	Deep-sea shipping	914	6.9	650 <sup>5</sup>		Eurostat, 2010
1.2	Short-sea shipping (incl. Ro-Ro)	963	7.3		Eurostat, 2010	
1.3	Passenger ferry services	n/a	3.2		Eurostat, 2010	
1.4	Inland waterway transport	677	12.8	3,565		Maritime Monitor, 2011
<b>2. Food, nutrition, health and eco-system services</b>						
2.1	Catching fish for human consumption	276 <sup>6</sup>	28.4 <sup>7</sup>	Fishing: 700, processing: 600, Retail:1,700	740 registered vessels	JRC (fishing), Eurostat (fish processing, wholesale&retail, Prodcom (share of human /animal), 2010
2.2	Catching fish for animal feeding	0	0	0	0	
2.3	Marine aquatic products	43	0.3			JRC data, 2010
2.4	Blue biotechnology	n/a blue biotechnology activities are spread out over many different sectors				
2.5	Agriculture on saline soils	n/a	n/a	n/a		
<b>3. Energy and raw materials</b>						
3.1	Offshore oil and gas	4304	0.8	72		CBS Statline, 2010
3.2	Offshore wind	997 turnover	2.2 FTE	153	228 MW capacity	Agentschap NL, 2010
3.3	Ocean renewable energy	1.5	0.008	30		ECN, 2009
3.4	Carbon capture and storage	n/a	n/a	<10	2 offshore projects ongoing	Milieucentraal, 2012
3.5	Aggregates mining (sand, gravel, etc.)	115	0.5			CBS Statline, 2010

<sup>3</sup> Includes 5.1 according to Dutch terminology

<sup>4</sup> The allocation of port services GVA and port employment to the 1.1-1.3 sectors is based on the shares of employment between these three activities, assuming an equal GVA per person between the activities

<sup>5</sup> Source: Maritime Monitor for 1.1, 1.2, 1.3

<sup>6</sup> Includes fishing and fish processing, retail and wholesale not available in Eurostat

<sup>7</sup> Includes fishing, fish processing, wholesale and retail

Maritime economic activity		GVA (€, million)	Employment (*1000)	Number of enterprises	Further indicators	Source & Reference year
3.6	Marine minerals mining	No specific data available, it is included in 3.5.				
3.7	Securing fresh water supply (desalination)	n/a not relevant in the Netherlands due to sufficient freshwater supply				
<b>4. Leisure, working and living</b>						
4.1	Coastal tourism	927	41.0	n.a.		Eurostat, 2010
4.2	Yachting and marinas	2500	16.5	4.025		ICOMIA 2011
4.3	Cruise tourism	300 <sup>8</sup>	4.3			European Cruise Council, 2012
<b>5. Coastal protection</b>						
5.1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats	No specific data available, it is included in 0.2.				
<b>6. Maritime monitoring and surveillance</b>						
6.1/6.2	Traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods,	n/a	n/a	n/a		
6.3	environmental monitoring	31.6	Unknown	> 4	Gov. expenditure	EMODNET 2010

<sup>8</sup> This figure refers to direct expenditures and includes also shipbuilding

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

### Shipbuilding

#### Shipbuilding and ship repair

In times of a worldwide overcapacity of vessels in many markets (deep sea container, bulk, tanker, but also inland vessels), the Dutch shipbuilding industry has maintained its position in terms of new building orders and turnover in the years of 2010, 2011 and 2012. The Netherlands can maintain its position because of its specialized focus on complex vessels for the offshore industry, dredging activities, land reclamation and short-sea vessels. These are all strong and growing markets in which the Dutch specialist yards can excel. A total of 75 shipyards have delivered 95 large (>100GT) and 90 smaller vessels in 2012, providing work to 7,700 persons in around 11.000 fte. The number of shipyards and companies is decreasing because of rationalisation through mergers and acquisitions. In total, the sector has realised in 2012 a turnover of €3 billion and a gross value added of €0.6 billion (2011).

Stricter regulations from IMO on the pollution and fuel efficiency of sea going vessels emerges the need of vessel design adaptation to increase the efficiency of these vessels. The Dutch shipyards have shown to be inventive on energy efficient solutions which are an opportunity to strengthen its competitiveness. The retro-fitting of vessels to the newest environmental standards had a positive effect on the repair and maintenance side of the sector. In total, around 2,000 jobs are created because of ship repair and maintenance. Overall, its innovative character and focus on niche-markets helps the shipbuilding sector of The Netherlands to grow in gentle pace, even in rough times for the major markets of liner shipping and the bulk shipping markets.

#### Construction of water projects

In the construction of water projects, The Netherlands has a top position worldwide. The Netherlands is built partially on water itself and the players Boskalis and Van Oord are key players in the world. Together with Tideway, these three players comprise 70% of the total employment and 85% of the turnover generated in the sector. A total of 75 companies are active in the construction of water projects realising €2.1 billion turnover, between €0.6 and €0.9 billion GVA and 5.1 to 6.3 thousand employed persons. Despite the International focus of these companies, they maintain a strong relation with The Netherlands for the acquiring of complex materials and skilled technical employees. Boskalis<sup>9</sup> has a total of around 7000 employees worldwide of which around 60% of the employment is created outside The Netherlands.

The sector has grown steadily over the past years with a compounded average growth rate of 4.7 % over GVA figures of 2008-2010. Other sources indicate also a rise of GVA in 2011, but competition tends to get fiercer as reflected in prices and value added. The key players Boskalis and Van Oord keep growing year by year, also due to external growth by mergers and acquisitions (e.g. of Smit). Innovation is one of the main drivers of growth in the sector and with Dutch collaborations with TU Delft and Deltares, the competitive position of The Netherlands is again strong.

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<sup>9</sup> Associated companies not included

## Maritime transport

### Deep-sea shipping

A total of 260,000 deep-sea tons has been imported or exported by Dutch seaports in 2010. This is 47% of all sea freight being shipped from and to The Netherlands; the rest is short-sea. Since 2008, the degree of deep-sea shipping (in total tonnage) is decreasing. On the basis of Eurostat values, Deep-sea shipping is responsible for €0.9 billion GVA and 6,900 jobs in The Netherlands. GVA is decreasing the last years (CAGR -18%), because of the crisis and severe overcapacity freight rates have dropped. This is a worldwide problem, not only present in The Netherlands. Furthermore, Dutch employment in the sector is decreasing as well: there are not enough new Dutch sailors to replace the leaving ones, foreigners take these places.

### Short-sea shipping

A total of 306,000 short-sea tons has been imported or exported by Dutch seaports in 2010. This is 53% of all sea freight being shipping from and to The Netherlands. Since 2008, the degree of short-sea shipping (in total tonnage) is increasing. On the basis of Eurostat values, short-sea shipping is responsible for €1 billion GVA and 7,300 jobs in The Netherlands. In the last years, the GVA and employment in this sector is decreasing.

### Passenger ferry

The Netherlands has several ferry services to England from Hoek van Holland and IJmuiden. These are operated by Stena Line, P&O Ferries and DFDS Seaways. Also, ferry services are in place to reach the Wadden- islands in the North, these are operated by local ferry operators such as TESO, Wagenborg and Doeksen. Most employment and GVA is made by the international ferries to England. In total, around 3,200 Dutch jobs are created by these ferry services.

### Inland waterway transport

The Netherlands has the largest inland waterway transport sector of Europe both in terms of employment and number of companies. A total of 10,500 – 12,800 workers are employed in 3,565 companies in 2011. Around 90% of these entail small companies of less than 5 persons employed. These include companies of owner-operators; owners of the vessels who are sailing the vessel themselves. In terms of gross value added, the sector contributes value of €0.677 billion in 2011. The trend of GVA is decreasing the last three years (2009-2011). With many orders being placed in the growing years of 2006-2008, these vessels were delivered in the period of a market downturn (after 2008), resulting in an overcapacity of ships. Prices are therefore under pressure which has led to a decreasing GVA of 3% per year accumulated. Employment has remained stable in these years.

## Food, nutrition, health and eco-system services

### Catching fish for human consumption in The Netherlands

This economic activity consists of fishing, processing, wholesale and retail. The GVA of the fishing and processing sector in 2010 is €300 million and about 9,300 persons are employed. An additional 19,000 employees are employed in wholesale and retail sale in other food, including fish, crustaceans and molluscs.

In 2012 the Dutch fishing fleet consisted of 740 registered vessels, with a combined gross tonnage of 133.7 thousand GT and total power of 286.5 thousand kW. The size of the Dutch fishing fleet has followed a decreasing trend between 2008 and 2012. Although the number of vessels increased slightly by 14 vessels (2%) while the total GT and kW of the fleet declined. The total number of fishing enterprises in the Dutch fleet was around 700 in 2011. The total volume of landings achieved by the Dutch fleet in 2011 was 262 thousand tonnes of seafood. This volume has declined between 2008 and 2011 with around 33% (JRC, 2012).

The Netherlands has approximately 600 companies involved in processing and further trading of fish and about 1,700 fish retail companies with at least 1 selling point. Since 2010 the consumption of fish decreased with 3 per cent annually due to the recession.

### Marine aquatic products in The Netherlands

In 2010, the Dutch marine aquaculture sector consists of a large shellfish production segment (around 60,000 tonnes of mussel and oyster) and a small marine finfish aquaculture segment (around 270 tonnes). The shellfish production rose in the last five years from a low in 2006 with a trend of +12%. The marine finfish aquaculture had after the start of production in recirculation systems in 1996 a strong upward trend (+28% in the last five years). Except for the shellfish production, aquaculture has only a small contribution as regards GVA. The GVA and employment data in 2010 are respectively €40 million and 300 employees. The sector comprises around 100 finfish and 80 shellfish (including fresh water) enterprises (JRC, 2012).

For information on wholesale and retail information, please refer to the previous sector (catching fish for human consumption in the Netherlands). Per capita consumption rose from 1990 to 2009 in the marine finfish segments from 5 to 15.8 kg while in shellfish products it fell from 4 to 0.6 kg (JRC, 2012)

### Blue biotechnology

Blue biotechnology is a sector whose size is difficult to measure. The sector mostly comprises of research and development. When a new technology reaches (commercial) maturity, it is included in other sectors. Algae farming, for example, is part of blue biotechnology before it reaches maturity, after which it is included in the agriculture or aquaculture sector. Therefore, no reliable statistics have been found which quantify the sector size. For the stated reason, however, it is argued that the sector can by definition not be a large sector, but potentially a fast growing one



### **Agriculture in saline soils in The Netherlands**

The level of salinity in The Netherlands is increasing. According to scientists about 125,000 hectare of Dutch agricultural land will become saline because of the rise of the sea level, salt marches and drying out as a result of the worldwide climate change. For farmers this is a tremendous problem, because it will then be impossible to grow many varieties of potatoes and vegetables. For many years The Netherlands try to keep saline areas artificially fresh. In the long term this strategy is not sustainable and would require high costs. Besides converting these areas in nature (currently the option most used) it seems economically useful to use this land for saline agriculture. This sector is still in an early stage of development with a strong focus on Research and Development. In the Netherlands, several research and pilot projects are conducted, for example:

- Saline Agriculture Texel (An environmentally-friendly nursery for salt-tolerant crops is being established on the island of Texel. Experiments are being conducted on a two-hectare site with the cultivation of fodder beet, the vegetable crops see aster and seakale and the cereal crops spelt, quinoa and barley.)
- Growing potatoes in saline soil in Zeeland.

GVA and employment data are unknown.

### **Energy and raw materials**

#### **Offshore oil and gas**

Offshore oil and gas in the Netherlands is a large sector, mainly because the North Sea and the Wadden Sea contain oil and gas reserves. Per January 2011 The Netherlands have 248 gas and 23 oil reserves in the North Sea of which respectively 137 and 10 are in production. The production of hydrocarbons from the North Sea has declined in recent years, though more oil and gas fields are in use. This suggests a shift towards more and smaller oil and gas fields and a future trend of gradual shrinking of the sector. There are, however, new opportunities, mostly focussing on shale gas reservoirs. If this source of gas becomes economically feasible, it will cause an increase in offshore production. The GVA of this sector is estimated at 4.3 billion euro with an employment of 775 persons.<sup>10</sup>

#### **Wind energy**

Currently, two wind farms are in operation in the Dutch waters of the North-Sea: Egmond aan Zee (2007) and Princess Amalia wind farm (IJmuiden shore, 2008). Together they have a capacity of 228 MW. Further, a total of 153 companies are active in offshore wind in The Netherlands, also for foreign wind farms. Activities are ranging from research and development activities to construction of windfarms. Around 1 billion Euro of turnover is made by these companies, contributed by 2,200 FTE's. In accordance with the national aim of the government to produce 16% renewable energy out of total energy production in 2010, the capacity of offshore wind energy will increase the coming years. The next windfarm to be operational is the Q10 project

<sup>10</sup> Based on turnover and employment estimates from Dutch CBS Statistical office, corrected for ratio GVA/turnover and ratio onshore/offshore oil and gas (EBN, 2013).

Luchterduinen, to be operational in 2015. This park will be responsible for 128 MW and installed by Dutch companies Van Oord and Joulz, as requested by operating companies Eneco and Nuon. The German company Bard Gruppe will build two wind farms above Schiermonnikoog, with both having a capacity of 300 MW.

In addition to the wind farms in Dutch waters, Dutch companies do also construct foreign farms, such as the DanTysk (228 MW) project in the German part of the North Sea. Hollandia and Strukton are involved companies here.

To accommodate the future expansion of the Dutch wind farms, The Netherlands recently (1<sup>st</sup> August 2013) reorganised their sailing lanes in the North Sea.

### **Ocean renewable energy**

The ocean renewable energy sector is still in an early stage of development with a strong focus on Research and Development. In the Netherlands, several test projects are conducted, for example in Blue Energy (using osmotic power due to differences in salt gradient between the North Sea and the IJsselmeer). The turnover and people employed are limited, because ocean renewable energy projects are currently not commercially feasible. The GVA of this activity in 2009 was € 1.5 million, with an estimated employment of 8 people. The future of the sector strongly depends on oil prices, but is in any case expected to remain relatively small.

### **Carbon capture and storage**

In The Netherlands, carbon capture and storage is only allowed to take place at sea. The K12-B project has stored around 60,000 ton CO<sub>2</sub> in empty gas fields in the North Sea. The CO<sub>2</sub> is directly extracted from the gas and stored in the empty field. GDF Suez E&P Nederland B.V. and TNO are the involved parties here. Furthermore, preparations for a demonstration project at the North Sea are taking place; ROAD project. Here, CO<sub>2</sub> is captured from a coal plant at the Maasvlakte in Rotterdam, transported by a pipeline 20 kilometres from the coastline and then stored at 3.5 km depth. Partners are E.ON Benelux and GDF SUEZ Energie Nederland. No information is available on the GVA, turnover or number of workers under these projects.

### **Aggregates mining**

Aggregates mining in the Netherlands is a sector whose size partially depends on the government's expenditure on flood protection. Sand is mined and placed in front of the coastline causing currents and wind to strengthen the coastline. Furthermore, sand is mined for other purposes, like land reclamations (Maasvlakte 1 and 2, outside of the coast near the Port of Rotterdam); for agricultural purposes (flower production); and as construction materials for foundations of infrastructure. Annual production of sand, excluding land reclamations, is approximately 25 million m<sup>3</sup>. In 2010 the GVA was 115 million euro and 462 people were employed in the sector. As the Maasvlakte 2 was recently finished, the future size of the sector will mostly depend on the government's expenditures on flood protection and infrastructure.

### **Marine minerals mining**

As marine minerals are not expected to be found in the North Sea, mineral mining in The Netherlands is limited to the development and operational part of mineral mining at sea. This function is in its exploration phase, there are many uncertainties where the minerals are located and how to look for them and extract them from the seabed. However, as it is a combination of dredging, offshore and deepsea technology, Dutch firms such as IHC Merwede, Fugro, Heerema, Gusto and Seatools are in a strong position to develop methods and equipment for marine mineral mining. Currently, Fugro (in Mineral surveying) and IHC (in delivering equipment and developing technical solutions for ocean resource extraction) have taken the steps to be the world's initiators of deep sea mineral mining.

### **Leisure, working and living**

#### **Coastal tourism**

In The Netherlands, around 21% of the domestic and 26% of the foreign nights spent in hotels, camping grounds, pensions etc. takes place in the coastal area. In the four coastal provinces (Zeeland, Zuid-Holland, Noord-Holland and Friesland) nearly 50% of all nights spent takes place in the coastal region. It is estimated that at least around 6.5 million people make a trip to the beach each year. If a broader definition is taken (including hiking and biking through the dunes and going out for dinner) the total number of daytrips to the coastal area is estimated at around 95 million. Total direct GVA of coastal tourism is estimated at €0.9 billion with an employment of 41.000 FTE (Eurostat data).

The proximity of the beach also influenced living pleasure and as a result housing prices. The total economic value of the coastal regions is therefore more than only the spending of coastal tourists.

No projections are available regarding the number of tourists that will visit the coastal area. For all tourism to the Netherlands it is expected that the number of Asian tourists will continue to grow in the future. The same is true for tourists from Russia and Brazil. The number of tourists from the South of Europe (Spain, Italy) is expected to decrease due to the economic crisis.

#### **Yachting and marinas**

The GVA of yachting and marinas is estimated at €2.5 billion in 2011. About 16,500 people are employed in this sector. These figures comprise the sectors a) Recreational boatbuilding b) Engine manufacturers, c) Equipment manufacturers and d) Trade and service providers.

The market share of the Dutch builders of super yachts has increased during recent years. The Netherlands is now, behind Italy, the second largest builder of super yachts worldwide. They operate in the highest and most expensive segment of the industry.

The marinas (around 1,100) in The Netherlands face problems related to the ageing society. In some areas there is overcapacity in the number of berths. Elderly people stop sailing and they are not replaced by younger people. The quality of the marinas needs to be improved (and has been improved during the last years) but it is difficult to ask higher tariffs and to improve turnover.

### **Cruise tourism**

In the Netherlands the interest in cruise travel is growing. The Netherlands has a lot of ground to make up, because its share in the cruise market is still very low. Over the past few years, however passenger numbers have risen sharply in a short period of time. In 2010, 65,511 passengers were booked to depart from the Netherlands on short and long cruise holidays, setting sail for destinations all over the world, which was 5.1% more than the year before. In 2011, the cruise market grew by another 31.7% to around 99,000 passengers. Due to the steady growth rates, more and more shipping companies are targeting the Dutch market. This is also expressed in the increase in the number of departures from the Dutch ports of Amsterdam, Rotterdam and IJmuiden. In 2011, 168 ships called in at Dutch cruise ports, compared to 225 in 2012.

The European Cruise Council estimates the Dutch employment in the cruise sector at 5,700 FTE (2011). This figure must be seen as a maximum since it also includes employment in the shipbuilding and maintenance sector. It is stated that the manufacturing sector was responsible for 24% of the total employment impacts. This means that the cruise sector without the shipbuilding sector realises around 4,300 jobs in The Netherlands. Total expenditures in The Netherlands including shipbuilding amount to € 347 million in 2011. This should however be interpreted as upper bound estimate, as most of the estimates of ECC have shown to be from the high side.

### **Coastal protection**

This economic activity is part of activity 'construction of water projects'.

### **Maritime monitoring and surveillance**

The marine transport sector in the Netherlands is important. The effort in surveillance of the transshipment is, as a result, relatively large. The Port of Rotterdam is the biggest transport hub, other ports are for example Delfzijl and Amsterdam. Policy on promoting the Netherlands as a transshipment centre ('topsector logistiek'), partially focusses on cooperation between customs and business sectors leading to a relatively quick customs and improving the competitiveness of transshipment. Therefore, the sector size of maritime monitoring and surveillance in terms of goods and people transport is expected to increase. The sector size of environmental monitoring mostly depends on the implementation on the Marine Strategy Framework Directive, requiring monitoring to effectively develop measures for a higher water quality.

### 3. List the 7 largest, fastest growing and most promising marine and maritime economic activities

In the following sections a list in ranking order of the 7 largest, 7 fastest growing and 7 most promising prospective marine and maritime economic activities at NUTS 0 level will be provided.

#### 3.1 Listing and ranking the largest marine and maritime economic activities

The 7 largest maritime economic activities in The Netherlands are presented in the table below. In the last column, a score has been assigned to each economic activity<sup>11</sup>. This score gives high relevance to the employment dimension.

**Table 2 – Listing the 7 largest maritime economic activities in a MS at NUTS-0 level**

Rank	Maritime economic activities	GVA (EUR billion)	Employment (*1000)	Score
1.	Coastal tourism	0.9	41.0	25.0
2.	Offshore oil and gas	4.3	0.8	21.0
3.	Yachting and marinas	2.5	16.5	20.8
4.	Catching fish for human consumption	0.3	28.4	15.7
5.	Inland waterway transport	0.7	12.8	9.9
6.	Short-sea shipping (incl. ro-ro)	1.0	7.3	8.7
7.	Deep-sea shipping	0.9	6.9	8.0

As can be concluded from the table, the traditional economic activities like coastal tourism, fisheries and maritime transport sector are the largest maritime economic activities in The Netherlands. The coastal tourism and fishery activities generate significant employment, while the offshore oil and gas sector generates the most gross value added.

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

For each economic activity information on CAGR of GVA and number of persons employed in the period 2008-2010 has been calculated. Unfortunately, quantitative data is not available for all economic activities therefore, when needed a qualitative score (-/0/+) has been added. The following table shows the 7 fastest growing marine and maritime economic activities over the past 3 years.

<sup>11</sup>  $\frac{(GVA \text{ billion} * 10) + (\text{number of persons employed} / 1000)}{2}$

**Table 3 - Ranking order of the 7 fastest growing maritime economic activities in a MS at NUTS-0 level (2008-2010)**

	Maritime economic activities	GVA (CAGR)	Employment (CAGR)	Score
1	Shipbuilding and ship repair	n/a	5.9%	5.9%
2	Construction of water projects	4.7%	5.7%	5.2%
4	Passenger ferry services <sup>1)</sup>	n/a	2.9%	+
4	Catching fish for human consumption	2,1%	0,4 <sup>12</sup> %	1.3%
5	Aggregates mining	n/a	n/a	+
6	Offshore wind	n/a	n/a	+
7	Ocean renewable energy	n/a	n/a	+

1) CAGR for Passenger ferry services is based on the period 2009-2010

The fastest growing economic activities are the shipbuilding and ship repair sector and construction of water projects. Fishing and passenger ferry increased, but to a lesser degree. No data is available for Aggregates mining, offshore wind energy, and Ocean renewable energy. However, we expect an increase of GVA and employment in these sectors in the period 2008-2010. The supposed increase of aggregates mining is based on the additional mining that took place for Maasvlakte 2. As indicated in policy document Noordzee 2009-2015, the capacity of offshore wind energy needs to be expanded, which resulted in an increase in added value and employment. Also, the sailing lanes in the Dutch part of the North Sea has been specially reorganised in 2013 to accommodate further growth of wind farms.

### 3.3 Ranking order of the 7 most promising marine and maritime economic activities

The 7 most promising marine and maritime economic activities in The Netherlands are indicated in the table below. Two economic sectors score 5 and four sectors score 4. The assessment is based on six key external drivers which have been scored by country and sector experts. Annex 3 presents the score of all marine and maritime activities.

**Table 4 - Ranking order of the 7 most promising maritime economic activities in a MS at NUTS-0 level**

Rank	Maritime economic activities	Score
1 -2	<ul style="list-style-type: none"> <li>• Construction of water projects</li> <li>• Coastal protection</li> </ul>	5
3 - 6	<ul style="list-style-type: none"> <li>• Shipbuilding (excl. leisure boats) and ship repair</li> <li>• Short-sea shipping</li> <li>• Inland waterway transport</li> <li>• Offshore oil and gas</li> <li>• Offshore wind</li> </ul>	4

As can be concluded from the table, the 7 most promising economic activities in The Netherlands are in general the mature sectors. These sectors have a strong market position and currently provide high amounts of added value and employ substantial numbers of people. Based on the assessment of the six

<sup>12</sup> Source : JRC, 2012, Annual Report on Fishing Fleet

criteria, these more mature sectors are still likely to be the most promising sectors for the Dutch marine and maritime area.

Sectors in the pre-development phase like agriculture on saline soils, ocean renewables, carbon capture storage score relatively low.

## 4. Breakdown of maritime economic activities at regional level and selection of the most important maritime regions for the country

The following tables present a breakdown of the GVA and Employment figures per economic activity at regional level, which is NUTS 2. The coastal NUTS 2 areas taken into account are Friesland, Groningen, Noord-Holland, Zuid-Holland and Zeeland. Since only statistical information on the number of enterprises at Nuts 2 level is available, we applied the ratio number of enterprises in the region/total enterprises in The Netherlands to the national GVA and Employment data.

The most important maritime regions in The Netherlands are Zuid-Holland and Noord-Holland. Two large ports (Rotterdam and Amsterdam) are located in these regions. The presence of deep sea shipping, short-sea shipping and inland waterway activities in these regions attract and reinforce other economic activities like ship repair, offshore activities, maritime services and marine monitoring and surveillance.

**Table 5 - Overview of GVA per maritime economic activity per region in a MS**

GVA (€ million)		Friesland	Groningen	Noord Holland	Zuid Holland	Zeeland
<b>0. Shipbuilding</b>						
0.1	Shipbuilding (excl. leisure boats) and ship repair	104	23	118	158	25
0.2	Construction of water projects	27	16	82	124	14
<b>1. Maritime transport and shipbuilding</b>						
1.1	Deep-sea shipping	86	61	193	237	46
1.2	Short-sea shipping (incl. Ro-Ro)	91	64	204	250	49
1.3	Passenger ferry services					
1.4	Inland waterway transport	55	30	149	372	71
<b>2. Food, nutrition, health and eco-system services</b>						
2.1	Catching fish for human consumption	30	16	97	95	37
2.2	Catching fish for animal feeding	0	0	0	0	0
2.3	Marine aquatic products	7	3	14	9	9
2.4	Blue biotechnology	n/a blue biotechnology activities are spread out over many different sectors				
2.5	Agriculture on saline soils	n/a	n/a	n/a	n/a	n/a
<b>3. Energy and raw materials</b>						
3.1	Offshore oil and gas	0	430	2152	1722	0
3.2	Offshore wind	n/a	n/a	n/a	n/a	n/a
3.3	Ocean renewable energy	n/a	n/a	n/a	n/a	n/a
3.4	Carbon capture and storage	n/a	n/a	n/a	n/a	n/a
3.5	Aggregates mining (sand, gravel, etc.)	23	0	23	35	35
3.6	Marine minerals mining	No specific data available, it is included in 3.5.				
3.7	Securing fresh water supply (desalination)	n/a not relevant in the Netherlands due to sufficient freshwater supply				
<b>4. Leisure, working and living</b>						
4.1	Coastal tourism	174	60	353	195	145
4.2	Yachting and marinas	n/a	n/a	n/a	n/a	n/a



GVA (€ million)		Friesland	Groningen	Noord Holland	Zuid Holland	Zeeland
4.3	Cruise tourism	61	27	109	82	20
<b>5. Coastal protection</b>						
5.1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats	No specific data available, it is included in 0.2.				
<b>6. Maritime monitoring and surveillance</b>						
6.1/6.2	Traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods,	n/a	n/a	n/a	n/a	n/a
6.3	environmental monitoring	n/a	n/a	n/a	n/a	n/a

**Table 6 - Overview of GVA per maritime economic activity per region in a MS**

Employment (number of people in thousands)		Friesland	Groningen	Noord Holland	Zuid Holland	Zeeland
<b>0. Shipbuilding</b>						
0.1	Shipbuilding (excl. leisure boats) and ship repair	1,32	0,29	1,49	2,00	0,31
0.2	Construction of water projects	1,72	1,03	5,12	7,73	0,86
<b>1. Maritime transport</b>						
1.1	Deep-sea shipping	0,65	0,46	1,46	1,79	0,35
1.2	Short-sea shipping (incl. Ro-Ro)	0,69	0,49	1,54	1,89	0,37
1.3	Passenger ferry services	0,30	0,18	1,17	1,27	0,27
1.4	Inland waterway transport	1,04	0,56	2,82	7,03	1,34
<b>2. Food, nutrition, health and eco-system services</b>						
2.1	Catching fish for human consumption	3,10	1,65	10,02	9,82	3,82
2.2	Catching fish for animal feeding	0,00	0,00	0,00	0,00	0,00
2.3	Marine aquatic products	0,05	0,02	0,10	0,07	0,06
2.4	Blue biotechnology	/a blue biotechnology activities are spread out over many different sectors				
2.5	Agriculture on saline soils	n/a	n/a	n/a	n/a	n/a
<b>3. Energy and raw materials</b>						
3.1	Offshore oil and gas	0,00	0,16	0,80	0,64	0,00
3.2	Offshore wind	n/a	n/a	n/a	n/a	n/a
3.3	Ocean renewable energy	n/a	n/a	n/a	n/a	n/a
3.4	Carbon capture and storage	n/a	n/a	n/a	n/a	n/a
3.5	Aggregates mining (sand, gravel, etc.)	0,10	0,00	0,10	0,15	0,15
3.6	Marine minerals mining	No specific data available, it is included in 3.5.				
3.7	Securing fresh water supply (desalination)	n/a not relevant in the Netherlands due to sufficient freshwater supply				

Employment (number of people in thousands)		Friesland	Groningen	Noord Holland	Zuid Holland	Zeeland
<b>4. Leisure, working and living</b>						
4.1	Coastal tourism	4,50	1,56	9,14	5,04	3,76
4.2	Yachting and marinas	n/a	n/a	n/a	n/a	n/a
4.3	Cruise tourism	0,88	0,39	1,56	1,17	0,29
<b>5. Coastal protection</b>						
5.1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats	No specific data available, it is included in 0.2.				
<b>6. Maritime monitoring and surveillance</b>						
6.1/6.2	Traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods,	n/a	n/a	n/a	n/a	n/a
6.3	environmental monitoring	n/a	n/a	n/a	n/a	n/a

## 5. List of existing clusters

In this chapter we address maritime clusters in The Netherlands. These clusters are geographic regions where larger industries, smaller suppliers as well as education and research institutes are reinforcing each others' performance using their close proximity.

In The Netherlands many maritime activities cluster together in specific regions. Three clusters are identified, two in the port regions of Rotterdam and Amsterdam and a 'shipbuilding cluster' in the Northern Netherlands. The port clusters consist of port activities, shipping and inland shipping activities maritime services and ship repair activities. Rotterdam is the largest port cluster, with over 70 000 persons employed. Amsterdam is also a cluster of substantial size, with 40 000 persons employed. Shipbuilding is the core of the cluster in the Northern part of The Netherlands, suppliers and ship operators are included in the cluster. The three clusters have a mature status. Strengths and weaknesses have been presented in the table below.

**Table 7 - List and analysis of clusters**

	Member State(s)	Maritime economic activities covered	Status (mature, growing, early development)	Strengths	Weaknesses
<b>Rotterdam port cluster</b>	NL	Deep sea shipping, short-sea shipping, inland waterways, ship repair, offshore activities, marine monitoring and surveillance	Mature	<ul style="list-style-type: none"> <li>- Mainport to Europe</li> <li>- Combination of many economic activities strengthens the cluster</li> <li>- Integration of maritime transport modes</li> <li>- Innovation</li> <li>- Specialisation</li> </ul>	<ul style="list-style-type: none"> <li>- Labour force (shortage)</li> <li>- Quality of life</li> </ul>
<b>Amsterdam port cluster</b>	NL	Deep sea shipping (coal and benzin, cacao, agribulk and project cargo), short sea shipping, Cruises.	Mature	<ul style="list-style-type: none"> <li>- Cluster for agribulk and energy materials.</li> <li>- Cruise terminal with Amsterdam as selling point</li> </ul>	<ul style="list-style-type: none"> <li>- Container handling</li> <li>- Locks</li> <li>- Labour force</li> </ul>
<b>North NL ship-building cluster</b>	NL	Ship building and repair	Mature	<ul style="list-style-type: none"> <li>- Focus on new markets and technologies</li> <li>- Building specialised ships</li> </ul>	<ul style="list-style-type: none"> <li>- Labour force (shortage)</li> </ul>

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

### 6.1 National Maritime Strategy<sup>13</sup>

The maritime cluster in the Netherlands consists of the following sectors: shipping, shipbuilding, offshore, inland shipping, dredging, ports, navy, fishing, maritime services, water sports industry, and maritime equipment supply. This cluster in cooperation with the Dutch government developed a maritime strategy for the coming 10 years with the motto: safe, sustainable and economically strong maritime sector. The objective of this strategy is to further develop its strong international position. The following four innovation themes have been selected:

- Deep sea mining and sustainable energy production on sea;
- Sustainable ships (alternative fuel, fuel savings, emission reduction);
- Smart ships (reduction of staff and maintenance costs, increase functionality and use of platforms, safe ships and platforms);
- Smart harbours (improvement cargo processing, port development)

#### Link with most promising maritime economic activities and blue growth areas

This strategy has a link with the blue growth focus areas blue energy, marine and mineral resources and with the economic activities maritime transport and shipbuilding, two of the most promising maritime economic activities for the Netherlands.

#### Link with Smart Specialisation Strategies

The national maritime strategy has a link with the following Smart Specialisation Strategies:

- Clusters: The national strategy has been developed by the maritime cluster itself in cooperation with the government. The strategy increases the cooperation within the cluster and is therefore an instrument to foster industrial competitiveness, innovation and growth.
- Research infrastructure, centres of competence and science parks; University-enterprise cooperation: The maritime strategy is focused on four innovation themes. Innovation will be realised through cooperation between the sector and research based institutes. These institutes are the driving forces behind innovation.
- Internationalisation: The Dutch maritime sector has a strong international position, but this has to be further developed.
- Green growth: Sustainable growth is one of the priorities of Europe 2020. Two of the above mentioned innovation themes (sustainable ships and sustainable energy production on sea) contribute to this priority.

### 6.2 Regional Maritime strategies

Multiple organisations like local governments (provinces) and the larger port authorities have developed a strategy for the North Sea and/or the coastal area. The provinces of Zuid-Holland and Noord-Holland have specifically developed a strategic agenda for the coastal area. They pay attention to a broad range of themes, like coastal protection, recreation and nature values. Within the strategy, whether or not intervention is required or desirable with respect to these themes is assessed. For example, the current and

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<sup>13</sup> - Nederland: de Maritieme Wereldtop; Veilig, duurzaam en economisch sterk - Top sector water

desirable trade-off between different types of recreational use and nature values at the coastline is identified.

The Port of Rotterdam has formulated a vision for future development. It specifically addresses worldwide sustainable development, for example with respect to efficiency and ecological footprint, technical innovation (blue biotechnology) and sustainable energy. The goal is to ensure that the Port of Rotterdam continuously facilitates these developments.

The focus of the Port of Amsterdam is on innovation and cooperation between economic sectors, government and knowledge/research institutes on regional, national and international level.

The Port of Groningen (Eemshaven and Delfshaven) has developed a plan with focus on wind energy and sustainable shipping. Also cooperation between government, economic activities and research/knowledge institutes will be further developed.

The Port of Zeeland aims at an increase in GVA and employment with 20% in 2020 through increasing container transport and handling activities and 'green' industry.

#### **Link with most promising maritime economic activities and blue growth areas**

The province strategies are closely linked to the blue growth focus area marine and coastal tourism. These strategies aim to maintain or strengthen this sector and at the same time increase the possibilities of other maritime functions. The blue growth focus areas blue biotechnology and blue energy are mentioned in the strategies of the most important ports in the Netherlands.

There is limited focus of regional strategies on the most promising economic activity 'construction of water projects and coastal protection' which is obvious since Rijkswaterstaat (national authority) is mainly responsible for this area. But there is not a clear link either between these regional strategies and the other most promising maritime economic activities like shipbuilding, inland waterway transport, offshore oil and gas and maritime monitoring and surveillance.

#### **Link with Smart Specialisation Strategies**

The regional maritime strategies have a link with the following Smart Specialisation Strategies:

- Innovation through cooperation between economic activities, government and research institutes The strategies increase the cooperation within the regions and is therefore an instrument to foster innovation.
- Internationalisation: The Dutch maritime sector has a strong international position, but this has to be further developed.
- Green growth: The port authorities focus on sustainable growth which is one of the priorities of Europe 2020.

### **6.3 Maritime policies**

The most important maritime policies in The Netherlands focussing on the entire maritime sector are North Sea policy document (beleidsnota Noordzee) and the EU Maritime Strategy Framework Directive (MSFD). The first policy aims at sustainable use and development of the North Sea. Economic activities of national importance should be able to develop in a sustainable way. Furthermore, sand mining and renewable energy production are priority areas. The focus of this national policy is on the development of the economic sectors on the North Sea. The second policy (MSFD) has another perspective, which is maintaining and enhancing environmental quality of marine water.

**Table 8 – Assessment of maritime policies<sup>14</sup>**

Policy	Objectives	Priorities	Consequences for maritime activities	Impacts on sustainable growth	Investment and funding
National water policy, North Sea addendum (Nationaal Waterplan – bijlage beleidsnota Noordzee)	<ul style="list-style-type: none"> <li>- Sustainable use and development of North Sea</li> <li>- Climate change adaptation</li> <li>- Dealing with exhausting oil- and gas supply</li> </ul>	<ul style="list-style-type: none"> <li>- Activities of national importance</li> <li>- Reserving locations for sand production</li> <li>- Supplying renewable energy functions the required area</li> </ul>	Sand production and renewable energy will benefit from this policy. It might be detrimental for other functions with high spatial claims, unless they are of national importance (military, transport, oil and gas).	Positive	NL Government
Marine Strategy Framework Directive (Europese Kaderrichtlijn Mariene Strategie)	Protecting, maintaining and enhancing environmental quality marine water	<ul style="list-style-type: none"> <li>- Determine environmental goals and indicators</li> <li>- Determine and execute monitoring programme</li> <li>- Developing and executing measures</li> </ul>	Functions depending on ecological quality will benefit (e.g. recreation and biotechnology). Detrimental activities (e.g. transport sector) might be hampered by future legislation.	Neutral (twofold). On one hand, ecological quality is sustained, on the other hand growth might be hampered because of restrictions	EU / NL Government

<sup>14</sup> Please see the country fiche guidelines for the methodology

## Annex 1 Overview of the maritime economic activities

		EUROSTAT			National statistics			Alternative sources (outside formal stats)			Other indicators (various sources)		
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	Further indicators	Source & Reference year
		(€, million)	(*1000)		(€, billion)	(*1000)		(€, million)	(*1000)				
<b>0. Shipbuilding</b>													
0,1	Shipbuilding (excl. leisure boats) and ship repair	n/a	10,7	No GVA data for NACE 30.11 and 33.15 in Eurostat. Employment data 2010, Eurostat	n/a	n/a		3000 turnover, 609 gva	11,8 fte, 7,710 persons	Scheepsbouw Nederland 2012 Turnover: Building and repair total 3,6 - 0,6 (Superyachts) als 2,9 for Maritieme Cluster 2011. 11,8 employment includes yachtsbuilding. 0,609 gva from Maritieme Cluster 2011(excluding superyachts). 7,7 Maritieme Cluster 2011 (excluding superyachts)	560	75 shipyards, 95 large vessels delivered 90 smaller vessels <100GT	Scheepsbouw Nederland 2012 on further indicators, De Maritieme Cluster 2011 for enterprises
0,2	Construction of water projects	856,3	6,3	Eurostat, data for 2010	n/a	n/a		627,0	5,2	De Maritieme Cluster 2011	75	Turnover of 2,076 billion	De Maritieme Cluster 2011
<b>1. Maritime transport</b>													
1,1	Deep-sea shipping	914,4	6,9	Eurostat, data for 2010; support sectors NACE 77.34, 52.22,	n/a	n/a					650		

		EUROSTAT			National statistics			Alternative sources (outside formal stats)			Other indicators (various sources)		
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	Further indicators	Source & Reference year
		(€, million)	(*1000)		(€, billion)	(*1000)		(€, million)	(*1000)				
				52.10, 52.24 not included (no data available in Eurostat)									
1,2	Short-sea shipping (incl. Ro-Ro)	<b>963,2</b>	<b>7,3</b>	Eurostat, data for 2010; support sectors NACE 77.34, 52.22, 52.10, 52.24 not included (no data available in Eurostat)	n/a	n/a							De maritieme Cluster 2011
1,3	Passenger ferry services	n/a	<b>3,2</b>	No GVA data on any of the relevant NACE sectors in Eurostat. Employment: Eurostat, data for 2010; support sectors NACE 77.34, 52.22, 52.10, 52.24 not included (no data available in Eurostat)	n/a	n/a							
1,4	Inland waterway transport	n/a	19,1	No GVA data on any of the relevant NACE sectors in Eurostat. Employment: Eurostat, data for 2010; support sectors NACE 77.34, 52.22,	n/a	n/a		<b>677,0</b>	<b>12,8</b>	De maritieme Cluster 2011, persons	<b>3.565</b>		De maritieme Cluster 2011



		EUROSTAT			National statistics			Alternative sources (outside formal stats)			Other indicators (various sources)		
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	Further indicators	Source & Reference year
		(€, million)	(*1000)		(€, billion)	(*1000)		(€, million)	(*1000)				
				52.10, 52.24 not included (no data available in Eurostat)									
<b>2. Food, nutrition, health and ecosystem services</b>													
2,1	Catching fish for human consumption	<b>276,6</b>	<b>28,4</b>	JRC (fishing), Eurostat (fish processing, wholesale & retail), PRODCOM (share of human/animal), data for 2010. No GVA data for 47.23 retail in Eurostat	n/a	n/a					<b>700,0</b>	fishing enterprises: 700 retail: 1700 enterprises processing enterprises: 600	JRC 2012
2,2	Catching fish for animal feeding	<b>0,0</b>	<b>0,0</b>	JRC (fishing), PRODCOM (share of human/animal), data for 2010 (share animal is zero)	n/a	n/a							
2,3	Marine aquatic products	<b>43,20</b>	<b>0,3</b>	JRC, data for 2010	n/a	n/a					<b>180,0</b>		JRC 2012
2,4	Blue biotechnology	<b>n/a</b>	<b>n/a</b>	Not available in Eurostat.	n/a	n/a				No alternative data on Netherlands found centrally			

		EUROSTAT			National statistics			Alternative sources (outside formal stats)			Other indicators (various sources)		
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	Further indicators	Source & Reference year
		(€, million)	(*1000)		(€, billion)	(*1000)		(€, million)	(*1000)				
2,5	Agriculture on saline soils	n/a	n/a	No data in Eurostat on percentage saline soils in the Netherlands (possibly low)	n/a	n/a							
<b>3. Energy and raw materials</b>													
3,1	Offshore oil and gas	n/a	1,8	Eurostat, data 2009. No GVA data in Eurostat on NACE 06.10, 06.20, 09.10	<b>4304,792</b>	<b>0,775</b>	CBS Statline. Arbeids- en financiële gegevens, per branche, SBI 2008. NACE 06. Corrected for onshore offshore ratio of 0,25 (0,5 holds for oil production, source: EBN focus on Dutch Oil and Gas 2013), judged that gas has a higher onshore ratio, and there is more gas than oil in NL). Also corrected for ratio turnover - GVA of 0,446				72,0		List of companies: <a href="http://www.su-bsea.org/company/allbycountry.asp?qcountry=Netherlands">http://www.su-bsea.org/company/allbycountry.asp?qcountry=Netherlands</a>

		EUROSTAT			National statistics			Alternative sources (outside formal stats)			Other indicators (various sources)		
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	Further indicators	Source & Reference year
		(€, million)	(*1000)		(€, billion)	(*1000)		(€, million)	(*1000)				
							(CBS Statline, based on sector B. Delfstofwinnin g's turnover and GVA)						
3,2	Offshore wind	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a		<b>997 (Turnover)</b>	<b>2,2</b>	in FTE Agentschap NL, 2010	<b>153,0</b>	<b>228 MW (2010), already stable since 2008</b>	<a href="http://www.agentschapnl.nl/sites/default/files/bijlagen/Sector%20survey%20Offshore%20Windenergy.pdf">http://www.agentschapnl.nl/sites/default/files/bijlagen/Sector%20survey%20Offshore%20Windenergy.pdf</a> MW from CBS
3,3	Ocean renewable energy	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a		<b>1,5</b>	<b>0,008</b>	No alternative sources found for Netherlands centrally. Report Energy Centre Netherlands (Socio-economic indicators of renewable energy in 2009). Indicators are for hydro power, blue energy and blue energy.	<b>30,0</b>	16th country on OE patent list. The Netherlands is developing the the reversed-electrodialysis osmosis technology.	Report Energy Centre Netherlands (Socio-economic indicators of renewable energy in 2009). Indicators are for hydro power, blue energy and blue energy.

		EUROSTAT			National statistics			Alternative sources (outside formal stats)			Other indicators (various sources)		
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	Further indicators	Source & Reference year
		(€, million)	(*1000)		(€, billion)	(*1000)		(€, million)	(*1000)				
3,4	Carbon capture and storage	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a				No alternative sources found for Netherlands centrally		<b>2 projects ongoing</b>	<a href="http://www.milieucentraal.nl/themas/klimaat-en-milieuproblemen/klimaatverandering/co2-afvangen-en-opslaan">http://www.milieucentraal.nl/themas/klimaat-en-milieuproblemen/klimaatverandering/co2-afvangen-en-opslaan</a> , <a href="http://www.road2020.nl/en">http://www.road2020.nl/en</a> , <a href="http://www.k12-b.nl/">http://www.k12-b.nl/</a> , <a href="http://www.co2-cato.nl/nl/uitleg-co2-opslag/hoe">http://www.co2-cato.nl/nl/uitleg-co2-opslag/hoe</a>
3,5	Aggregates mining (sand, gravel, etc.)	0,0	0,2	Eurostat, data for 2010. No GVA data on NACE 08.12 in Eurostat; GVA data on 09,90 given to be zero. Offshore share based on UEPG	<b>115,193</b>	<b>0,462</b>	CBS Statline. Arbeids- en financiële gegevens, per branche, SBI 2008. NACE 08. Assumed correction for onshore offshore ratio of 0,22 (based on UEPG). Also corrected for ratio turnover - GVA of 0,446 (CBS Statline,						

		EUROSTAT			National statistics			Alternative sources (outside formal stats)			Other indicators (various sources)		
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	Further indicators	Source & Reference year
		(€, million)	(*1000)		(€, billion)	(*1000)		(€, million)	(*1000)				
							based on sector B. Delfstofwinnig's turnover and GVA)						
3,6	Marine minerals mining	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a	Sector included in 3,5	n/a	n/a	25 persons employed at IHC, turnover of 20 million.	<10		<a href="http://www.oceanflores.com/">http://www.oceanflores.com/</a> , <a href="http://www.fugro.com/datasheets/services/Geophysical_A4_dps_LO.pdf">http://www.fugro.com/datasheets/services/Geophysical_A4_dps_LO.pdf</a> , <a href="http://www.tu-delft.nl/fileadmin/UD/MenC/Support/Internet/TU%20Website/TU%20Delft/Images/Actueel/Universiteitsbladen/Delft_Integraal_2011-4/DI_nl/DI-04-Na_Delft.pdf">http://www.tu-delft.nl/fileadmin/UD/MenC/Support/Internet/TU%20Website/TU%20Delft/Images/Actueel/Universiteitsbladen/Delft_Integraal_2011-4/DI_nl/DI-04-Na_Delft.pdf</a> , <a href="http://www.energydigital.com/reports/ihc-deep-sea-">http://www.energydigital.com/reports/ihc-deep-sea-</a>

		EUROSTAT			National statistics			Alternative sources (outside formal stats)			Other indicators (various sources)		
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	Further indicators	Source & Reference year
		(€, million)	(*1000)		(€, billion)	(*1000)		(€, million)	(*1000)				
													dredging-mining
3,7	Securing fresh water supply (desalination)	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a	Sector included in 3,5	0,0	0,0	Not present in the Netherlands according to Global Water Insights			
<b>4. Leisure, working and living</b>													
4,1	Coastal tourism	<b>929,7</b>	<b>41,0</b>	Eurostat, data for 2010 (only data for NACE 55.10, other sectors no data)	n/a	n/a		1300	24	Decisio and Kenniscentrum kusttoerisme, 2010	n/a		
4,2	Yachting and marinas	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a		<b>2500</b>	<b>16,5</b>	ICOMIA Statistics 2011 (2012) Statistics concerning July 2011 to June 2012, *Dutch Statistics 2011,	4.025		

		EUROSTAT			National statistics			Alternative sources (outside formal stats)			Other indicators (various sources)		
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	Further indicators	Source & Reference year
		(€, million)	(*1000)		(€, billion)	(*1000)		(€, million)	(*1000)				
										HISWA Holland Marine Industry			
4,3	Cruise tourism	n/a	n/a	No GVA data on any of the relevant NACE sectors in Eurostat. Employment: Eurostat, data for 2010; support sectors NACE 77.34, 52.22, 52.10, 52.24 not included (no data available in Eurostat)	n/a	n/a		300 (direct expenditure incl. shipbuilding)	4,3	European Cruise Council, 2012	n/a		
<b>5. Coastal protection</b>													
5,1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a	Included in in 3.5						

		EUROSTAT			National statistics			Alternative sources (outside formal stats)			Other indicators (various sources)		
Maritime economic activity		GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	GVA	Employment	Source & Reference year	Number of enterprises	Further indicators	Source & Reference year
		(€, million)	(*1000)		(€, billion)	(*1000)		(€, million)	(*1000)				
<b>6. Maritime monitoring and surveillance</b>													
6.1/6.2	Traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods,	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a		n/a	n/a		No data found centrally. Problem of different definitions applied across sources & countries.		
6,3	environmental monitoring	n/a	n/a	Sector not visible in Eurostat.	n/a	n/a		31,6	n/a	EMODNET	at least 4	government expenditure on environmental monitoring for Marine Framework Directive estimates 5 - 15 mio €/y	



## Annex 2 CAGR of GVA and number of persons employed

Maritime economic activity		GVA (CAGR)	Number of persons employed (CAGR)	Source & time reference of data	Score
<b>0. Shipbuilding</b>					
0.1	Shipbuilding (excl. leisure boats) and ship repair	n/a	5.9%	Eurostat, data 2008-2010	+
0.2	Construction of water projects <sup>15</sup>	4.7%	5.7%	Eurostat, data 2008-2010	5.2%
<b>1. Maritime transport</b>					
1.1	Deep-sea shipping	-18.8%	-18.0%	Eurostat, data 2008-2010	-18.4%
1.2	Short-sea shipping (incl. Ro-Ro)	-16.3.0%	-15.5%	Eurostat, data 2008-2010	-15.9%
1.3	Passenger ferry services	n/a	2.9%	Eurostat, data 2008-2010	+
1.4	Inland waterway transport	-3.4%	0%	De Maritime cluster, 2011	-3.4%
<b>2. Food, nutrition, health and eco-system services</b>					
2.1	Catching fish for human consumption	2,1%	0,4%	JRC, 2008-2010 (fishing excl. processing, wholesale and retail)	1.3%
2.2	Catching fish for animal feeding				
2.3	Marine aquatic products	n/a	n/a		+
2.4	Blue biotechnology	n/a	n/a		0
2.5	Agriculture on saline soils	n/a	n/a		+
<b>3. Energy and raw materials</b>					
3.1	Offshore oil and gas	n/a	-1.2%	CBS Statline, 2010	-1.2
3.2	Offshore wind	n/a	n/a		+
3.3	Ocean renewable energy	n/a	n/a		0
3.4	Carbon capture and storage	n/a	n/a		0
3.5	Aggregates mining (sand, gravel, etc.)	n/a	-34.8%	Eurostat, data 2008-2010	-34.8
3.6	Marine minerals mining	n/a	n/a		0
3.7	Securing fresh water supply (desalination)				
<b>4. Leisure, working and living</b>					
4.1	Coastal tourism	-7.9%	-7.9%	Eurostat, data 2008-2010	-7.9
4.2	Yachting and marinas	n/a	n/a		+
4.3	Cruise tourism	n/a	n/a		+
<b>5. Coastal protection</b>					

<sup>15</sup> Includes 5.1 according to Dutch terminology

Maritime economic activity		GVA (CAGR)	Number of persons employed (CAGR)	Source & time reference of data	Score
5.1	Protection against flooding and erosion, preventing salt water intrusion, protection of habitats	No specific data available, it is included in 0.2.			
<b>6. Maritime monitoring and surveillance</b>					
6.1/6.2	Traceability and security of goods supply chains, prevention and protection against illegal movement of people and goods,	n/a	n/a		0
6.3	environmental monitoring	n/a	n/a		0

## Annex 3 Future potential of economic activities

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