



Report

Economic description of the Dutch North Sea and coast: 2010, 2015 and 2017

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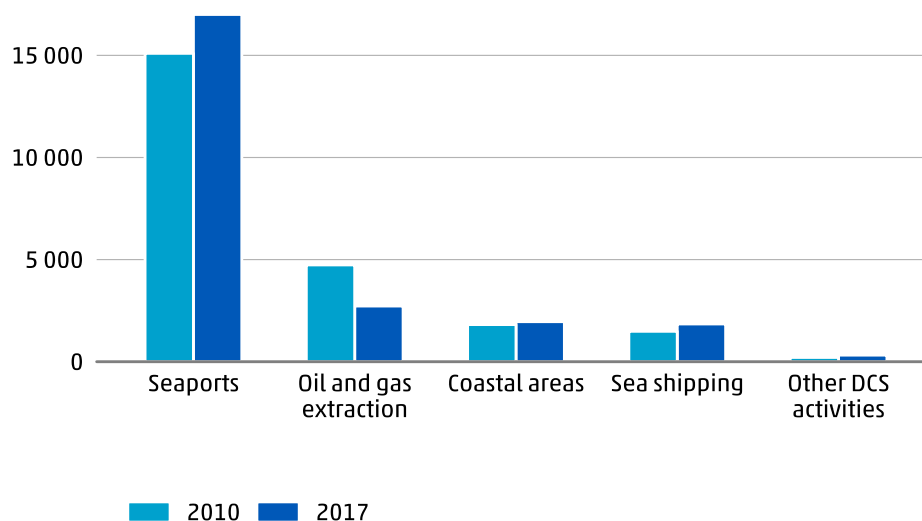
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Executive Summary

This study is carried out by Statistics Netherlands in the context of the European Marine Strategy Framework Directive, which requires social and economic analysis of the use of the marine environment. In this study an economic valuation of activities related to the Dutch Continental Shelf (DCS) is presented for the years 2010, 2015 and 2017. The following activities at sea are included in this study: sea shipping, oil and gas production, fishing, sand extraction and off-shore wind energy production. Activities on land are also included. These relate to economic activities in seaports and in the coastal area of the North Sea. For the coastal area, fisheries, hotels and restaurants, retail trade and recreational, cultural and sporting activities have been selected. Double counting of fisheries as both an activity on land and at sea is corrected for when totals are analysed. In seaports, the focus is on the following sectors; manufacturing; transport storage and communication; and wholesale and construction. In these sectors, proximity or accessibility to the North Sea is a critical factor. The activities on sea and the activities on land together constitute the Dutch North Sea economy. For all sectors on land and on sea, figures are presented and analysed for production (current prices), intermediate consumption (current prices), GVA (Gross Value Added, both in current and constant prices at the 2015 level), the number of employed persons (FTE), and the total compensation of employees.

Figure 0.1 shows a summary of the size of the economy of the Dutch North Sea in terms of the GVA of its constituent parts.

Figure 0.1 GVA per sector in the North Sea Economy in 2010 and 2017



In general, the results in this study show several interesting trends/patterns, a few of which are summarised here.

- The Dutch North Sea economy is growing at a slower rate than the economy of the Netherlands as a whole. Between 2015 and 2017 the economy of the Netherlands grew by 4.8% whereas the economy of the North Sea grew by 2.1%. This is partly because of some of the large and fast growing sectors, mainly 'Professional, scientific and technical

activities' and 'Administrative and support service activities' are not included in the North Sea Economy.

- The transition from fossil fuels to sustainable energy is having a substantial effect on the economic activities on the DCS. In terms of value added, the oil and gas sector declined by 20% between 2015 and 2017 whereas the wind energy grew to 3.7 times its size over the same period.
- The contribution of the port of Rotterdam to the North Sea Economy is greater than all other ports combined, and is almost as large as all other ports plus the coastal area.
- Between 2010 and 2015, the 'transport, storage and communication' within the seaports grew rapidly but was stagnant between 2015 and 2017. Conversely, manufacturing declined in seaports between 2010 and 2015 but grew between 2015 and 2017. The composition of the economy of the seaports therefore fluctuates over time, presumably under the influence of international economic conditions.
- Almost all the growth in the economy of the coastal area is found in the hotels and restaurants sector. All other sectors are relatively stagnant or in decline.

This study builds on a previous study (which presented results for the years 2005, 2010 and 2014) by implementing two methodological improvements. Firstly, Wageningen Economic Research has contributed to this study by calculating the share of fishing by Dutch vessels which takes place on the DCS. This share is calculated using Vessel Monitoring through Satellite (VMS) data. Secondly, a new method is employed to approximate the size of the marine sand and gravel mining industry (referred to hereafter as 'marine aggregates'). Previously, figures were presented on the broader sector 'hydraulic engineering' because there was no known method to determine the magnitude of marine sand and gravel mining, which falls within hydraulic engineering. The size of the marine aggregates sector can however be approximated with the use of data from the European Aggregates Association, as suggested by Ecorys (2013). This method is hence employed in the present study, which allows for a more precise definition of the economy of the DCS.

1 Introduction

This study has been financed by the Dutch Ministry for Infrastructure and Water Management in the context of the Marine Strategy Framework Directive (Directive 2008/56/EC of the European Parliament and of the Council, 17 June 2008). Article 8 of the Directive stipulates that member states must undertake an economic analysis of the use of their marine waters. This report provides data on the economic use of marine waters for the Netherlands. Specifically, this report considers economic activities on the Dutch Continental Shelf (DCS), which is the area of the North Sea where the Netherlands has exclusive rights. Further, this report also includes economic activities on land in the coastal area and in ports that are directly dependant upon the vicinity to the sea.

This study updates and extends the data and analysis from the Statistics Netherlands report prepared by Statistics Netherlands (2017)¹⁾ and an earlier study (Statistics Netherlands, 2014a)²⁾. In the study of 2017, results were presented for 2005, 2010, and 2014. In the current study, results are presented for the years 2010, 2015 and 2017. The year 2010 is calculated again because of the revision of the national accounts. Periodically, Statistics Netherlands performs a series of updates and improvements to the national accounts, with the aim of calculating statistics according to the most recent international guidelines (for example, the European System of Accounts ³⁾) to accurately represent the Dutch economy. Such changes are applied to several previous years of data. A revision has taken place since the previous study and therefore these results must be recalculated. Although pre- and post-revision results are not compared in this study, for the interested reader, a short description about the difference between pre- and post-revisions is included in Appendix 1.

Both this study and the previous Statistics Netherlands studies build on the methodological basis of Brouwer *et al.* (2005) and Statistics Netherlands (2010). This methodology, known as NAMWARiB (National Accounting Matrix including River Basins) is adapted for analysis of the seaports and the coastal area. The method is also presented and described as the Marine Water Accounts approach in the European guidance document on economic and social analyses for the Marine Strategy Framework Directive (European Commission, 2010).

This report begins with a definition of the system boundaries in Chapter 2 and proceeds to present the methods in Chapter 3. The study employs two distinct methods: one for activities in the coastal area and one for activities at sea. Both are explained in this chapter along with the definitions and boundaries of the study. The first results are shown in Chapter 4 at the most aggregated level. This entails considering “The Dutch North Sea economy” as a whole. Results are presented in terms of value added, production value, intermediate consumption, employment and compensation of employees. Value added is presented in constant prices (base year 2015) and in current prices. The report then proceeds to provide more detail by considering the constituent parts of the Dutch North Sea economy. Chapter 5 describes the activities on land. These are firstly, the activities in the coastal area, and secondly, the activities in seaports. In Chapter 5, the results are disaggregated to specific sectors in order to

¹⁾ www.cbs.nl/en-gb/publication/2017/24/economic-description-of-the-dutch-north-sea-and-coast

²⁾ www.cbs.nl/nl-nl/achtergrond/2014/10/economic-description-of-the-north-sea-for-the-netherlands-2005-2008-2010-2011-

³⁾ <https://ec.europa.eu/eurostat/documents/3859598/5925693/KS-02-13-269-EN.PDF/44cd9d01-bc64-40e5-bd40-d17df0c69334>

provide more detail. The results for the activities at sea are shown in Chapter 6. Chapter 7 evaluates the results and provides conclusions and recommendations for future research.

2 System boundaries and definitions

National accounts

The main data source used in this study are the Dutch national accounts. All activities on land are determined purely from the national accounts. For activities at sea, the national accounts data are complemented by data from various other sources. The system of national accounts provides a quantitative overview of the economic activities in a country as well as its economic relations with the rest of the world. At the core of the national accounts is a number of important economic indicators such as gross domestic product (GDP) and national income. The main benefit of using figures from the national accounts is that all variables are linked together in a consistent way. Consistent definitions which underlie the system facilitate comparability both between sectors and over time. International comparability is also guaranteed because all concepts and definitions are based on international guidelines provided by the United Nations, the European Union and other international organisations. The international standards are documented in the United Nations System of National Accounts (UN et al., 2008) and the European System of Accounts (Eurostat, 2010).

The national accounts have been revised in 2018. More information on the revision can be found in Statistics Netherlands (2018)⁴⁾. Statistics presented in this report therefore deviate from those presented in previous reports. The revision is based on one verification year, which was 2015 in the revision of 2018. As a result, new estimates for the macro-economic indicators have become available for the whole time-series. However, the revised figures for the years before 2015 are only available at a greater level of aggregation. Hence, an additional division-key, based on the economic structure of 2015, has to be used to determine the figures of some specific branches for 2010. While this is not ideal, we are confident that the 2010 data can be meaningfully compared to data for later years.

From the national accounts the following indicators are derived for the economic description of the Dutch North Sea and coast:

- *Number of employed persons*. All persons who are working for a business unit or private household residing in the Netherlands, including self-employed persons.
- *Compensation of employees*. The total remuneration paid by employers to their employees. Hence, compensation excludes the costs of employing self-employed persons.
- *Production*. The value of all goods produced for sale, including unsold goods, and all receipts for services rendered.
- *Intermediate consumption*. The value of all goods and services used in the production process. This includes for example fuel, raw materials, semi-manufactured goods, communication services, cleansing services and audits by accountants.
- *Gross Value Added (GVA)*. The difference between production and intermediate consumption in current prices (nominal terms value added). In the text often referred to as GVA.
- *Gross Value Added (GVA) 2015 prices*. Value added adjusted for inflation, with 2015 as base year. In the text often referred to as GVA in constant prices (real terms value added).

⁴⁾ <https://www.cbs.nl/nl-nl/publicatie/2018/25/nationale-rekeningen-revisie-tijdreeksen-1995-2015>

Geographical boundaries

This study considers activities on land that relate to the Dutch North Sea and activities that occur on the Dutch North Sea itself. The measurement of activities of Dutch companies on the North Sea in this study is limited to the Dutch part of the Continental Shelf. The DCS is the part of the North Sea, adjoining the Dutch coast, where the Netherlands claims exclusive rights to mineral resources. This Dutch part of the continental shelf in the North Sea is also regarded as part of the economic territory. Figure 3.1 shows a map of the DCS. While the Wadden Sea (Waddenzee) is in fact part of the DCS, it is not part of the North Sea and therefore excluded from this analysis. In terms of policy, the Wadden Sea falls under the remit of the Water Framework Directive, not the Marine Strategy Framework Directive.

Figure 2.1 The Dutch Continental Shelf as defined in this study (excluding the Wadden Sea)



In addition to the activities at sea, this study also considers activities on land. Activities on land are divided into activities in the coastal area and in seaports. The geographical boundary of the seaport areas is mostly based on information provided by the relevant Port Authorities. A seaport is thus defined as the area under the jurisdiction of the Port Authority.

The coastal area has been defined as an **one kilometre (km) wide strip** of land behind the Dutch North Sea coastline together with the Wadden Islands (Waddeneilanden). This is the same definition of the coastal area that has been used in the previous versions of this study. The decision to use a one km wide strip is a pragmatic decision, based on the geography of economic activities surrounding the specific area. To include some economic activities, the coastal strip was put behind the beach and sand dunes, and not just behind the shoreline. The beach and sand dunes were located using a land use map; all dry natural terrain bordering the North Sea has been defined as beach and sand dunes. Appendix 3 shows a map of the location of the beach and sand dunes as well as the coastal strip including the Wadden Islands.

The decision to use a one km wide strip is a trade-off between a desire to fully represent the Dutch North Sea economy while at the same time, not taking into account economic activities that are not considered to be part of the Dutch North Sea economy. An important example of this trade-off are the economic activities in the city of The Hague and the seaside resort of Scheveningen, which is part of the same agglomeration. Hotels in Scheveningen can easily be considered as part of the North Sea economy. However, hotels further in land receive guests

who visit The Hague for a wide variety of purposes unrelated to the proximity of The Hague to the North Sea. The choice of a 1 km wide strip in this case, aims to ensure that as much of the relevant economic activities are included as possible, without also including irrelevant activities.

Sectors

This study considers specific sectors for the activities on land. Sectors are chosen which have a strong and clear link to the North Sea in order to produce a fair estimate of the coastal economy. The selected sectors differ between for the coastal area and seaports.

Coastal area:

- Fisheries
- Hotels and restaurants
- Retail trade
- Recreational, cultural and sporting activities

Seaports:

- Manufacturing
- Wholesale Trade
- Construction (excl. the construction of buildings) ⁵⁾
- Transport, storage and communication

Residents

An important concept in the national accounts is the resident principle. An institutional unit is said to be resident within the economic territory of a country if it maintains a centre of predominant economic interest in that territory. GDP is an aggregate measure of production by all resident units. However, some of this production may occur abroad and as a result production in the national accounts differs from the sum of all production that takes place within the geographic boundaries of the national economy. All figures in this report represent only activities of resident companies and employees. For example: fishing vessels registered outside the Netherlands active on the DCS, are not included in the estimates of the Dutch production of fisheries in this study, nor are Dutch fisheries active outside the DCS.

⁵⁾ Construction is included because this includes installations for ships and for on- and offshore facilities. Since these businesses are located in the area of interest, construction companies are included even though the port location may be a less critical factor than for some manufacturing or transport companies.

3 Method

3.1 Activities on land

The method used for estimating economic key figures for the areas of interest is based on the NAMWARiB ⁶⁾ method used by Statistics Netherlands to calculate the economic figures for different sub-river basins (Brouwer et al., 2005; Statistics Netherlands, 2010). NAMWARiB provides information about the interactions between the physical water system and the economy at a national and sub-river basin scale. The regional economic accounts are the most geographically detailed national accounting data available at Statistics Netherlands. These accounts present the national accounts at the level of the NUTS-3 region, which are used as the basis for this study.

In order to produce results for seaports and the coastal strip it is however necessary to use a “division key” in addition to the regional figures. The division keys are used to inform how much of the regional economy can be allocated to the coastal area or the seaports. They are deduced from the data of the business register. The business register contains, in general terms, all the businesses in the Netherlands. Of the many variables in the business register, two are particularly useful in this study. These are the postcode of the business ⁷⁾ and the number of employees. The method is to select the businesses within seaports or the coastal area by their postcode. It is then possible to calculate the number of employed persons for both the coastal area and seaports. From the regional accounts, total number of employed persons per region is known. The division key for the coastal area (or seaport) is thus the number of employed persons in the coastal area (or seaport) divided by the number of employed persons in the whole region. This division key can then be applied to the regional economic accounts to obtain economic indicators relevant for the coastal area and seaports. Hence, an economic indicator for a seaport is the indicator for the region in which the seaport is located, multiplied by the division key.

In order to apply the above method, it is first necessary to know which postcodes correspond to the different areas. This analysis was carried out during the previous project and the same results were used again in the current project. The postcodes were determined in the previous project by delimitating the coastal areas and the seaports in purely spatial terms (basically, drawing a line on a map). This was done on the basis of input from the harbour authorities and topography as explained in chapter 2. The map of these boundaries was then overlaid onto a map of postcode areas. All postcode areas that lie fully in the areas of interest (seaports and the coastal strip) are used in the analysis in their entirety. Many postcodes however fall only partially inside the areas of interest. There are two possible ways of dealing with this;

- **Scenario A.** Calculate the share of the postcode which falls into the area of interest and use this share to adjust the number of employed persons. Use the adjusted number of employed persons for the division key.
- **Scenario B.** If a postcode falls partially within the area of interest then use the total number of employed persons within the postcode for the division key.

⁶⁾ <http://www.helpdeskwater.nl/onderwerpen/wetgeving-beleid/nationaal/economische-aspecten/namwa/>

⁷⁾ Specifically the postcode of the “Local business unit”. This is the most disaggregated unit in the business register. One business may have multiple offices for example. Each office is a local business unit.

To fully understand the distinction between scenario A and scenario B, let us consider an example. In region Y there are four postcodes of which only two are (partly) located in the coastal area. For postcode A, 90% of the surface area of this postcode is located in the coastal area. For postcode B, 10% of the surface area is located in the coastal area. The company register provides that in postcode A, 200 persons are employed in sector X. In postcode B, 500 persons are employed in sector X. There are therefore 230 employed persons allocated to this part of the total coastal area ($90\% \times 200 + 10\% \times 500 = 230$). The company register also shows that in the total region Y, 1500 persons are employed in sector X. This means that 15.3% ($230/1500$) of the economic key figures of this region (production, added value, employees, compensation of employees) are allocated to the coastal area in scenario A. For scenario B this figure is larger because complete postcodes are included. The result for scenario B is thus 700 employees ($200+500$). This means that 46.6% ($700/1500$) of the economic key figures of region Y (production, added value, employees, compensation of employees) are allocated to the coastal area in scenario B.

The choice for scenario A or B is made on a case-by-case basis. In principal, scenario A is considered to be methodologically superior, however, the desire to account for as many relevant economic activities as possible, requires that the choice be predominantly determined by the geography of economic activities surrounding the specific area of interest. For example, if a seaport is entirely surrounded by a natural area, then scenario B is preferred because there are no economic activities adjacent to the port which can be incorrectly counted in the port by using the entire postcode. Continuing the port example, if a port is surrounded by an office park containing financial services sectors, it is prudent to employ scenario B to minimise the effect of the financial services companies which occupy a postcode that partially falls into the port area. Case-by-case decisions for scenario A and B are explained in Appendix 5. Figures on production for both scenarios are provided per area of interest in Appendix 6 to 9.

The exception to the use of scenario A or scenario B is the method for the port of Rotterdam and the port of IJmuiden. In defining the port, area maps published by the Port Authority ⁸⁾ were used. Appendix 8 shows the production level per sector and per scenario in the port of Rotterdam. Analysis of the data shows that, although production is located in the defined area of the port, the employees are in some cases registered at office locations in the centre of Rotterdam. Since production is allocated based upon postcodes of the companies where employment is registered, production is also virtually shifted to the centre of Rotterdam. This statistical problem exists for all ports and the coastal area, but is most prominent in the Port of Rotterdam. The activities of a few large companies are very influential on the port as a whole. Missing a couple of these companies, because the registered location differs from the production site, results in a substantial error. To correct for this statistical problem the total economic figure for the whole NUTS-3 region (Rijnmond) is included for selected sectors, namely:

- Manufacture of petroleum products; cokes, and nuclear fuel
- Manufacture of basic chemicals and man-made fibres
- Transport on water
- Supporting transport activities

⁸⁾ <https://www.portofrotterdam.com/en/harbour-master-port-map>

3.2 Activities at sea

The method for producing figures for the activities at sea varies depending on the specific activity in question. Where possible, data available at Statistics Netherlands are used. These data are complemented by external data where needed. The approach generally relies on obtaining suitable division keys to disaggregate the economic statistics. The specific methodology per activity at sea is described in this section.

3.2.1 Oil and gas extraction

With the exception of the number of employed persons, the figures are based on the regional module of the national accounts. The figures on employed persons are based on offshore exposure hours data (Appendix 2) provided by the State Supervision of Mines ⁹⁾. In calculating the number of FTE (Full Time Equivalent) employed persons, the assumption was made that one full time employed person works 1,600 hours per year on average. Offshore exposure hours of companies and contractors include businesses in the sectors “Crude petroleum and natural gas production” and “Supporting Crude petroleum and natural gas production”, as well as other sectors supplying goods and services to the oil and gas sector (caterers, suppliers of installations, etc.). In order to make a distinction between the core industry and suppliers, the number of FTEs in mining and quarrying from national accounts was used as a starting point. The figures on onshore and offshore exposure hours allow a geographical distribution between the DCS and activities on land.

3.2.2 Fisheries

Macro-economic figures for the entire fishing sector are obtained from the Dutch National Accounts. The fishing sector in the Netherlands consists of cutter fisheries, large-scale high sea fisheries, mussel farming and aquaculture. Mussel farming and aquaculture do not take place on the DCS. Mussel farming (which takes place in Wadden Sea or the Oosterschelde) is however related to the North Sea because the sea provides salt water. Therefore, while we would prefer to exclude this activity as an activity at sea (because it does not take place on the DCS), it is not problematic to include it within the economy of the Dutch North Sea as a whole. The only remaining problem is aquaculture. It is unfortunately not possible to isolate aquaculture from fishing and mussel farming. The inclusion of aquaculture means that these figures are a slight overestimate for fishing in the Dutch North Sea economy.

The division keys to allocate a share of Dutch fisheries to the DCS have been provided by Wageningen Economic Research (WEcR) using Vessel Monitoring System (VMS) data. VMS data are collected via satellite monitoring of fishing vessels which shows when and where fishing has occurred. The share of the value of the catch from the DCS to the value of the catch on all waters is used to allocate a share of the fishing sector to the DCS. Not all vessels send data to the VMS but these vessels only account for between 1% and 2% of the value of the catch. Accordingly, their exclusion has a negligible effect on the results. This represents a considerable methodological improvement compared to the method employed in the previous report.

⁹⁾ As this study makes use of State Supervision of Mines data in order to calculate data on employment, data on employment in this study is not fully consistent with data in the regional accounts.

3.2.3 Sea shipping

The National Accounts provide macro-economic figures for the Dutch sea shipping sector. Macro-economic data for the sector represent all international and national activities of Dutch sea shipping businesses (residents). The residence principle refers to the centre of economic interest of the operators of vessels. The total national figure is used for the valuation of the DCS, because the international accessibility matters, and not so much the DCS itself. While figures on the number of employees are available for the sector of interest, the number of self-employed is only available at a higher aggregation level (namely, sector “Transportation by water”). The ratio between the self-employed and employees at this level was used to estimate the total number of employed persons for the sea shipping sector.

3.2.4 Marine aggregates

In previous reports, we did not report on marine aggregates (sand and gravel) but on hydraulic engineering instead. Hydraulic engineering includes sand and gravel extraction, but also other activities such as construction of dykes, shipping channels and ports, dredging works, land reclamation etc. However, many of these activities are not related to the North Sea. In the previous report, a methodology was presented to determine statistics for marine sand and gravel extraction only, which was employed by Ecorys (2013). Sand and gravel extraction (including marine aggregates) are part of “Other mining and quarrying”, of which quarrying of stone, sand and clay constitutes about a half. Data from the UEPG (European Aggregates Association) are used to estimate the share of marine aggregates in the total of “Other mining and quarrying”. Under the assumption that the GVA and employment per unit of production are the same for marine aggregates offshore as for the total of “Other mining and quarrying”, the ratio of marine aggregates in the total of “Other mining and quarrying” can be used to calculate GVA and employment for the marine aggregates.

3.2.5 Offshore wind energy

Estimates of the economic indicators on offshore wind energy are based on the amount of energy produced by wind turbines on the DCS. The necessary figures are calculated by combining the physical energy production with price information on energy, figures on product-based SDE+ subsidies¹⁰⁾ and information on maintenance and operational costs. For more information, see the publication *‘Economische Indicatoren Energiegerelateerde Activiteiten 2016’* (in Dutch)¹¹⁾. In this way, the resulting figures refer purely to the production of wind energy and in no way to the production and installation of the turbines and related infrastructure.

For the calculation of compensation of employees in the offshore wind energy sector, compensation of employees per FTE in NACE D (“Electricity, gas, steam and air conditioning supply”) has been used as a proxy.

The wind energy sector is interesting due to the degree to which it receives government subsidy. The figures presented here include subsidies. More information on subsidies can be found on the RVO website¹²⁾.

¹⁰⁾ Stimulation of Sustainable Energy Production (SDE+) subsidy.

¹¹⁾ For an English version, see an older edition of the economic radar on the Sustainable energy sector (Statistics Netherlands, 2014).

¹²⁾ www.rvo.nl/subsidies-regelingen/sde/windenergie-op-zee

4 Summary results for the Dutch North Sea Economy

The summary results are presented in table 4.1, which gives a picture of the role of the Dutch North Sea Economy in the Dutch economy.

Table 4.1 Contribution of the North Sea economy to the total economy

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Area	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	North sea economy	8,830	169	80,179	58,703	21,476	23,356
	Total economy	311,717	7,024	1,193,763	619,483	574,280	593,911
	Share of total econ. in %	2.8	2.4	6.7	9.5	3.7	3.9
2015	North sea economy	9,788	170	81,897	58,392	23,505	23,505
	Total economy	330,267	7,015	1,337,394	716,559	620,835	620,835
	Share of total econ. in %	3.0	2.4	6.1	8.2	3.8	3.8
2017	North sea economy	10,030	174	83,910	60,496	23,413	23,862
	Total economy	352,818	7,315	1,429,367	767,801	661,566	650,775
	Share of total econ. in %	2.8	2.4	5.9	7.9	3.5	3.7

The results show that the size of the Dutch North Sea economy expressed in value added at constant prices (which means corrected for potential developments in prices) accounted for 3.7% of the Dutch economy in 2017, while in 2010 it was 3.9%. This means that the relative importance declined. This is the result of the fact that the Dutch economy as a whole grew by 9.6% between 2010 and 2017, whereas the North Sea economy showed a much smaller growth, of only 2.2% over the same period. This is partly because of some of the large and fast growing sectors, mainly “Professional, scientific and technical activities” and “Administrative and support service activities” are not included in the North Sea Economy.

Regarding the other indicators, production and intermediate consumption of the North Sea economy have also increased between 2010 and 2017. Production has increased by 4.7%. Intermediate consumption also increased, but with a smaller amount (3.1% in the same period). Just like production, the contribution of the intermediate consumption in the North Sea area to the whole economy declined: from 9.5% in 2010 to 7.9% in 2017.

The Dutch North Sea economy consists of activities on land (seaports and coastal area) and activities at sea. Table 4.2 shows that activities on land constitute a large share of the Dutch North Sea economy. This is particularly the case for employed persons, compensation, intermediate consumption and production, but less so for GVA. However, the GVA share of the activities at sea decreased from 27.6% in 2010 to 20.5% in 2017. As will be shown later, this is mainly due to the oil and gas sector.

Table 4.2 Summary of the economic key figures for activities at sea and on land (selected sectors)

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Area	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	Activities at sea	882	13	11,009	4,865	6,144	6,437
	Activities on land	7,948	156	69,170	53,838	15,332	16,919
	Total	8,830	169	80,179	58,703	21,476	23,356
2015	Activities at sea	1,101	15	12,019	6,523	5,496	5,496
	Activities on land	8,687	156	69,877	51,869	18,009	18,009
	Total	9,788	170	81,897	58,392	23,505	23,505
2017	Activities at sea	932	13	9,899	5,836	4,081	4,898
	Activities on land	9,098	161	74,011	54,660	19,332	18,964
	Total	10,030	174	83,910	60,496	23,413	23,862

The Dutch North Sea economy can be further split into its constituent parts in order to reveal the contributions of the different activities on land and at sea, see figure 4.1. Seaports not only account for the majority of activities on land, but also for the majority of the Dutch North Sea economy (73.6%). Activities in the coastal area account for only 8.9% of the Dutch North Sea economy. This figure very much depends on the delineation of the coastal area. As mentioned before, a 1 km wide strip is used. Furthermore, some large cities were excluded. If for example the coastal NUTS-3 regions were used to delineate the coastal area, the size of the economy of the coastal zone would increase significantly. This is also demonstrated in Appendix 11. Activities at sea (DCS) account for 17.5% of the North Sea economy and consists of 5 different activities, see the right-hand circle of Figure 4.1. Oil and gas extraction and sea shipping contribute the most to the GVA of the activities at sea; 8.8 and 7.2% respectively. In 2010 the oil and gas extraction had an even greater share (20%). In Chapter 6 the development of the oil and gas extraction over time will be discussed.

The North Sea economy can also be analysed as a whole in terms of employment. The Dutch North Sea economy contributed for 2.4% to the total Dutch employment in 2017, see table 4.1. Figure 4.2 shows that this employment is dominated by the seaports: more than two thirds of the North Sea employment. The coastal areas follow with almost a quarter of the Dutch North Sea employment. Within the activities on the DCS, sea shipping provides the most employment. Oil and gas extraction provides relatively little employment compared to their GVA.

A comparison between figures 4.1 and 4.2 shows that sectors with higher contributions to the GVA of the Dutch North Sea economy are not necessarily the sectors that contribute the most in terms of employment.

Figure 4.1 Share in total GVA of different activities on or related to the DCS (2017)

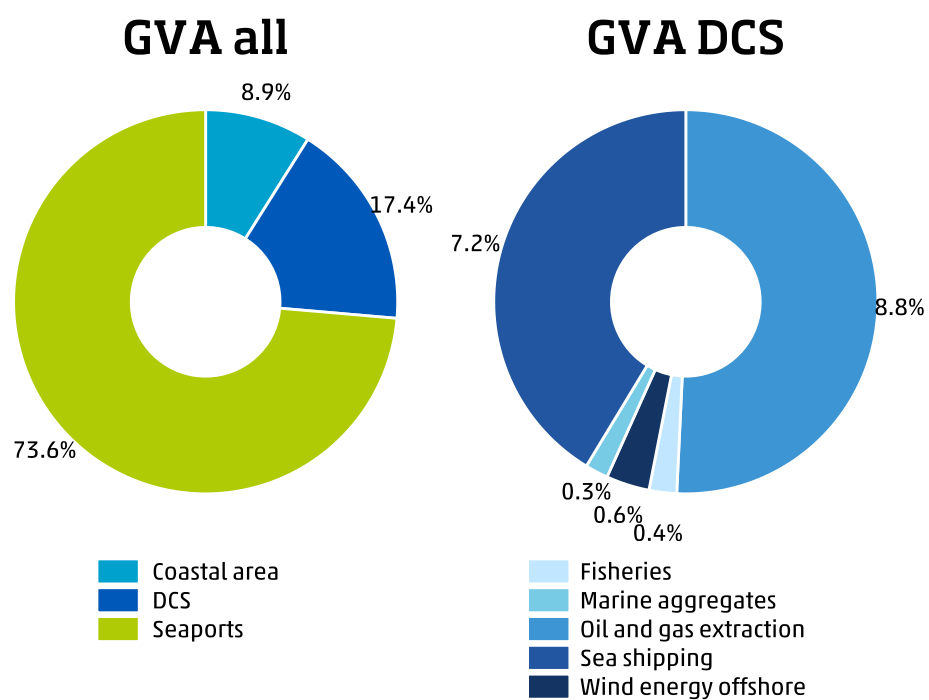


Figure 4.2 Share in total employment of different activities on or related to the DCS (2017)

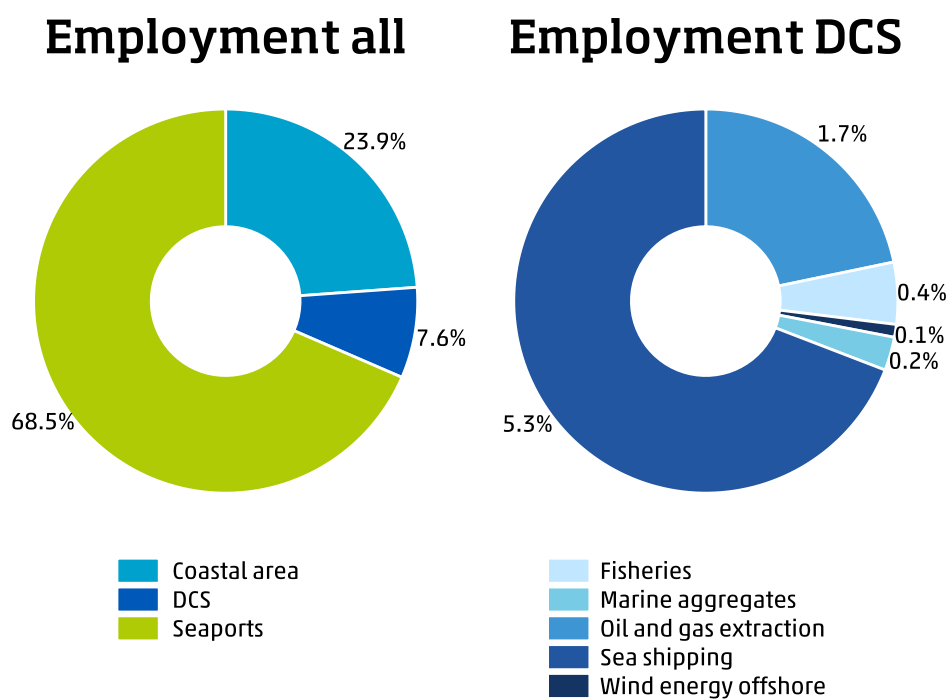
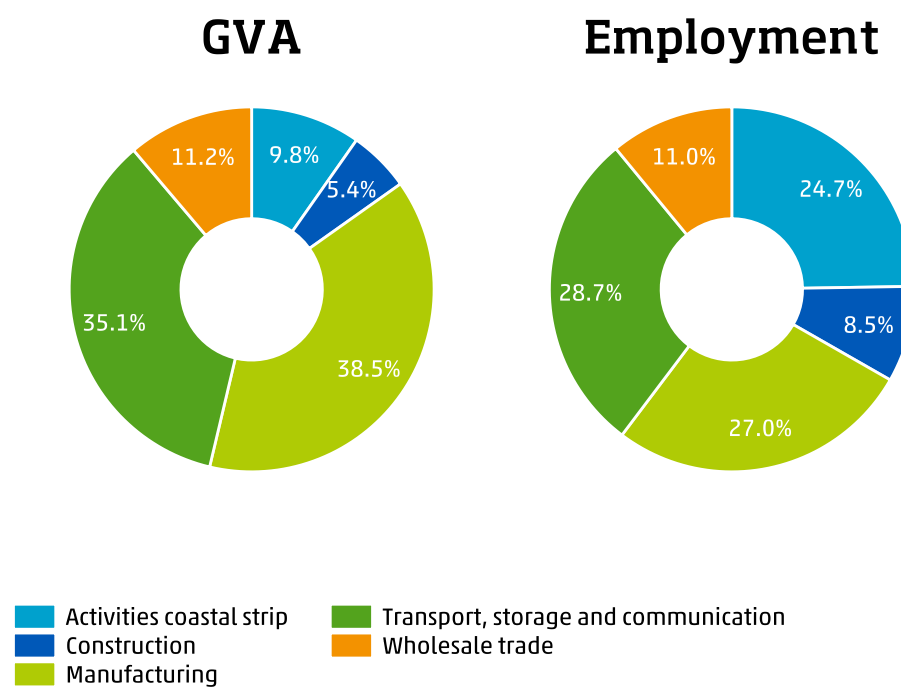


Figure 4.3 compares the contributions of the sectors to GVA and employment in the coastal area and in seaports. Hotels and restaurants and retail trade provide relatively more jobs than GVA. This is due to the labour intensive nature of these sectors. At the opposite end of the spectrum is the “transport, storage and communications” sector, which provides relatively few jobs proportional to its GVA.

Figure 4.3 Share in total employment and GVA of relevant sectors on land (2017)



5 Activities on land

This chapter will show the results of the activities on land. In the first section the key results of the coastal area as well as the port of Rotterdam and the other seaports will be shown. In the second section, the coastal area will be discussed in more detail. The third section shows results for the activities in the seaports. The final section summarises the most important results and draws some conclusions.

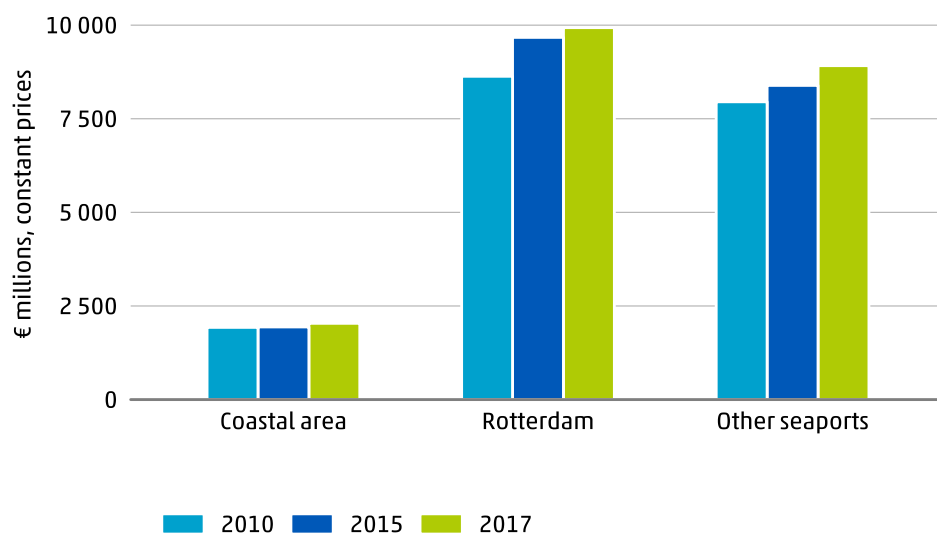
5.1 Key results of activities on land

This section presents the key results regarding the activities on land of the Dutch North Sea economy. The first thing to note is the economic dominance of the port of Rotterdam. The contribution of the economic value of the economic sectors in the port of Rotterdam is larger than of all other seaports combined (Figure 5.1). In 2017 the GVA in Rotterdam is 11.4% higher than in the other seaports. Also in earlier years the GVA in Rotterdam was much larger than in the other seaports. In 2010 the difference was 8.6% and in 2015 the difference increased to 15.3%.

The GVA of all activities on land shows an overall increase of 12.8% in the period 2010-2017. This is primarily due to the growth in the port of Rotterdam in the period 2010-2015 (12%). The growth of GVA is related to the turnaround after the financial crisis.

In Rotterdam, the growth in the later years (2015-2017) was less pronounced than in the other seaports. In particular, the port of Amsterdam showed a substantially greater increase in the sector “transport, storage and communication” than in the port of Rotterdam. This is predominantly due to substantial growth in the port of Amsterdam in the sub-sector “Warehousing and support activities for transportation”.

Figure 5.1 GVA over time for the activities on land



The previous report (2017) showed that the economic growth in the coastal area was stagnant. This is reflected in the marginal growth between 2010 and 2015 (0.6%) which we

see in the present study. However, in the years 2015-2017 GVA shows an increase of 4%. This increase is primarily due to the growth in the sector “hotels and restaurants”, as will be discussed in the next section. A similar trend can be seen for the retail sector. The GVA of retail in the coastal area shrunk by 1.8% in between 2010 and 2015, but increased again with 4.7% in the period 2015 to 2017.

Table 5.1 shows in more detail the results of the coastal area, the seaport of Rotterdam and the other seaports. As was mentioned before, the coastal area is based on the following sectors: fisheries, hotels and restaurants, retail trade and recreational, cultural and sporting activities. The seaports have a different focus: manufacturing, transport storage and communication, and wholesale and construction. The coastal area shows a distinct increase in the number of employed persons between 2010 and 2017 (12.8%), while the increase in Rotterdam is much smaller (3.3%). The other seaports even show a decline in number of employed persons (-1.9%).

Table 5.1 Indicators for activities on land *

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Area	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	Coastal area	940	37	3,210	1,515	1,695	1,928
	Rotterdam	3,629	55	42,957	35,484	7,474	8,635
	Seaports, excl. R'dam	3,879	73	28,180	20,657	7,522	7,953
	Total	8,448	165	74,346	57,656	16,691	18,517
2015	Coastal area	1,023	39	3,660	1,720	1,940	1,940
	Rotterdam	4,047	57	46,799	37,126	9,674	9,674
	Seaports, excl. R'dam	4,178	70	26,172	17,781	8,391	8,391
	Total	9,248	166	76,632	56,627	20,005	20,005
2017	Coastal area	1,128	42	4,080	1,892	2,188	2,037
	Rotterdam	4,150	57	46,692	36,542	10,150	9,933
	Seaports, excl. R'dam	4,382	71	29,430	20,654	8,776	8,918
	Total	9,660	171	80,202	59,088	21,114	20,889

* The selected sectors differ between the coastal area and the seaports. The coastal area includes the sectors: fisheries, hotels and restaurants, retail trade and recreational, cultural and sporting activities. In seaports includes the sectors: manufacturing, transport storage and communication, and wholesale and construction.

As is shown in table 5.1, compensation increases in all three regions. The greatest increase is found in the coastal area (20%). The rough indication of the best paid jobs (compensation / employed persons) ¹³⁾ shows Rotterdam has on average the best paid jobs.

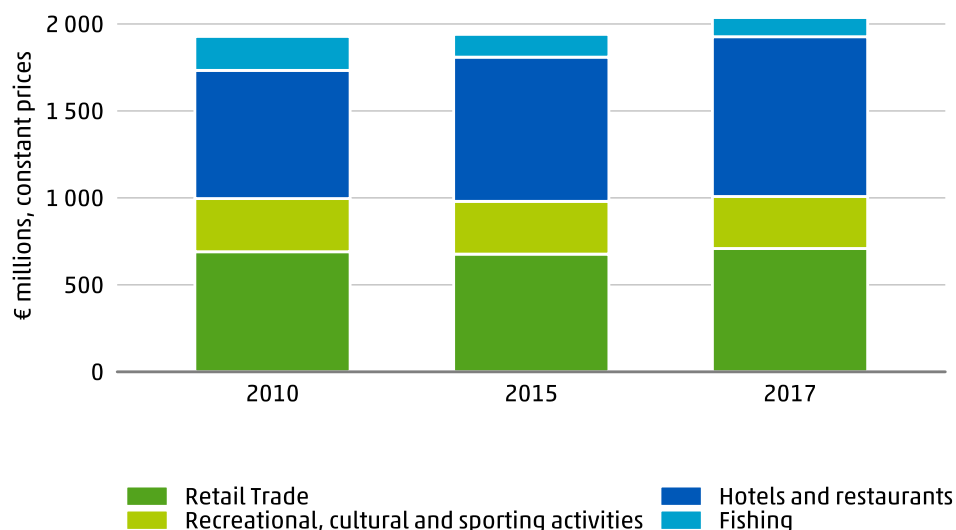
5.2 North Sea coastal area

This section describes in more detail the activities in the North Sea coastal area. Table 5.2 provides all the figures on the coastal area. Figure 5.2 shows the developments of GVA over time per sector. While “hotels and restaurants” show a growth in GVA of almost 25%, “fishing” shows a significant decline (-44%). This corresponds to the general growth of tourism in the

¹³⁾ Compensation refers to employees, and thus excludes the self-employed, while the number of employed persons includes the self-employed. Therefore compensation divided by employed persons is an underestimate of the compensation per employee, but it suffices as a rough estimate for the purpose of comparison between regions.

coastal area ¹⁴⁾ and the decline of the fishing sector ¹⁵⁾. Nevertheless, since “hotels and restaurants” have the greatest share in the coastal area and “fishing” has only a small share, the GVA of this area has grown. Other sectors show little change: the sector “recreation, culture and sport” shows a small decrease in GVA and “retail trade” shows a small increase.

Figure 5.2 GVA in the coastal area for the relevant sectors



The other indicators besides GVA are presented in table 5.2. One aspect that stands out in this table is the number of people employed. Only the sector “hotels and restaurants” shows an increase in employed persons (almost 24%), in the other sectors the number of employed persons did not change.

By calculating the compensation per employed person, a rough indication can be obtained of the sector which provides on average the highest paid jobs. This calculation shows that “fishing” as well as “recreation, cultural and sporting activities” provide the relatively higher paid jobs in the coastal area.

¹⁴⁾ <https://opendata.cbs.nl/statline/#/CBS/nl/dataset/82061NED/table?ts=1581324459366>

¹⁵⁾ <https://www.agrimatie.nl/ThemaResultaat.aspx?subpubID=2232&themaID=2280&indicatorID=2919§orID=2860>

Table 5.2 Indicators of the relevant sectors in the North Sea coastal area

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Area	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	Fishing	31	1	254	114	139	195
	Hotels and restaurants	371	17	1,365	732	632	737
	Recreation, culture and sport	146	5	517	252	265	306
	Retail Trade	392	15	1,074	416	658	690
	Total	940	37	3,210	1,515	1,695	1,928
2015	Fishing	34	1	225	94	131	131
	Hotels and restaurants	441	19	1,703	873	829	829
	Recreation, culture and sport	156	5	624	320	303	303
	Retail Trade	392	14	1,109	432	677	677
	Total	1,023	39	3,660	1,720	1,940	1,940
2017	Fishing	32	1	217	80	136	110
	Hotels and restaurants	518	21	2,031	1,033	999	919
	Recreation, culture and sport	160	5	626	322	304	299
	Retail Trade	418	15	1,206	457	749	709
	Total	1,128	42	4,080	1,892	2,188	2,037

Next, we examine the contribution of the North Sea economy to the economy of the NUTS-3 regions which are coastal. To do so, we take a stepwise approach. The North Sea economy is determined by selecting given sectors in a specific area. It is therefore helpful to get an impression of the effect of selecting the specific sectors before analysing both the effects of selecting a specific sectors and a specific area. In doing so, it is found that the selected sectors account approximately 13% of real terms GVA in 2017 and approximately 20% of the employed persons in the coastal area. In other words, approximately 87% of the economic activities in the coastal area is not part of the Dutch North Sea economy and approximately 80% of the FTEs in the coastal area are not associated with the Dutch North Sea Economy.

Given this understanding of the significance of the selected sectors in the coastal area, the significance of the selected sectors within the coastal area can be analysed in terms of the sum of the economies of NUTS-3 regions along the coast. This provides insight into the effect of proximity to the North Sea for economy of the larger coastal region. To do so, the indicators per NUTS-3 are presented in Appendix 11. Of the 52 NUTS-3 regions in the Netherlands, 13 are coastal. All sectors are included in the NUTS-3 totals. Table 5.3 therefore compares the economy of the relevant sectors in the coastal area to the whole economy of all the NUTS-3 regions along the Dutch coastline.

Table 5.3 The contribution of the relevant sectors in the coastal area to the economy of the NUTS-3 coastal regions

Year	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
	%					
2010	1.08	1.91	0.92	0.83	1.02	1.12
2015	1.13	2.02	0.99	0.87	1.13	1.13
2017	1.18	2.13	1.07	0.93	1.23	1.16

Table 5.3 shows that the coastal economy (consisting of the relevant sectors in the 1 km wide strip) account for only a small percentage of the economy of NUTS-3 regions along the coast.

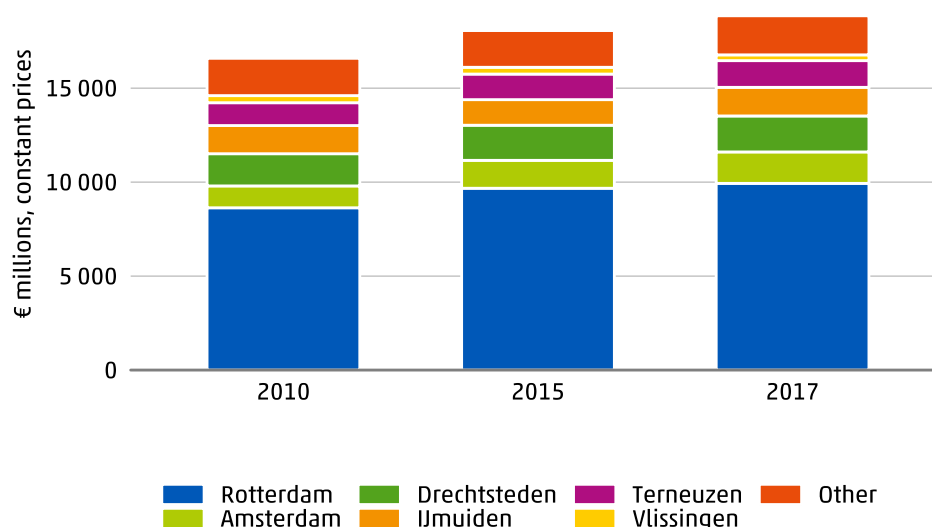
This is partly due to the selection of sectors and partly due to the selection of businesses within the 1 km wide strip. The results show that the definition of the coastal area is strict: it excludes the vast majority of economic activities. Earlier it was already demonstrated that the selected sectors account for 13% of real terms GVA in 2017 of all sectors in the coastal zone. Table 5.3 demonstrates that the coastal zone accounts for 1,2% of the NUTS-3 coastal regions. It can be said that approximately 9% of all economic activities in a NUTS-3 region takes place in the coastal area and approximately 13% of the economic activities in the coastal zone is part of the North Sea Economy. This excludes activities in seaports.

5.3 Seaports

Chapter 5.1 already showed that the seaports contribute the most to the Dutch North Sea economy and Rotterdam has the greatest impact overall. This section will provide a more detailed analyse of all the seaports. First the results of GVA of the separate seaports and sectors over time are shown. Next, we will discuss the results of each distinct seaport in more detail.

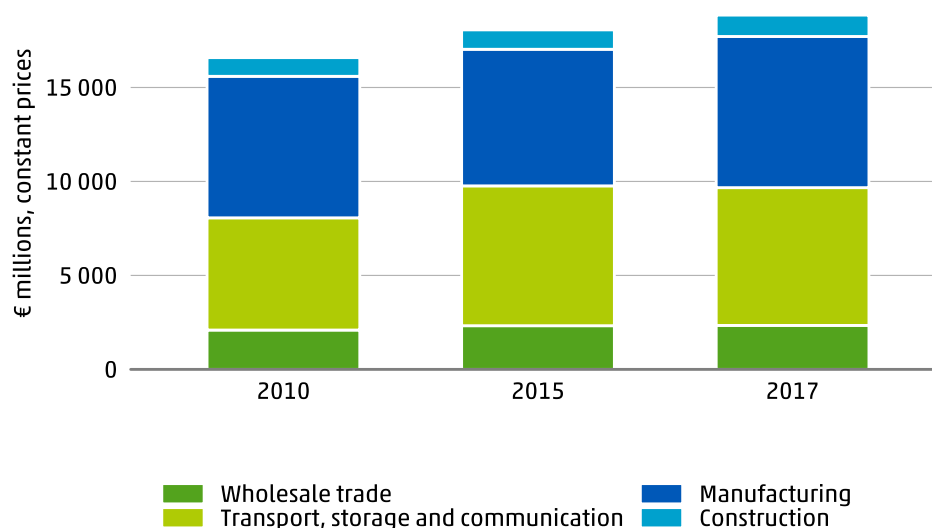
Figure 5.3 displays GVA over time per seaport and figure 5.4 displays GVA over time per sector. As figure 5.3 clearly shows, the seaports contribute to various degrees to the total GVA of seaports, with the port of Rotterdam as the largest contributor (52.7% in 2017).

Figure 5.3 GVA per seaport



As is shown in Figure 5.4, the total GVA increased between 2010 and 2017. The GVA growth in the total of seaports can primarily be attributed to an increase in the largest sector: “transport, storage and communication” sector (22.8%). Between 2010 and 2015 this sector show a large increase, afterwards the sector stabilised. The “manufacturing” sector is the largest sector in the seaports. Overall this sector has grown between 2010 and 2017 because the growth between 2015 and 2017 of 11% has been sufficient to more than offset the decline between 2010 and 2015. The other sectors have also experienced growth between 2015 and 2017.

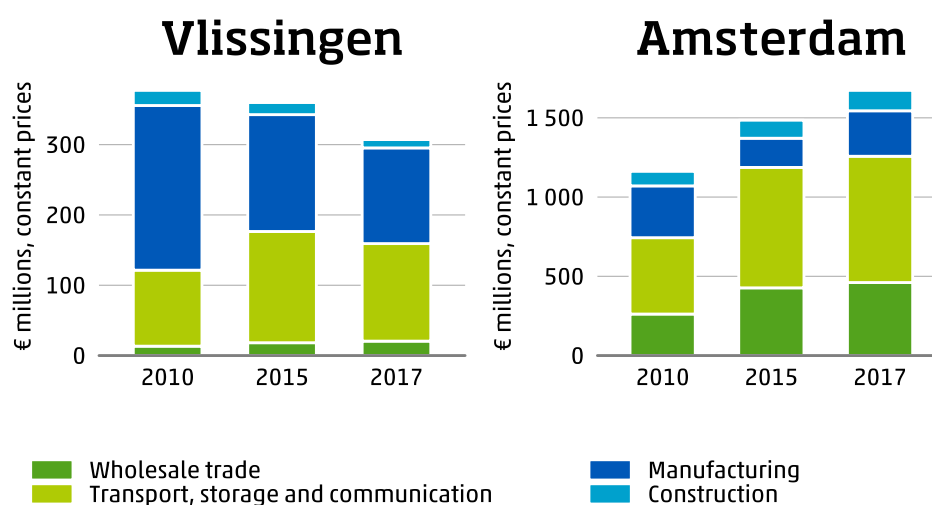
Figure 5.4 GVA per sector in seaports



We will now show the results in detail per seaport. First we will compare two ports in Figure 5.5. This figure depicts the development of GVA over time for both the port of Amsterdam and Vlissingen. Their development over time is dissimilar. While Amsterdam shows an increase of 44%, in Vlissingen the total value added decreases with 19%. In 2010 “manufacturing” in Vlissingen was the sector with the greatest share (62%), while in Amsterdam “transport, storage and communication” was the largest sector (41%). The “manufacturing” sector in Vlissingen showed a major decline (-42%) between 2010 and 2017. The sector “transport, storage and communication” grew by 28% such that this sector became marginally larger the “manufacturing” sector.

In Amsterdam, the increase of GVA is primarily due to the increase (65%) of the largest sector: Transport, storage and communication. This sector has a share of 48%. Although the smaller sector “wholesale trade” shows an even greater relative increase (76%), it has less impact. Just like Vlissingen, the port of Amsterdam also showed a decline of the sector “manufacturing”. However, this decline has little effect on the port as a whole because this sector is relatively small in the port of Amsterdam.

Figure 5.5 GVA in the seaports of Amsterdam and Vlissingen



The text box below provides a short explanation about the differences between the results in this chapter and the CBS rapport “Port Monitor” (Haven monitor). After this textbox the results of each of the seaports will be shown in more detail in the following subparagraphs.

Differences to the Port Monitor (Haven monitor)

Since 2004 the Port Monitor (Haven monitor) is published annually. The Port Monitor includes economic figures on seaports. The objective of the Port Monitor overlaps partially with the objective of our current study on seaports in the Netherlands. Both studies present figures on employment and value added in the seaports, but results differ substantially. In this textbox a brief explanation of the differences between the Port Monitor (RebelGroup Advisory et al., 2009) and the figures presented for seaports in the current study is provided.

The estimate of total (direct) value added for all seaports in this study is smaller than the value added estimated in the Port Monitor. The largest part of the difference is explained by different geographical boundaries. In this study seaports are limited to industrial areas surrounding these ports only. In many cases maps provided by port authorities have been used in determining the boundaries. The Port Monitor in multiple cases, e.g. Rotterdam and Amsterdam, includes complete municipalities in setting their boundaries. The geographical boundaries set in the Port Monitor are therefore much broader than the boundaries set in the current study. In addition, Scheveningen is included as a seaport in the Ports Monitor, whereas in the current study the economic activities in Scheveningen are included in the coastal area. Another difference is the sectors selected. First, fisheries are included in the figures of the Port Monitor, whereas in the current study this sector is not labelled relevant in the seaports (as it is already covered by activities at sea). Second, the figures of the current study include more construction sector classes than the Port Monitor. Third, waste processing activities in seaports are included in the Port Monitor but not in the current study. A final difference is calculation of direct transport activities. In the current study direct transport activities are estimated like all other sectors based on location, whereas the Port Monitor makes use of data on transport performances.

5.3.1 Port of Rotterdam

The port of Rotterdam is Europe's largest port for (trans)shipment of goods. Not only is Rotterdam the largest port (in terms of GVA) in the Netherlands, it also has the highest labour productivity of all Dutch ports. The detailed results of the activities in the port of Rotterdam are shown in table 5.4. Production per employed person in 2017 was €817,000. For the total of all seaports except Rotterdam, the figure is about €415,000. When we look at the same sectors (construction, manufacturing, transport, storage and communication and wholesale trade) in the Dutch economy as a whole we find a production per employed person of €307,000. Seaports are thus in general terms very productive per unit of labour with Rotterdam as being the most productive of the seaports. Increased automation¹⁶⁾ may be a factor which contributes to the high labour productivity of Rotterdam.

Rotterdam has a dominant position and a high labour productivity. The "transport, storage and communication sector" is the most important in terms of employment. This sector has a more important role in Rotterdam than in the other ports. Moreover, in 2017 this sector is responsible for more than half of the GVA in the port of Rotterdam.

Table 5.4 Key indicators for selected sectors in the port of Rotterdam

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Area	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	Construction	265	6	1,180	762	418	381
	Manufacturing	1,237	16	31,457	28,903	2,554	3,324
	Transport, storage, commun.	1,831	28	9,270	5,349	3,921	4,342
	Wholesale trade	296	5	1,050	470	580	589
	Total	3,629	55	42,957	35,484	7,474	8,635
2015	Construction	222	5	1,089	745	343	343
	Manufacturing	1,327	16	32,439	28,980	3,459	3,459
	Transport, storage, commun.	2,206	32	12,116	6,867	5,249	5,249
	Wholesale trade	292	5	1,156	533	623	623
	Total	4,047	57	46,799	37,126	9,674	9,674
2017	Construction	229	5	1,239	860	379	386
	Manufacturing	1,351	15	31,984	28,084	3,900	3,755
	Transport, storage, commun.	2,298	32	12,366	7,078	5,288	5,211
	Wholesale trade	272	4	1,102	519	583	581
	Total	4,150	57	46,692	36,542	10,150	9,933

The transport, storage and communication sector shows the largest increase in GVA (20%) during the period 2010-2017. The sector manufacturing has an increase of 13%. Notably, the employed persons in this latter sector decreased by 6%. The compensation per person was already the best for this sector in 2010, but this sector also showed the highest increase (16%) in the period 2010-2017.

The only sector that shows a decline in GVA is the sector construction. Since this sector only has a small share (less than 4% in 2017), this decline has only a small effect on the total GVA in Rotterdam.

¹⁶⁾ <https://www.portofrotterdam.com/en/cargo-industry/50-years-of-containers/the-robot-is-coming>

5.3.2 Port of Amsterdam

The port of Amsterdam is the second largest port in the Netherlands for the (trans)shipment of goods and is also highly diversified in terms of economic activities (see appendix 9). The map ¹⁷⁾ published on the internet by the Port Authority was used to define the area. The results in terms of value added were already shown in figure 5.5 (comparing with Vlissingen). More detailed results with other key indicators are shown in table 5.5.

Table 5.5 Key indicators for selected sectors in the Port of Amsterdam

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Area	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	Construction	61	2	298	197	101	92
	Manufacturing	122	2	3,172	2,790	383	327
	Transport, storage, commun.	231	4	982	539	443	482
	Wholesale trade	138	2	473	215	258	262
	Total	551	10	4,925	3,740	1,184	1,162
2015	Construction	68	2	382	268	114	114
	Manufacturing	94	2	677	493	184	184
	Transport, storage, commun.	327	5	1,880	1,120	760	760
	Wholesale trade	206	3	800	373	427	427
	Total	694	12	3,739	2,254	1,485	1,485
2017	Construction	70	2	430	306	124	129
	Manufacturing	137	2	1,093	805	288	287
	Transport, storage, commun.	354	6	2,071	1,277	795	797
	Wholesale trade	220	3	876	415	461	461
	Total	779	13	4,470	2,802	1,668	1,673

The economy of the port of Amsterdam has increased significantly between 2010 and 2017 (44%) and its composition has also altered. “Transport, storage and communication” and “wholesale trade” have grown substantially (65% and 75%). This growth was sufficient to compensate for the decline in manufacturing (-12%), which was severe between 2010 and 2015 (-43%). Between 2015 and 2017, the sector grew but did not yet reach 2010 levels. As a result, almost half of all GVA is generated by the “transport, storage and communication” sector, and “wholesale trade” is also a major player.

In general, the employment and compensation figures mirror the above developments. Interestingly however is that nominal compensation of employees in the “manufacturing” has increased slightly, despite the decline in nominal GVA.

¹⁷⁾ <https://www.portofamsterdam.com/nl/scheepvaart/havenkaart>

5.3.3 Port of IJmuiden

Close to the North Sea, along the canal that connects Amsterdam to the sea, there is a cluster of ports and industrial areas including the cities of IJmuiden, Beverwijk and Velsen-Noord. The definition of this area is based on the location of ports for the (trans)shipment of goods and the adjoining industrial areas. Production of steel is the biggest sector in this area (basic metal industry).

The key indicators for the port of IJmuiden are shown in table 5.6. The results show that the “manufacturing” sector is the most important in terms of all indicators in the port of IJmuiden, and accounts for 85% of the GVA. In the period 2010-2017, the value added in the port of IJmuiden shows a small increase (1.6%). This is mainly due to growth in manufacturing. This large sector compensates for the decline in the smaller sectors “transport, storage and communication” (-34%) and “wholesale trade” (-30%). Although the manufacturing had shown a decline between 2010 and 2015 (-7%), in the years 2015-2017 the growth was substantial (16%).

Table 5.6 Key indicators for selected sectors in the Port of IJmuiden

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Area	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	Construction	31	1	150	99	51	46
	Manufacturing	685	11	4,581	3,391	1,189	1,196
	Transport, storage, commun.	55	1	244	134	110	120
	Wholesale trade	66	1	240	105	135	137
	Total	837	14	5,214	3,729	1,485	1,499
2015	Construction	28	1	158	109	50	50
	Manufacturing	732	10	3,981	2,868	1,113	1,113
	Transport, storage, commun.	40	1	230	131	98	98
	Wholesale trade	47	1	190	89	101	101
	Total	848	12	4,559	3,197	1,362	1,362
2017	Construction	29	1	176	121	55	57
	Manufacturing	785	10	4,998	3,771	1,227	1,292
	Transport, storage, commun.	35	1	190	109	81	79
	Wholesale trade	46	1	185	89	96	96
	Total	894	12	5,548	4,090	1,459	1,523

5.3.4 Port of Drechtsteden

This port consists of eight spatially distinct ports in the vicinity of the city of Dordrecht. The area is identified using “Case study Inland ports of Drechtsteden” (TNO, 2004) and Google Maps. The small ports are surrounded by land which is used for diverse economic activities. The results for the economic key figures for the relevant selected sectors are presented in table 5.7.

In Drechtsteden the GVA increased by 12% between 2010 and 2017. This is primarily due to growth in “wholesale trade” (24%) which is the largest sector in this seaport. Although the sector “construction” has a smaller share than “manufacturing”, the share of “construction” is higher than in other seaports. The only sector in the port Drechtsteden that shows a decline in GVA in constant prices is “transport, storage and communication” (-15%), mainly due to the decline of -16% between 2015-2017.

Table 5.7 Key indicators for selected sectors in the port of Drechtsteden

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Area	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	Construction	184	4	852	564	288	261
	Manufacturing	296	6	1,727	1,176	551	559
	Transport, storage, commun.	110	2	511	307	204	231
	Wholesale trade	315	6	1,172	516	655	664
	Total	906	18	4,261	2,563	1,698	1,714
2015	Construction	183	3	911	635	276	276
	Manufacturing	321	6	1,993	1,450	543	543
	Transport, storage, commun.	123	2	553	319	234	234
	Wholesale trade	370	6	1,497	682	815	815
	Total	997	18	4,954	3,086	1,868	1,868
2017	Construction	181	3	998	701	296	299
	Manufacturing	342	6	2,208	1,613	595	594
	Transport, storage, commun.	114	2	488	283	205	197
	Wholesale trade	372	6	1,542	714	828	824
	Total	1,010	18	5,236	3,312	1,924	1,914

5.3.5 Port of Vlissingen

In spatially delineating the port of Vlissingen, information of the “Port Authority, Zeeland Seaports” has been used. Zeeland Seaports¹⁸⁾ is the port authority for two ports: Vlissingen and Terneuzen. The port of Terneuzen will be discussed in the next section and the results presented in table 5.9. The results of Vlissingen are shown in table 5.8.

Figure 5.5 already showed the economy of the port of Vlissingen, in comparison with the port of Amsterdam. As was shown, the GVA in Vlissingen dropped by 19%. In Vlissingen “transport, storage and communication” has the greatest share, followed by “manufacturing”. The drop in GVA in the sector “manufacturing” (-42%) was mainly responsible for the overall drop in GVA in this seaport. Although the “transport, storage and communication” grew by 29%, this was not sufficient to offset the decline in manufacturing.

Table 5.8 Key indicators for selected sectors in the port of Vlissingen

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Area	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	Construction	15	0	69	46	24	22
	Manufacturing	119	2	2,769	2,590	179	234
	Transport, storage, commun.	45	1	200	102	99	108
	Wholesale trade	7	0	24	11	13	13
	Total	186	3	3,062	2,748	314	377
2015	Construction	10	0	55	38	17	17
	Manufacturing	76	1	2,106	1,939	166	166
	Transport, storage, commun.	65	1	308	150	158	158
	Wholesale trade	9	0	35	16	18	18
	Total	160	3	2,503	2,143	360	360
2017	Construction	6	0	38	26	11	12
	Manufacturing	62	1	1,889	1,743	146	136
	Transport, storage, commun.	61	1	283	140	143	139
	Wholesale trade	10	0	40	19	21	21
	Total	138	2	2,249	1,928	321	307

¹⁸⁾ <http://www.zeelandseaports.nl/en/en/download/file:havenkaart-2014-001.htm>

5.3.6 Port of Terneuzen

Terneuzen is located near to Vlissingen; both ports are managed by Zeeland Seaports. The port area of Terneuzen is spread along the Ghent-Terneuzen Canal and the Western Scheldt. The port of Terneuzen is economically important principally due to the presence of large chemical businesses.

Just like IJmuiden, the manufacturing sector in Terneuzen has the greatest share of GVA (70%). In the period 2010-2017, the performance of the smaller sectors was varied, but predominantly due to a 13% growth in manufacturing, the seaport as a whole grew by 17%.

Table 5.9 Key indicators for selected sectors in the port of Terneuzen

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Area	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	Construction	64	1	288	185	102	93
	Manufacturing	365	6	3,438	2,688	750	884
	Transport, storage, commun.	69	1	380	237	142	160
	Wholesale trade	41	1	141	65	76	78
	Total	539	10	4,246	3,175	1,070	1,215
2015	Construction	74	2	368	247	121	121
	Manufacturing	408	5	3,002	2,069	933	933
	Transport, storage, commun.	99	2	584	336	248	248
	Wholesale trade	30	1	116	57	59	59
	Total	611	10	4,070	2,710	1,361	1,361
2017	Construction	74	2	398	269	129	132
	Manufacturing	459	6	3,341	2,441	900	1,001
	Transport, storage, commun.	97	2	505	271	234	228
	Wholesale trade	30	1	122	61	61	60
	Total	660	10	4,366	3,042	1,324	1,422

5.3.7 Other smaller seaports

The other seaports are five smaller ports: Moerdijk, Den Helder (main port for the Royal Navy of the Netherlands ¹⁹⁾), Harlingen, Eemshaven and Delfzijl. The port of Moerdijk is located in the south of the Netherlands (close to the port of Drehtsteden). The other four smaller ports are located in the north of The Netherlands. The port of Moerdijk has the largest production of the “other seaports”, followed by Delfzijl. Moerdijk is known for the presence of businesses in the “manufacture of basic chemicals and man-made fibres” sector. The port of Eemshaven has the smallest production figure of the selection of other ports.

The five ports together show a small increase of value added (5%). This is primarily due to the increase in the sector “transport, storage and communication” (29%). The sector construction is relatively small but it shows an increase in GVA (21%). The “manufacturing” sector has the greatest share in these five ports (47%). This sector shows a small decline (-3%) in the period 2010-2017 as the drop in the years 2010-2015 was not yet compensated by the growth in the years 2015-2017.

Table 5.10 Key indicators for selected sectors in other sea ports

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Area	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	Construction	68	2	321	211	110	100
	Manufacturing	392	7	4,148	3,301	847	1,007
	Transport, storage, commun.	224	5	1,375	907	469	528
	Wholesale trade	176	4	627	282	345	350
	Total	861	17	6,471	4,701	1,771	1,986
2015	Construction	67	2	349	238	110	110
	Manufacturing	392	6	3,572	2,702	870	870
	Transport, storage, commun.	274	5	1,894	1,200	694	694
	Wholesale trade	136	3	533	252	281	281
	Total	869	15	6,347	4,392	1,955	1,955
2017	Construction	67	2	384	265	118	121
	Manufacturing	403	6	4,759	3,768	991	981
	Transport, storage, commun.	287	5	1,846	1,174	672	681
	Wholesale trade	143	3	573	275	298	296
	Total	900	16	7,561	5,481	2,080	2,079

5.4 Conclusion

The port of Rotterdam dominates the results for seaports: the GVA of the port of Rotterdam is larger than that of all other Dutch Seaports together. Rotterdam is also almost twice the economic size of the other Dutch seaports. In the port of Rotterdam the growth of the GVA in the period 2010-2015 is greater than in the period 2015-2017. In the other seaports the growth of the GVA is more equal for both periods, despite the fact that the first period is twice as long as the second period.

¹⁹⁾ The number of employees working in the Royal Navy in Den Helder cannot be published because of confidentiality. All employees working in the sector “defence are registered centrally in The Hague in the company register of Statistics Netherlands.

Generally, the largest sector in the seaports is “transport, storage and communication”. This sector contributes to almost half of the GVA in the seaports. The growth of the seaports GVA in the period 2010-2017 concentrates in this sector. The sector “manufacturing” also has a large share: almost 37%. However, this sector shows the slowest growth (less than 8%). Despite this overall picture, there are big differences in the distribution of the different sectors between the individual seaports.

The GVA of the coastal area (which consists of different sectors than the seaports) is far less than the GVA of the seaports. The coastal area showed a marginal growth (0.6%) of the GVA in constant prices in the period 2010-2015, while in the period 2015-2017 the growth became more substantial (5%). The sector with the greatest share is “hotels and restaurants” (45%), followed by “retail trade” (35%). Moreover, the “hotels and restaurants” showed a growth of almost 25%. The fishing sector has the smallest share and showed a decline of 44% in the period 2010-2017. The selected sectors in the coastal area represent 1.2% of the whole economy of the NUTS-3 regions along the coast.

6 Activities at sea

This chapter describes the economic activities taking place on the DCS by Dutch resident companies. It includes the extraction of oil and gas, fisheries, sea shipping, marine aggregates and the production of offshore wind energy. The next section presents an overview of all activities at sea together (i.e. key results), followed by a more detailed description of the different activities.

6.1 Key results

Activities at sea account for 21% of the real terms GVA of the North Sea economy and 0.75% of the total economy in 2017. An analysis of the composition of activities at sea and the trend of time follows.

Figure 6.1 GVA of activities at sea

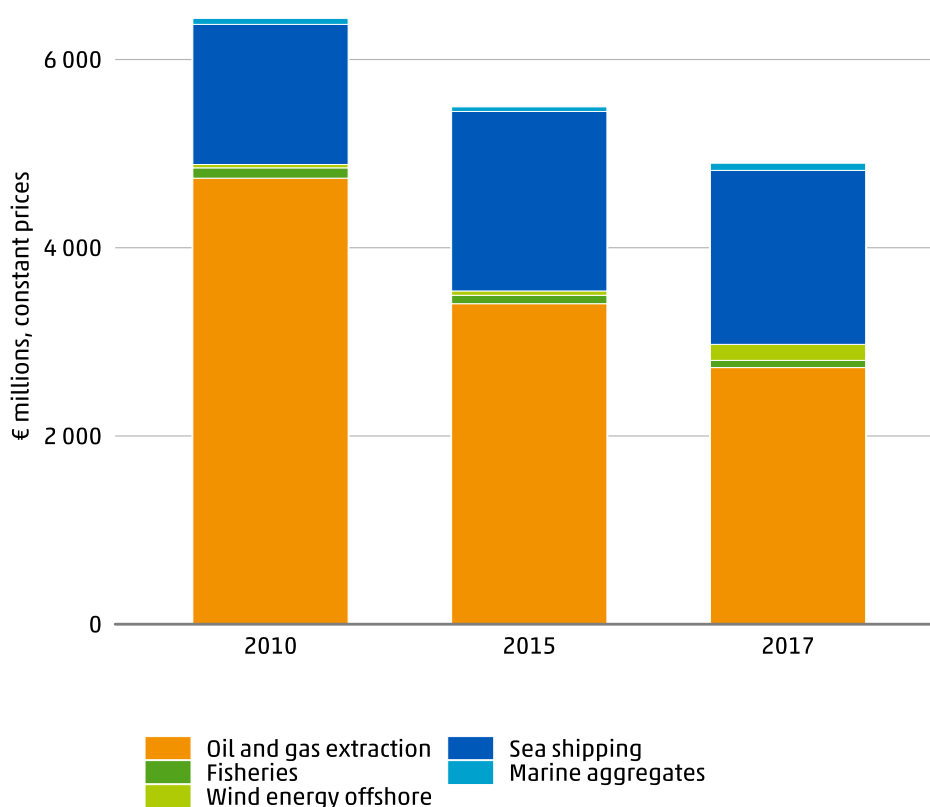


Figure 6.1 shows that the size of the North Sea economy in terms of the activities at sea has shrunk in real terms between 2010 and 2017. In 2017, GVA was €4.9 billion, which is a 24% reduction compared to the €6.4 billion in 2010. The above figure shows that this reduction is mainly caused by reductions in GVA in the Oil and Gas Extraction sector (which includes exploration activities). This is due to a drop in production over this same period, despite a decrease in prices for oil and gas. In nominal terms (not corrected for changes in price levels), the DCS Oil and Gas sector shrunk less than in constant prices. Between 2010 and 2015, the GVA of the Sea shipping sector grew 28% in real terms, but shrunk by 3% in between 2015 and

2017 ²⁰⁾. The greatest growth of GVA in real terms is found in the offshore wind energy. The value added of this relatively small sector grew in real terms from €36 million in 2010 to €176 million in 2017. This is likely related to the Dutch policy to invest in offshore wind energy.

6.2 Oil and gas extraction

The Netherlands has significant reserves of natural gas as well as some smaller oil deposits. Since their discovery, these stocks have been exploited to meet the demand in the Dutch economy and to facilitate exports to foreign countries, thus contributing to the Dutch balance of payments over the past decades. Extraction of natural gas and oil contributes significantly to GDP and economic growth.

On the DCS, mainly natural gas is extracted, as well as some oil. The value of production, intermediate consumption and value added of these activities is published annually in the Dutch Regional Accounts. In these accounts, an “extra-territorial region” is defined, which comprises the territorial waters, the Dutch part of the continental shelf in the North Sea, and the so-called territorial enclaves situated abroad (Dutch embassies, consulates, military bases, etc.) ²¹⁾. For oil and gas extraction in the current study, only the DCS is relevant. Table 6.1 shows key economic figures for oil and gas extraction on the DCS.

Table 6.1 Indicators for the oil and gas extraction on the Dutch Continental Shelf

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	358	3	5,597	911	4,686	4,739
2015	519	4	5,013	1,608	3,405	3,405
2017	332	3	3,144	1,072	2,071	2,727

Compensation of employees and the number of employed persons increased substantially between 2010 and 2015, as does intermediate consumption. Production and GVA however exhibited a slight decrease. Possible reason for this may be large projects, such as the construction or decommissioning of oil platforms, and the discovery of new reserves in the Dutch North Sea in 2013. Activities related to the discovery and surveying of new reserves are included within these figures.

The developments in oil and gas extraction between 2015 and 2017 were reverse: there was a substantial drop in all economic indicators. This can be partially explained by a price drop in oil and natural gas that manifested itself in the autumn of 2015. The prices reached their minimum at the beginning of 2016. However, the value added of 2017 in prices of 2015 shows that there was also a decline in real terms. This can be explained by the declining production and reserves of North Sea Oil and Gas ²²⁾.

²⁰⁾ Sea shipping is included in the “transport, storage and communication” sector under sea ports. The performance of the sector as a whole is not necessarily correlated with the performance of the sector within individual sea ports

²¹⁾ The Dutch national accounts refer to the economic territory of the Kingdom of the Netherlands in Europe. The Dutch section of the continental shelf in the North Sea is also regarded as a part of that economic territory. The economies of the countries of the Kingdom of the Netherlands outside Europe (Curaçao, Sint Maarten and Aruba) are not described in the Dutch national accounts. The islands Bonaire, Sint Eustatius and Saba are indeed part of the Netherlands but are also not included in the national accounts.

²²⁾ <https://www.ebn.nl/wp-content/uploads/2016/12/Focus-Dutch-Oil-and-Gas-2016.pdf>

6.3 Fisheries

The results are presented in table 6.2. For the purposes of comparison, the table includes figures for the entire Dutch fishing sector. This shows that the Dutch fishing industry is much larger than just the fisheries that take place at the Dutch part of the continental shelf. Dutch vessels are also active outside of Dutch waters both within and outside of the North Sea area. Further, fisheries in other geographical areas, such as those exploited off the west coast of Africa, involve different fish species and different production technologies. Therefore, the Dutch DCS fishery is not representative of the Dutch fishing sector in its entirety.

Table 6.2 Indicators for fisheries

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Area	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	DCS	15	0.7	142	64	78	109
	Total Netherlands	57	2.6	531	238	293	410
2015	DCS	19	0.8	153	64	89	89
	Total Netherlands	63	2.5	500	209	291	291
2017	DCS	19	0.7	132	56	95	77
	Total Netherlands	71	2.6	498	211	358	289

For the DCS, the trend is influenced by the fact that 2010 and 2015 were good years for fishing on the DCS. In 2010 this was due to higher prices for sole and prawns. The price of sole has a significant impact on the GVA of the DCS fisheries because, along with plaice, sole constitutes the most important commercial species. The year 2015 was also a good year due to fluctuations in prawn prices. In general though, we see that the fishing industry is in decline in terms of GVA, although the number of employed persons and their compensation remains stable in nominal terms.

6.4 Sea shipping

The North Sea is important for marine traffic. Its shipping lanes are among the busiest in the world. Sea shipping includes the transport of both cargo and passengers. Though inland vessels may sometimes use the DCS, their share in the total DCS usage is not large and is hence not considered.

The vessels of the Dutch operators may be registered in (i.e. may fly the flag of) another territory. The ownership of the vessels operated by Dutch residents can therefore be with a foreign company. Ships operated by foreign sea shipping companies use the DCS for transport to and from Dutch seaports, as well as for sailing through. The value of these activities is not included in the economic figures, as foreign activities do not contribute to Dutch GDP.

Unlike in the case of, e.g. the oil and gas sector, the sea shipping sector is assigned the total national figure on sea shipping, i.e. without the need to split the total figure into its on- and offshore parts. This is because the DCS provides the international accessibility which facilitates the entire Dutch sea shipping sector.

Table 6.3 Indicators for sea shipping sector

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	485	9.1	5,035	3,754	1,281	1,489
2015	542	9.5	6,601	4,694	1,907	1,907
2017	543	9.2	6,059	4,372	1,687	1,848

In Table 6.3, a clear increase in all economic indicators is visible between 2010 and 2015. This corresponds with the development in international maritime trade as shown in the Review of Maritime Transport by UNCTAD ²³⁾.

Between 2015 and 2017, no substantial changes were observed, neither in the numbers of employed persons and their compensation, nor in the GVA in constant prices. However, the drop in nominal GVA between 2015 and 2017 was substantial. This indicates that the relatively smaller decreases in production and intermediate consumption may not have taken place, should one apply constant prices to these indicators.

6.5 Marine aggregates

Table 6.4 shows estimated economic figures on extraction of marine aggregates (sand and gravel) on the DCS. This shows a slight decline in production, value added and compensation of employees in 2015, as opposed to 2010. However, one has to allow for uncertainty margins around these figures, as they are in fact an approximation only (exact numbers from National Accounts on marine aggregates are not available). In 2017, however, a clear increase (of about 50%) in all above-mentioned indicators is visible, compared to 2015. This may be explained by the growing demand for sand for the purpose of protecting the coastline, because of the expected sea level rise in the future ²⁴⁾.

Table 6.4 Indicators for marine aggregates on the DCS

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	20.1	0.3	145.6	81.9	63.8	63.8
2015	17.0	0.3	135.9	87.5	48.5	48.5
2017	26.8	0.4	208.3	129.2	79.1	76.4

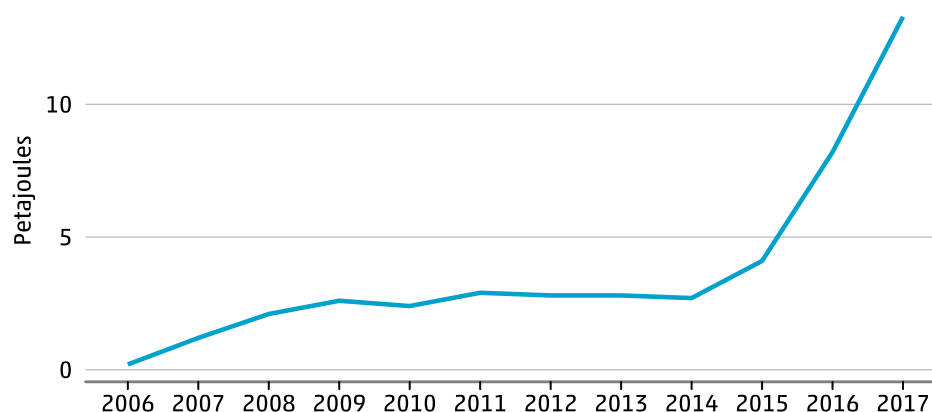
6.6 Offshore wind energy

The Netherlands has been using the DCS for the generation of wind energy since 2006. Since then, the DCS has become increasingly important for the total wind energy production. The share of offshore production in the total wind energy production was initially 2% (in 2006) and was relatively stable between 2010-2015 (about 15%). In 2016, it jumped to 28% and reached 35% in 2017.

²³⁾ https://unctad.org/en/PublicationsLibrary/rmt2019_en.pdf

²⁴⁾ <https://www.noordzeeloket.nl/en/functions-and-use/artikel-baseline/>

Figure 6.2 Production of wind energy on DCS in petajoules



The developments in the economic indicators in Table 6.5 are predominantly determined by the increase in the production of energy from offshore windfarms, as shown in Figure 6.2. All economic indicators have been growing (including the GVA in constant prices). The change between 2017 and 2015 is the most remarkable, with production and GVA more than tripling. The real change in the GVA in those years is even larger than in nominal terms, which is due to a decrease in both electricity prices and product-based SDE+ subsidies.

The number of employed persons only includes those who are directly involved with the operation and maintenance of the turbines. Both the small size of this activity and its capital intensive nature explain why this activity does not contribute much to employment. Energy production requires relatively high-skill labour, with wages being higher than on average in the whole economy. The growing number of people employed, with wages remaining relatively stable, explains the upward trend in the compensation of employees.

Table 6.5 Indicators for offshore wind energy

Employment figures x 1000 FTE, monetary values x €1,000,000

Year	Compensation	Employed persons	Production	Intermediate cons.	GVA	GVA 2015 prices
2010	3	0.04	90	55	35	36
2015	5	0.06	116	70	46	46
2017	12	0.14	356	207	149	170

7 Evaluation of methodology and recommendations

7.1 Activities on land and at sea

There is a number of strengths and weaknesses in the methodology used in this report. In this chapter, these strengths and weaknesses are discussed, with a particular focus on ways to address the weaknesses and strengthen the methodology.

The figures presented in this report are based on figures from the national accounts or the regional accounts. The national or regional figures are recalculated to specific geographical areas: the Dutch Continental Shelf, the selected seaports or the coastal area. An important strength of this study comes from using data from the national accounts. This means that the concepts and definitions used are consistent and based on international definitions. Other advantages are that the data sources are produced annually and that time series are available. Since data are published per sector, it is possible to analyse the economic structure of the areas of interest.

Part of the methodology used in the economic analysis for river basins (Brouwer et al., 2005) is adopted in this study to analyse the seaports and the coastal area. An advantage is that different types of areas are estimated in a similar way. A drawback of this methodology is that it allocates production to the location where employees are recorded in the 'company register' of Statistics Netherlands. When the 'administrative location' differs from the actual production site, the results may not be precise. Especially for seaports, where large companies with multiple locations are present, this is likely to result in an underestimation of the economic value generated in this region for these economic activities. This problem is partly solved by allocating total figures for the larger region (NUTS-3) to a seaport for some relevant sectors. This methodological problem is less substantial for the river basin analysis because these geographical areas are much larger.

For the estimates of economic activities on the DCS (activities at sea) the starting point for the analysis is always the data of the National accounts. As a second step, several different sources were used in order to allocate the activities (national data) to different geographical areas (source for allocation differs per activity). The figures for production of wind power on the DCS are based on readily available Statistics Netherlands statistics. For fisheries, external sources were used to allocate the national figures to the DCS. For the number of employees in the offshore oil and gas extraction data supplied by State Supervision of Mines were used. The figures on production, intermediate consumption and value added in this sector were taken from the Regional accounts of the Netherlands.

In general, it is difficult to capture all economic activities related to the Dutch North Sea economy in the statistics. For example, we have not been able to isolate the economic activities surrounding the construction of wind turbines at sea because National Accounts data does not extend to this level of detail. However, a separate study could be carried out in the future to determine if data at this level of detail could be derived. We have also not included the recently constructed power plant at the port of Eemshaven. This site is supplied by means of transport over water and the sea provides a direct access to cooling water. Methodological issues were the main reason for excluding this sector as a relevant sector so

far. If this activity becomes more prominent in the future in sea ports, it is recommended to examine the feasibility of an alternative methodology in order to compile statistics for these relevant activities.

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Port of Vlissingen: <https://en.northseaport.com/>

European Commission: http://ec.europa.eu/environment/water/marine/index_en.htm

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Appendices

Appendix 1: Reasons for deviations between pre- and post-revision results

There are several reasons for the differences between the pre- and post-revision results. Statistics Netherlands collects over time a large set of ways to improve the national accounts and then applies these improvements in one go. When this is done, the improvements are also applied to previous years' data in order to provide a consistent time series. These changes included:

-Changes to the source data. A central source of data for the national accounts are the production statistics, which are constructed from a sample of businesses. Business may be added or removed from the production statistics. A wide range of new or improved data sources have also been employed for the first time during the most recent revision.

-Changes to the categorisation of businesses. The sector classification of business may be improved. For example, a high-street store may close its shop but continue with its more profitable online store. The categorisation of the business should change to reflect this.

-The effects of globalisation. Increases in the understanding of how multinational businesses operate, for example in terms of where production takes place, have resulted in various changes to the national accounts, as reflected in recent changes to international guidance.

Appendix 2: Exposure hours for companies and contractors in crude petroleum and natural gas production and support activities

Exposure hours for companies and contractors in crude petroleum and natural gas production and support activities			
	2010	2015	2017
ONSHORE			
Exposure hours Company	2,289,623	4,191,242	2,758,232
Exposure hours Contractors	5,649,990	5,318,943	3,072,850
Total exposure hours	7,939,613	9,510,185	5,831,082
OFFSHORE			
Exposure hours Company	980,746	1,960,719	800,337
Exposure hours Contractors	5,731,817	6,146,107	4,178,101
Total exposure hours	6,712,563	8,106,826	4,978,438
Total general exposure hours	14,652,176	19,666,180	12,547,789

Appendix 3: Map of the coastal area



Appendix 4: Map of the selected seaports



Appendix 5: Selected scenarios

Selected scenarios		
Area of Interest	Selected scenario	Explanation
Coastal area	B	The one kilometre wide strip used to define the coastal area is a pragmatic decision based on topography and geography of economic activity in the Netherlands. As the partition of a postal code can be disputed, the more flexible scenario B is chosen.
Seaports		
Rotterdam	A	The area of interest has been increased by including more postal codes than only the port itself. Hence, the stricter scenario A is preferred, whereby a portion of the economic activity in the relevant postal area is included in the totals.
Amsterdam	A	Scenario A is preferred because of the intensive economic use of the area surrounding the port for diverse economic activities.
IJmuiden cluster	A	Because the most important sector 'basic metal' has already been fully included, the downsides of choosing scenario A are negated.
Drechtsteden	A	Since this port consists of a few small geographical areas within an urbanised region, scenario A is preferred. This scenario may result in a better estimate for postal codes which are included for a small part in the port.
Vlissingen	B	Option B is preferred because the port of Vlissingen is surrounded by agricultural land. This suggests that including all the activity in the relevant postcodes in the best way to represent economic activity in the relevant port sectors.
Terneuzen	B	Two of the three main port areas are predominantly surrounded by non-urban land. Therefore, like the port of Vlissingen scenario B is preferred.
Other seaports		
Eemshaven	B	For all five seaports discussed in this section scenario B is preferred over A. For small ports areas the share of the surface area of the port in the postal codes concerned is generally small. In scenario A this results in the allocation of a small share of the companies located in the postal code to the seaport.
Harlingen	B	
Moerdijk	B	
Delfzijl	B	
Den Helder	B	

Appendix 6: Production in selected ports according to the two scenarios

	Port of IJmuiden		Port of Drechtsteden	
	Production (x €1,000,000)		Production (x €1,000,000)	
	Scenario A	Scenario B	Scenario A	Scenario B
2010				
Manufacturing	4,581	4,975	1,727	3,653
Wholesale trade	240	443	1,172	1,962
Transport, storage and communication	244	429	511	942
Construction	150	407	852	1,995
Financial and business activities	344	862	588	1,588
Other sectors	1,125	1,984	315	1,570
Total	6,683	9,099	5,164	11,712
2015				
Manufacturing	3,981	4,353	1,993	4,437
Wholesale trade	190	460	1,497	2,492
Transport, storage and communication	230	495	553	1,114
Construction	158	422	911	2,449
Financial and business activities	427	1,076	716	1,928
Other sectors	1,058	2,095	365	1,600
Total	6,044	8,902	6,035	14,021
2017				
Manufacturing	4,998	5,388	2,208	4,739
Wholesale trade	185	442	1,542	2,582
Transport, storage and communication	190	430	488	1,023
Construction	176	470	998	2,705
Financial and business activities	436	1,036	738	2,042
Other sectors	619	1,435	397	1,663
Total	6,603	9,201	6,371	14,755

	Port of Vlissingen		Port of Terneuzen	
	Production (x €1,000,000)		Production (x €1,000,000)	
	Scenario A	Scenario B	Scenario A	Scenario B
2010				
Manufacturing	1,495	2,769	843	3,438
Wholesale trade	10	24	45	141
Transport, storage and communication	93	200	146	380
Construction	30	69	98	288
Financial and business activities	18	40	221	480
Other sectors	29	72	225	527
Total	1,675	3,174	1,578	5,253
2015				
Manufacturing	1,175	2,106	730	3,002
Wholesale trade	15	35	47	116
Transport, storage and communication	142	308	252	584
Construction	22	55	149	368
Financial and business activities	17	38	250	544
Other sectors	57	130	215	497
Total	1,429	2,671	1,643	5,111
2017				
Manufacturing	1,063	1,889	791	3,341
Wholesale trade	17	40	48	122
Transport, storage and communication	129	283	209	505
Construction	15	38	160	398
Financial and business activities	18	40	273	617
Other sectors	52	116	246	561
Total	1,294	2,405	1,728	5,543

Port of Moerdijk and northern seaports		
	Production (x €1,000,000)	
	Scenario A	Scenario B
2010		
Moerdijk	2,014	4,714
Delfzijl	579	2,319
Harlingen	263	1,274
Den Helder	370	885
Eemshaven	227	538
Total	3,453	9,729
2015		
Moerdijk	2,058	4,610
Delfzijl	578	2,446
Harlingen	444	1,635
Den Helder	421	1,003
Eemshaven	110	332
Total	3,610	10,025
2017		
Moerdijk	2,747	5,995
Delfzijl	675	2,610
Harlingen	371	1,395
Den Helder	384	884
Eemshaven	111	289
Total	4,288	11,173

Appendix 7: Production in the coastal area

Production in the coastal area

Industry - aggregated	Industry - detailed	Production (x €1,000,000)					
		Scenario A			Scenario B		
		2010	2015	2017	2010	2015	2017
A Agriculture, forestry and fishing							
	01 Agriculture	397.5	460.1	415.8	1,091.7	1,275.3	1,227.1
	02 Forestry and logging	1.3	1.0	0.7	2.8	3.1	2.8
	03 Fishing and aquaculture	231.6	221.6	220.1	253.8	224.8	216.8
B Mining and quarrying	B Mining and quarrying	215.5	151.3	41.6	83.2	21.4	46.8
C Manufacturing							
	10-12 Manufacture of food and beverages	310.9	379.2	413.8	765.7	824.3	768.7
	13-15 Man. of textile-, leatherproducts	12.9	12.2	13.3	20.4	16.4	18.6
	16 Manufacture of wood products	7.9	6.6	7.1	21.6	26.4	29.9
	17 Manufacture of paper	-	3.4	3.4	-	7.8	-
	18 Printing and reproduction	20.1	16.8	15.6	81.4	56.7	60.3
	19 Manufacture of coke and petroleum	-	-	-	-	-	-
	20 Manufacture of chemicals	62.8	40.6	53.1	43.3	46.5	51.5
	21 Manufacture of pharmaceuticals	196.3	249.4	260.5	-	333.7	347.2
	22 Manufacture rubber, plastic products	13.9	21.7	20.5	34.7	55.3	50.3
	23 Manufacture of building materials	12.6	16.3	15.7	31.5	39.5	40.4
	24 Manufacture of basic metals	1.1	0.6	0.5	9.1	7.9	-
	25 Manufacture of metal products	92.9	94.6	113.1	266.4	267.7	326.5
	26 Manufacture of electronic products	5.2	6.8	1.8	19.9	26.7	10.6
	27 Manufacture of electric equipment	14.7	56.1	65.4	25.4	94.6	109.5
	28 Manufacture of machinery n.e.c.	59.6	70.1	86.5	171.7	239.2	281.4
	29 Manufacture of cars and trailers	19.6	6.8	10.5	79.5	55.3	69.1
	30 Manufacture of other transport	98.4	120.2	108.9	406.7	472.9	444.1
	31-32 Man. of furniture and other prods.	34.3	57.6	54.2	98.2	209.1	216.2
	33 Repair and installation of machinery	47.3	45.5	50.6	52.2	59.4	67.3
D-E Electricity, gas and water supply and waste management							
	35 Electricity and gas supply	9.1	13.2	9.8	29.2	49.2	33.5
	36 Water collection and distribution	122.6	58.9	43.1	175.5	81.8	58.3
	37-39 Sewerage and waste treatment	40.1	58.4	55.8	61.1	185.7	183.7
F Construction	F Construction	838.9	829.5	926.4	1,787.6	1,730.5	1,984.8
G Wholesale and retail trade							
	45 Sale and repair of motor vehicles	122.9	128.4	133.6	308.7	322.9	332.6
	46 Wholesale trade (no motor vehicles)	539.1	601.1	631.5	1,433.1	1,709.2	1,920.4
	47 Retail trade (not in motor vehicles)	614.1	649.1	697.4	1,073.8	1,109.1	1,205.9

Production in the coastal area (end)

Industry - aggregated	Industry - detailed	Production (x €1,000,000)					
		Scenario A			Scenario B		
		2010	2015	2017	2010	2015	2017
H Transportation and storage							
	49 Land transport	218.2	640.9	646.5	450.6	950.2	985.4
	50 Water transport	195.0	283.7	216.2	213.0	231.0	150.9
	51 Air transport	3.0	-	-	3.7	-	-
	52 Warehousing, services for transport	88.3	100.2	101.9	137.0	168.6	213.0
	53 Postal and courier activities	47.7	15.9	15.6	108.0	40.7	37.2
I Accommodation and food serving	I Accommodation and food serving	972.8	1,236.0	1,463.8	1,364.9	1,702.6	2,031.3
J Information and communication							
	58 Publishing	57.2	42.6	42.3	85.9	72.3	73.1
	59-60 Movies, TV and radio	22.5	37.7	63.9	37.9	66.2	107.2
	61 Telecommunications	23.4	56.9	22.3	37.3	147.4	108.4
	62-63 IT- and information services	149.0	190.8	258.9	290.0	369.8	479.2
K Financial institutions							
	64 Financial institutions, no insurance	758.0	730.6	548.3	1,340.5	1,290.9	947.6
	65 Insurance and pension funding	110.3	14.2	40.9	441.7	53.0	162.8
	66 Other financial services	94.7	152.3	149.4	191.3	275.2	271.4
L Renting, buying, selling real estate	68 Renting, buying, selling real estate	1,829.0	2,093.4	2,073.3	3,300.9	3,445.9	3,419.1
M Other specialised bus. services							
	69-70 Legal and management consultancy	960.2	1,287.6	1,294.6	2,347.3	3,530.6	2,815.9
	71 Architects, technical services etc.	137.3	137.7	132.1	379.6	272.3	267.1
	72 Research and development	104.9	118.9	134.8	159.5	183.2	206.6
	73 Advertising and market research	80.2	77.3	78.6	141.4	144.7	151.7
	74-75 Other specialised services	77.0	74.2	74.5	145.5	134.0	137.9
N Renting and other business support							
	77 Renting and leasing of tangible goods	111.3	81.7	98.2	249.4	245.2	368.0
	78 Employment activities	157.3	329.5	667.7	358.3	485.2	825.7
	79 Travel agencies, tour operators etc.	96.8	132.8	147.1	349.5	541.2	577.8
	80-82 Security, other business services	95.0	116.2	120.5	348.5	353.5	379.5
O Public administration and services							
	84 Public administration and services	1,045.7	1,051.6	1,100.1	3,196.1	2,465.2	2,426.3
P Education	85 Education	382.7	545.7	586.2	761.9	1,168.6	1,200.6
Q Health and social work activities							
	86 Human health activities	498.2	700.8	813.4	913.4	1,227.7	1,368.7
	87-88 Care and social work	550.9	727.7	766.1	922.3	1,279.9	1,338.4
R Culture, sports and recreation							
	90-92 Arts, culture and lotteries	214.6	260.4	248.2	297.6	351.6	340.7
	93 Sports and recreation	136.0	179.6	186.8	219.5	272.0	285.5
S Other service activities							
	94 Membership organisations	96.5	61.2	61.7	196.2	161.9	161.3
	95 Repair computers and consumergoods	7.6	9.9	14.0	14.2	19.9	26.7
	96 Other personal services	91.3	89.5	92.2	173.8	174.4	179.5
Total		13,559.4	15,954.3	16,730.3	27,872.5	31,377.1	32,171.3

Appendix 8: Production in the Port of Rotterdam

Production in the port of Rotterdam

Industry - aggregated	Industry - detailed	Production (x €1,000,000)					
		Scenario A			Scenario B		
		2010	2015	2017	2010	2015	2017
A Agriculture, forestry and fishing							
	01 Agriculture	37.5	29.1	22.9	381.3	343.2	277.0
	02 Forestry and logging	-	-	-	-	-	-
	03 Fishing and aquaculture	-	-	-	-	-	-
B Mining and quarrying	B Mining and quarrying	91.8	157.7	75.8	156.5	287.0	141.3
C Manufacturing							
	10-12 Manufacture of food and beverages	693.8	772.3	785.0	960.0	1,059.9	1,070.8
	13-15 Man. of textile-, leatherproducts	12.2	5.6	6.1	19.4	9.7	10.2
	16 Manufacture of wood products	8.1	7.7	7.6	11.2	12.5	12.6
	17 Manufacture of paper	44.7	27.0	-	54.7	35.4	-
	18 Printing and reproduction	13.3	8.8	5.5	29.1	19.6	15.9
	19 Manufacture of coke and petroleum	21,527.5	21,200.6	19,977.7	21,527.5	21,200.6	19,977.7
	20 Manufacture of chemicals	7,580.4	8,890.9	9,557.9	7,580.4	8,890.9	9,557.9
	21 Manufacture of pharmaceuticals	-	-	-	-	-	-
	22 Manufacture rubber, plastic products	6.6	3.7	3.2	12.9	8.6	8.0
	23 Manufacture of building materials	85.2	84.6	90.5	116.3	112.8	107.7
	24 Manufacture of basic metals	-	-	-	-	-	-
	25 Manufacture of metal products	214.8	182.5	192.1	329.8	295.4	295.1
	26 Manufacture of electronic products	11.9	5.2	0.3	38.4	14.7	1.3
	27 Manufacture of electric equipment	95.7	84.4	94.9	119.0	96.8	109.2
	28 Manufacture of machinery n.e.c.	370.9	524.0	528.6	496.1	686.6	667.8
	29 Manufacture of cars and trailers	57.3	82.3	105.1	73.0	114.6	143.8
	30 Manufacture of other transport	142.6	42.0	15.5	164.3	47.9	17.1
	31-32 Man. of furniture and other prods.	33.4	25.0	25.9	81.7	36.1	38.7
	33 Repair and installation of machinery	459.4	372.9	381.5	575.9	583.2	695.8
D-E Electricity, gas and water supply and waste management							
	35 Electricity and gas supply	158.2	215.7	82.4	234.3	298.2	88.3
	36 Water collection and distribution	-	-	-	-	-	-
	37-39 Sewerage and waste treatment	230.5	325.5	329.3	271.3	379.0	382.9
F Construction	F Construction	1,179.7	1,088.8	1,239.2	2,038.6	1,925.2	2,164.4
G Wholesale and retail trade							
	45 Sale and repair of motor vehicles	114.2	100.9	109.6	277.0	290.6	314.7
	46 Wholesale trade (no motor vehicles)	935.8	1,054.7	992.8	1,549.1	1,873.0	1,899.1
	47 Retail trade (not in motor vehicles)	2,429.9	2,546.7	2,777.3	2,434.2	2,554.4	2,785.6

Production in the Port of Rotterdam

		Production (x €1,000,000)					
Industry - aggregated	Industry - detailed	Scenario A			Scenario B		
		2010	2015	2017	2010	2015	2017
H Transportation and storage							
	49 Land transport	459.6	595.7	619.6	839.6	969.5	1,000.2
	50 Water transport	2,821.0	3,771.1	3,820.0	2,821.5	3,771.8	3,820.9
	51 Air transport	-	43.6	-	-	48.3	-
	52 Warehousing, services for transport	5,845.9	7,593.6	7,763.6	5,854.9	7,616.5	7,793.4
	53 Postal and courier activities	52.7	51.4	61.0	83.0	80.1	91.3
I Accommodation and food serving	I Accommodation and food serving	88.5	72.3	54.8	215.2	213.7	208.2
J Information and communication							
	58 Publishing	15.1	6.6	6.2	31.6	18.3	10.7
	59-60 Movies, TV and radio	23.0	25.2	39.6	40.9	49.0	78.2
	61 Telecommunications	43.4	28.6	43.7	87.8	63.2	109.8
	62-63 IT- and information services	65.7	105.0	124.3	129.4	218.2	270.5
K Financial institutions							
	64 Financial institutions, no insurance	141.7	134.9	98.4	355.8	320.0	244.2
	65 Insurance and pension funding	2.2	1.5	-	3.5	3.8	-
	66 Other financial services	20.2	23.5	24.5	43.0	51.6	51.6
L Renting, buying, selling real estate							
	68 Renting, buying, selling real estate	219.9	206.0	182.1	777.3	562.1	636.4
M Other specialised bus. services							
	69-70 Legal and management consultancy	402.5	366.3	406.9	611.1	586.1	627.4
	71 Architects, technical services etc.	257.8	198.3	139.3	425.6	345.4	299.9
	72 Research and development	120.3	121.8	134.6	193.4	180.4	192.8
	73 Advertising and market research	46.2	35.0	38.3	105.0	85.8	89.1
	74-75 Other specialised services	23.7	29.3	36.9	52.6	66.3	77.3
N Renting and other business support							
	77 Renting and leasing of tangible goods	28.3	181.5	146.7	50.6	266.6	266.4
	78 Employment activities	158.0	187.0	160.6	358.1	532.2	521.0
	79 Travel agencies, tour operators etc	9.4	14.4	14.5	42.1	42.5	40.4
	80-82 Security, other business services	240.4	271.8	290.0	441.5	446.8	485.6
O Public administration and services							
	84 Public administration and services	146.9	791.8	860.3	602.1	2,095.4	2,075.9
P Education							
	85 Education	116.6	277.1	314.0	311.7	559.4	605.7
Q Health and social work activities							
	86 Human health activities	48.5	55.8	49.8	120.4	168.2	148.8
	87-88 Care and social work	45.9	123.1	112.8	210.6	456.0	434.5
R Culture, sports and recreation							
	90-92 Arts, culture and lotteries	40.7	37.3	42.1	103.3	95.2	102.4
	93 Sports and recreation	9.2	11.1	12.7	38.7	62.4	76.2
S Other service activities							
	94 Membership organisations	21.0	13.6	9.4	53.8	42.0	56.1
	95 Repair computers and consumergoods	0.7	0.6	0.6	3.2	4.6	5.2
	96 Other personal services	13.6	14.8	12.9	53.6	63.5	64.1
Total		48,173.5	53,348.1	53,247.2	54,710.8	61,395.2	61,522.5

Appendix 9: Production in the Port of Amsterdam

Production in the port of Amsterdam

Industry - aggregated	Industry - detailed	Production (x €1,000,000)					
		Scenario A			Scenario B		
		2010	2015	2017	2010	2015	2017
A Agriculture, forestry and fishing							
	01 Agriculture	0.0	0.2	0.1	3.2	4.1	6.7
	02 Forestry and logging	-	-	-	-	-	-
	03 Fishing and aquaculture	-	-	-	-	-	-
B Mining and quarrying	B Mining and quarrying	254.4	169.9	-	259.7	171.0	-
C Manufacturing							
	10-12 Manufacture of food and beverages	255.5	146.5	179.3	913.5	905.2	1,029.6
	13-15 Man. of textile-, leatherproducts	15.4	4.4	3.8	35.0	15.2	12.6
	16 Manufacture of wood products	3.4	3.8	3.9	11.9	16.0	18.6
	17 Manufacture of paper	-	-	-	-	-	-
	18 Printing and reproduction	23.1	15.8	12.3	183.5	104.2	84.6
	19 Manufacture of coke and petroleum	-	-	-	-	-	-
	20 Manufacture of chemicals	407.7	249.1	320.4	723.6	482.9	574.1
	21 Manufacture of pharmaceuticals	-	-	-	-	-	-
	22 Manufacture rubber, plastic products	25.4	23.1	51.0	64.1	92.7	134.6
	23 Manufacture of building materials	43.2	33.6	43.2	56.4	55.4	62.0
	24 Manufacture of basic metals	-	-	-	-	-	-
	25 Manufacture of metal products	24.0	34.1	34.2	164.2	231.4	253.3
	26 Manufacture of electronic products	2,236.1	30.2	-	14,582.0	84.6	-
	27 Manufacture of electric equipment	-	-	-	-	-	-
	28 Manufacture of machinery n.e.c.	89.9	75.1	71.9	155.0	209.6	216.2
	29 Manufacture of cars and trailers	3.5	12.9	-	22.4	17.0	-
	30 Manufacture of other transport	3.8	1.8	1.1	52.7	31.8	21.1
	31-32 Man. of furniture and other prods.	24.6	21.5	16.6	117.1	78.6	93.3
	33 Repair and installation of machinery	16.0	22.6	31.0	88.7	75.2	94.5
D-E Electricity, gas and water supply and waste management							
	35 Electricity and gas supply	222.0	35.5	-	222.7	136.1	-
	36 Water collection and distribution	-	-	-	-	-	-
	37-39 Sewerage and waste treatment	111.0	663.3	737.2	204.0	1,011.2	1,133.2
F Construction	F Construction	297.7	381.7	430.1	1,117.8	1,378.4	1,498.7
G Wholesale and retail trade							
	45 Sale and repair of motor vehicles	64.8	50.2	38.8	272.7	225.1	209.8
	46 Wholesale trade (no motor vehicles)	407.8	749.6	837.0	1,333.7	1,991.7	2,310.5
	47 Retail trade (not in motor vehicles)	36.8	57.1	63.4	269.1	333.0	380.8

Production in the Port of Amsterdam

		Production (x €1,000,000)					
Industry - aggregated	Industry - detailed	Scenario A			Scenario B		
		2010	2015	2017	2010	2015	2017
H Transportation and storage							
	49 Land transport	159.8	114.9	131.8	691.9	345.7	340.2
	50 Water transport	135.6	730.2	741.9	217.5	846.3	862.0
	51 Air transport	-	-	-	-	-	-
	52 Warehousing, services for transport	329.7	506.4	576.8	580.7	823.3	962.8
	53 Postal and courier activities	56.3	82.3	98.4	134.0	196.5	233.4
I Accommodation and food serving	I Accommodation and food serving	40.4	61.6	69.4	127.1	225.5	254.7
J Information and communication							
	58 Publishing	133.6	181.1	145.6	653.8	834.1	655.8
	59-60 Movies, TV and radio	34.7	97.4	211.2	135.1	251.0	498.4
	61 Telecommunications	130.1	160.2	165.6	716.3	801.4	820.4
	62-63 IT- and information services	137.0	237.3	305.8	496.6	804.7	1,029.5
K Financial institutions							
	64 Financial institutions, no insurance	107.3	163.7	142.2	510.3	736.0	647.3
	65 Insurance and pension funding	174.6	133.0	-	979.4	660.0	-
	66 Other financial services	12.8	48.3	80.9	61.7	240.7	402.9
L Renting, buying, selling real estate							
	68 Renting, buying, selling real estate	177.4	209.5	262.6	669.8	981.1	1,242.8
M Other specialised bus. services							
	69-70 Legal and management consultancy	220.1	329.9	361.1	736.1	1,140.2	1,261.8
	71 Architects, technical services etc.	44.1	45.7	55.5	133.2	126.9	158.7
	72 Research and development	2.5	14.2	14.5	9.0	53.0	50.5
	73 Advertising and market research	167.7	187.5	244.6	357.3	386.1	513.7
	74-75 Other specialised services	41.9	50.9	65.9	115.0	128.0	177.8
N Renting and other business support							
	77 Renting and leasing of tangible goods	107.5	107.0	176.2	341.2	221.1	331.7
	78 Employment activities	81.4	77.5	86.1	240.3	345.8	429.3
	79 Travel agencies, tour operators etc	101.8	170.7	410.4	216.1	520.3	1,577.9
	80-82 Security, other business services	81.0	125.7	132.6	374.5	603.1	631.4
O Public administration and services							
	84 Public administration and services	718.4	1,045.6	1,151.3	3,376.5	3,078.5	3,617.2
P Education							
	85 Education	28.1	31.4	33.5	153.4	178.4	202.4
Q Health and social work activities							
	86 Human health activities	57.4	62.8	73.0	290.4	403.1	479.4
	87-88 Care and social work	30.3	41.8	39.4	171.3	159.1	133.7
R Culture, sports and recreation							
	90-92 Arts, culture and lotteries	59.3	69.9	72.8	117.2	155.7	171.2
	93 Sports and recreation	7.7	14.4	12.4	26.3	42.0	39.0
S Other service activities							
	94 Membership organisations	28.8	27.6	31.1	75.2	73.4	75.8
	95 Repair computers and consumergoods	0.5	2.2	2.8	4.3	9.2	13.3
	96 Other personal services	9.7	10.9	13.0	39.4	54.1	65.2
Total		7,987.3	7,934.4	9,319.1	33,649.8	23,144.1	27,029.1

Appendix 10: Summary of the results for selected activities on the DCS, in seaports and in the coastal area

Summary of the results for selected						
	Compensation	Employed persons	Production	Intermediate consumption	GVA	GVA 2015 prices
2010						
Seaports (excl. seashipping)	7,030	120	66,919	53,170	13,749	15,168
Coastal areas (excl. fishing)	909	37	2,956	1,401	1,555	1,733
Total activities on land	7,939	157	69,875	54,571	15,305	16,901
Oil and gas extraction	358	3	5,597	911	4,686	4,739
Fisheries	15	1	142	64	78	109
Offshore wind energie	3	-	90	55	35	36
Marine aggregates	20	-	146	82	64	64
Sea shipping	485	9	5,035	3,754	1,281	1,489
Total activities at sea	881.9	13.2	11,009.4	4,864.9	6,144.4	6,436.9
The North Sea economy	8,820.9	169.7	80,884.4	59,435.5	21,448.9	23,338.3
2015						
Seaports (excl. seashipping)	7,658	118	66,867	50,736	16,131	16,131
Coastal areas (excl. fishing)	990	38	3,435	1,626	1,809	1,809
Total activities on land	8,647	156	70,302	52,362	17,940	17,940
Oil and gas extraction	519	4	5,013	1,608	3,405	3,405
Fisheries	19	1	153	64	89	89
Offshore wind energie	5	-	116	70	46	46
Marine aggregates	17	-	136	87	48	48
Sea shipping	542	9	6,601	4,694	1,907	1,907
Total activities at sea	1,101.4	14.6	12,019.3	6,522.9	5,496.4	5,496.4
The North Sea economy	9,748.8	170.6	82,321.3	58,884.9	23,436.4	23,436.4
2017						
Seaports (excl. seashipping)	7,941	119	70,248	53,112	17,135	16,974
Coastal areas (excl. fishing)	1,096	42	3,863	1,812	2,052	1,927
Total activities on land	9,037	161	74,111	54,924	19,187	18,901
Oil and gas extraction	332	3	3,144	1,072	2,071	2,727
Fisheries	19	1	132	56	95	77
Offshore wind energie	12	-	356	207	149	170
Marine aggregates	27	-	208	129	79	76
Sea shipping	543	9	6,059	4,372	1,687	1,848
Total activities at sea	931.9	13.3	9,898.6	5,835.9	4,081.4	4,898.2
The North Sea economy	9,969.0	174.0	84,009.8	60,760.0	23,268.5	23,798.7

Employment figures x 1000 FTE, monetary values x €1,000,000

Appendix 11: Key indicators for the coastal NUTS-3 regions

Key indicators for the coastal NUTS-3 regions						
	Compensation	Employed persons	Production	Intermediate consumption	GVA	GVA 2015 prices
2010						
Rest of Groningen	6,801	159	31,307	12,460	18,848	19,328
North Friesland	4,407	119	16,637	8,232	8,405	8,760
Kop van North Holland	4,758	132	17,228	8,613	8,615	8,871
Alkmaar and surroundings	3,598	88	12,440	6,062	6,378	6,578
IJmond	2,909	67	13,654	7,701	5,953	6,122
Haarlem agglomeration	3,260	80	11,203	5,211	5,992	6,161
Leiden and Bollenstreek	6,751	153	24,896	11,766	13,130	13,252
Greater The Hague (Excl. Zoetermeer)	16,288	321	51,638	23,553	28,085	28,821
Delft and Westland	4,449	105	15,433	7,420	8,012	8,207
Rijnmond	26,449	539	119,248	71,694	47,554	49,882
Rest of Greater Rijnmond	2,270	58	9,353	4,917	4,436	4,587
Zeeuws-Vlaanderen	1,634	40	8,306	5,190	3,116	3,354
Rest of Zeeland	3,884	100	17,625	10,403	7,222	7,496
Total	87,459	1,960	348,970	183,222	165,747	171,419

Employment figures x 1000 FTE, monetary values x €1,000,000

Key indicators for the coastal NUTS-3 regions						
	Compensation	Employed persons	Production	Intermediate consumption	GVA	GVA 2015 prices
2015						
Rest of Groningen	7,226	159	32,483	14,207	18,276	18,276
North Friesland	4,366	112	17,052	8,642	8,410	8,410
Kop van North Holland	5,024	132	19,151	9,913	9,239	9,239
Alkmaar and surroundings	3,702	87	13,378	6,655	6,723	6,723
IJmond	3,151	66	13,670	7,853	5,817	5,817
Haarlem agglomeration	3,233	77	11,532	5,615	5,917	5,917
Leiden and Bollenstreek	7,230	152	27,237	13,905	13,332	13,332
Greater The Hague (Excl. Zoetermeer)	16,447	310	54,234	25,763	28,471	28,471
Delft and Westland	4,915	108	17,904	8,745	9,160	9,160
Rijnmond	27,342	526	127,836	76,580	51,255	51,255
Rest of Greater Rijnmond	2,221	55	10,024	5,466	4,557	4,557
Zeeuws-Vlaanderen	1,694	38	8,216	4,755	3,461	3,461
Rest of Zeeland	4,030	100	18,356	10,692	7,663	7,663
Total	90,582	1,922	371,072	198,791	172,281	172,281

Employment figures x 1000 FTE, monetary values x €1,000,000

Key indicators for the coastal NUTS-3 regions						
	Compensation	Employed persons	Production	Intermediate consumption	GVA	GVA 2015 prices
2017						
Rest of Groningen	7,840	168	31,797	14,720	17,077	18,092
North Friesland	4,547	114	17,416	8,998	8,418	8,340
Kop van North Holland	5,270	135	19,950	10,292	9,658	9,350
Alkmaar and surroundings	3,839	89	13,768	6,797	6,971	6,793
IJmond	3,193	66	14,233	8,452	5,781	5,718
Haarlem agglomeration	3,471	80	12,229	5,807	6,422	6,192
Leiden and Bollenstreek	7,457	156	27,848	14,189	13,658	13,275
Greater The Hague (Excl. Zoetermeer)	17,082	317	55,012	26,073	28,939	28,385
Delft and Westland	5,409	117	19,403	9,449	9,953	9,679
Rijnmond	28,930	545	132,258	78,044	54,214	53,122
Rest of Greater Rijnmond	2,310	56	10,540	5,694	4,846	4,694
Zeeuws-Vlaanderen	1,780	39	8,705	5,167	3,538	3,541
Rest of Zeeland	4,208	102	18,750	10,686	8,063	7,848
Total	95,335	1,984	381,907	204,369	177,538	175,028

Employment figures x 1000 FTE, monetary values x €1,000,000

Appendix 12: Glossary

Employed persons: are all persons who are working for a business unit or private household residing in the Netherlands. Employed persons include all persons who:

- have a paid job for at least one hour a week. - perform a job of which the payment is withheld from registration of tax and/or social insurance authorities, while the work itself is legal.
- are temporarily not working (due to illness, bad weather, etc.), but who continue to receive their remuneration.
- have taken a temporarily unpaid leave.

Employed persons may either be employees or self-employed.

Self-employed: individual that earns his/her income by performing labour on his/her own (company, profession) or who cooperate in the business of their family. The latter are not counted as self-employed if there is an employment contract

Compensation of employees: The total remuneration paid by employers to their employees in return for work done, even if they are actually withheld by the employer and paid directly to tax authorities, social security schemes and pension schemes.

Full-time equivalent job: Labour input in full-time equivalent jobs is calculated by expressing all jobs (be it full-time, part-time or flexible) to full-time equivalents. The full-time equivalent is obtained by dividing the annual contractual hours of the job by the annual contractual hours considered full-time (in the same branch of industry). Two half-time jobs thus add up to one full-time equivalent. For self-employed (mostly not included in the figures in this paper) the full-time equivalent is the quotient of the usual weekly work hours of that job and the average weekly work hours of self-employed with 37 or more normal weekly hours (in the same branch of industry).

Production / Output: The value of all goods produced for sale, including unsold goods, and all receipts for services rendered.

Intermediate consumption: All goods and services used up in the production process in the accounting period, regardless the date of purchase. This includes for example fuel, raw materials, semi-manufactured goods, communication services, cleansing services and audits by accountants.

Value added: The difference between output and intermediate consumption.