

3

Maritime transport, shipping and ports

Authors

Frank Maes ¹
Jean-Pierre Merckx ²
Hans Pirllet ³
Thomas Verleye ³

Reviewers

Ronny Schallier ⁴
Pascal Depoorter ⁵
Gwendoline Gonsaeles ⁵
Guido Fidlers ⁶

¹ Ghent University (UGent)

² Flemish Port Commission (VHC)

³ Flanders Marine Institute (VLIZ)

⁴ Royal Belgian Institute of Natural Sciences (RBINS), Operational Directorate Natural Environment (OD Nature)

⁵ Coast Guard Secretariat

⁶ FPS Health, Food Chain Safety and Environment, DG Environment, Marine Environment Service

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Currently more than 80% of the globally traded goods (in volume) are transported by sea. In 2016, this amounted to 10.3 billion tonnes of goods which were transported by seagoing ships. On the 1st of January 2017, the world merchant fleet consisted of 93,161 ships, equaling a total of 1.86 billion DWT (dead-weight tonnage). During the past years the total load capacity increased rapidly (2016: +2.5%) in comparison to the demand (+2.1%), which results in a continuous situation of global overcapacity. The primary flag states are Panama, Liberia and the Marshall Islands, together accounting for 42% of the global DWT. In 2017, Belgium had 263 seagoing ships, comprising 1.27% of the global DWT ([Barki and Deleze-Black 2017](#) - UNCTAD, see also [list Belgian seagoing ships](#)). The evolution of the Belgian merchant fleet is also discussed in a triennial study of the *Royal Belgian Shipowners' Association (RBSA 2017)*.

The Belgian sea ports are situated at one of the busiest shipping routes in the world. The total transshipment of goods in the Le Havre-Hamburg range (including Ostend) amounted to 1.195 billion tonnes in 2017. The market share of the Flemish sea ports¹ consisted of 294.7 million tonnes (24.7%), of which Antwerp accounted for 223.6 million tonnes ([Coppens et al. 2018](#), [Merckx 2018](#)).

Maritime transport and shipping in the Belgian part of the North Sea (BNS) will be discussed in detail below. With regards to the ports, only sea ports (with the main purpose of handling seagoing ships) are taken into account, whereas fishing ports (mooring for fishing boats, see theme [Fisheries](#)) and marinas (mooring for recreational boats, see theme [Tourism and recreation](#)) are not considered ([Jargon list website Flemish Port Commission](#)).

3.1 Policy context

The United Nations Convention on the Law of the Sea ([UNCLOS 1982](#)) can be regarded as the primary piece of legislation. This convention is considered as the constitution of the sea, discussing the general rights and obligations of nations (flag states, coastal states and port states). On an international level, shipping and maritime transport are covered by several international treaties and resolutions of the International Maritime Organization ([IMO, Brochure IMO 2013](#)). Furthermore, the IMO is responsible for a significant amount of other conventions about, *inter alia*, safety and security at sea, traffic regulations, the training of crew members and pollution prevention (accidental as well as operational discharges) (see [list at IMO website](#)). Some of these conventions are discussed further under **3.5 Sustainable use** and are explained in more detail in [Verleye et al. \(2018\)](#). The Paris Memorandum of Understanding on Port State Control ([MoU Paris 1982](#)) states that every authority needs to maintain an efficient port state control system so foreign freighters visiting their ports, or anchoring in front of the ports, are in line with the standards as described in the international treaties mentioned above.

On a European level, the Directorate-General for Mobility and Transport ([DG MOVE](#)) is, *inter alia*, competent for maritime transport and ports. The strategic goals as well as recommendations for the European policy concerning maritime transport until 2018 have been elaborated in the [Maritime Transport Strategy 2018](#) (COM (2009) 8). In 2016, a temporary report concerning the implementation of the strategy was published ([SWD \(2016\) 326](#)). On 8 June 2017, the Conclusions of the European Council regarding the priorities for the European maritime transport policy until 2020 were published ([9976/17](#)), in which competitiveness, decarbonisation and digitalisation are highlighted to ensure global connectivity, an efficient internal market and a maritime cluster of world class. These conclusions endorse the content of the [Valletta-Statement](#) of the 29th of March 2017 concerning the European maritime policy. Furthermore, the European Maritime Safety Agency ([EMSA](#)) is of relevance in the context of maritime transport and shipping. This agency aims to reduce the risk of maritime accidents, pollution by ships and the loss of human lives at sea. An overview of the European legislation and the policy concerning ports and marine transport is provided in the publication [Harbour Light \(Merckx et al. 2012\)](#). Several of these policy instruments are also further elaborated in [Verleye et al. \(2018\)](#).

In Belgium, maritime transport is a federal matter, covered by the [FPS Mobility, Directorate-General \(DG\) Shipping \(Policy statement Mobility 2014, Policy statement Social Fraud, Privacy and North Sea 2014](#), other federal actors are listed in table 1). DG Shipping ensures that ships sailing under a Belgian flag, or ships entering Belgian ports, comply with the international maritime standards concerning shipping safety, such as the construction and equipment standards, but also the crew standards and the environmental regulations, both technically and administratively. The DG Shipping represents Belgium within the IMO. The rules with regard to ship navigations are listed on the [website](#) of the FPS Mobility and Transport. Furthermore, a review of the current Belgian maritime legislation has been included in the [coalition agreement of the federal Government \(2014\)](#).

¹ The Flemish sea ports include the ports of Antwerp, Ghent, Zeebrugge and Ostend. Since December 2017, the port of Ghent is merged with Vlissingen and Terneuzen into the "North Sea Port". When this text mentions the port of Ghent, it's now referring to "North Sea Port, subport Ghent".

The law of 8 August 1980 defines that waterways and their appurtenances, ports and their appurtenances, pilotage and fairway services towards the ports, as well as rescue and towing services at sea are the responsibility of the Flemish Region, within the policy domain of Mobility and Public Works (*MOW*, see also *Policy Note MOW 2014-2019*) (see list of Flemish actors in table 1). The legal framework concerning Flemish ports is covered by the Port decree (2 March 1999, as modified). The coordination and the consultation between the federal and the Flemish Region services (table 1) and the Province of West Flanders is carried out by the *Coast Guard* (cooperation agreement of 8 July 2005). The organisational structure of the Coast Guard consists of a policy-making body, a consultation body and a secretariat. The policy-making body coordinates the collaboration between the different partners and advises the responsible ministers (article 6 of the cooperation agreement of 8 July 2005). The consultation body of the Coast Guard investigates certain files and gathers information for the policy-making body (article 12 of the cooperation agreement of 8 July 2005). The consultation body is chaired by the Governor of the Province of West Flanders who also manages the coordination of the ANIP North Sea (general emergency and intervention plan) (see Belgian Official Journal of 20 October 2016). The Coast Guard cooperation agreement also includes the creation of the Coast Guard Centre.

Table 1. Overview of the Flemish and federal partners of the Coast Guard structure.

| Flemish Partners of the Coast Guard | Federal Partners of the Coast Guard |
|---|---|
| International Environmental Policy Division | FPS Interior (Civil protection, Crisis Centre and Waterway Police) |
| Fisheries Service | FPS Foreign Affairs |
| Coastal Division | FPS Economy, S.M.E.s, Self-Employed and Energy |
| Shipping Assistance Division | FPS Finances (Belgian customs) |
| Pilotage | FPS Mobility and Transport (DG Shipping) |
| Fleet | FPS Health, Food Chain Safety and Environment (Marine Environment Service) |
| Ports and Water Policy Division | Ministry of Defence |
| Maritime Access Division | PPS Sustainable Development |
| | PPS Science Policy (Management Unit of the North Sea Mathematical Models (MUMM), scientific service of the Royal Belgian Institute of Natural Sciences (RBINS)) |
| | PPS Sustainable Development |

The Coast Guard Centre is the operational section of the Coast Guard and consists of two services, which collaborate intensively; the Maritime Rescue and Coordination Centre (*MRCC*) in Ostend (acting as the national IMO Coastal Station and the first contact point for ships in distress and in charge of the coordination of rescue operations) and the Maritime Security Centre Belgium (*MIK*) in Zeebrugge (cooperation between the Marine Component, the Shipping Police, Border Control and DG Shipping to make sure the laws at sea are applied). Their tasks have been stipulated in the decree of 16 June 2006, the agreement of the Government of Flanders of 26 October 2007 and the RD of 6 February 2009.

Other relevant organisations and clusters not listed in table 1 are:

- The Flemish Port Commission (*VHC*) – advising and informing function on socio-economic aspects of ports and port’s policy;
- Environment and Nature Council of Flanders (*Minaraad*) – advice on environmental and technical aspects of port projects over 10 million euro which have requested subsidies.

An overview of the legislation concerning shipping and ports is also available in the Codex Coastal Zone, themes *Shipping* and *Port and Industry*. The environmental context of port policy, management and exploitation is discussed in detail in *Van Hooydonk et al. (2003)*.

3.2 Spatial use

In the marine spatial plan (MSP, RD of 20 March 2014, see also *Van de Velde et al. 2014*) the most important shipping routes to reach the Belgian ports and the Scheldt ports are legally demarcated (figure 1). Within these areas, shipping has priority over other activities. However, ships are not obligated to follow these routes. Since 1 June 2017, *new shipping routes* are present within Belgian and Dutch waters, which are mainly necessary for the safety of the Belgian offshore wind parks on, and in the surroundings of, the Thornton Bank (no access for ships) and consequently to promote the safety of shipping and to limit the risk of collisions with possible environmental pollution as a result

SPATIAL USE - MARITIME TRANSPORT, SHIPPING AND PORTS

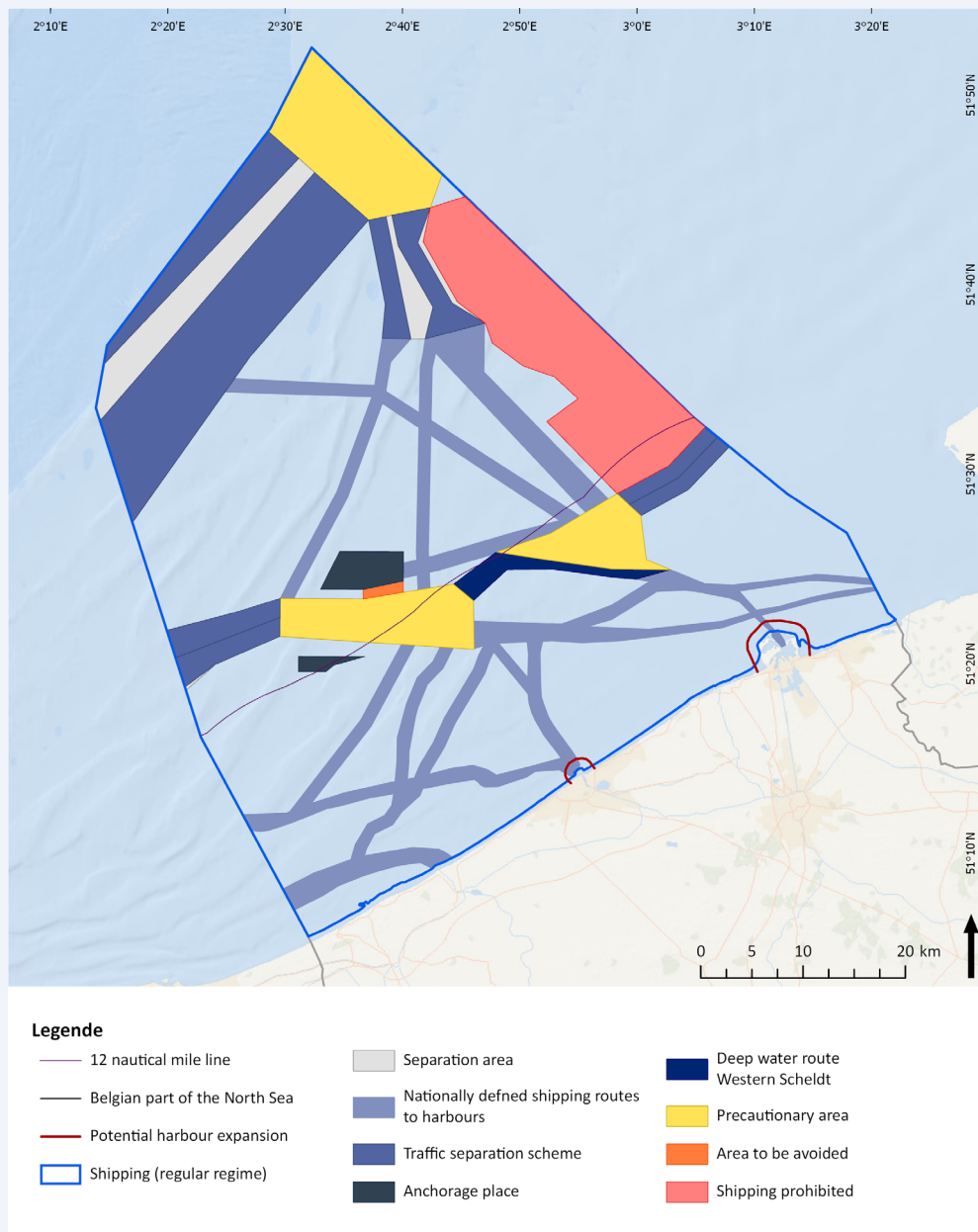


Figure 1. (Source: RBINS, marineatlas.be (based on RD of 20 March 2014), *MSP 2020-2026, public consultation 2018*, *IMO 2017*).

(figure 1). The new shipping routes also take into account the planned development of offshore wind parks by the Netherlands, known as the area of Borssele. Other activities may be allowed within these demarcated zones, as long as they don't compromise the shipping. For a number of these routes, a routing system (*Ship's routing*) has been adopted within the IMO for which the current situation is in force since 1 June 2017:

- Traffic separation scheme Noordhinder South;
- Precautionary area (where ships have to navigate carefully) Noordhinder Junction;
- Traffic separation scheme Westhinder;
- Precautionary area Westhinder;
- Area to avoid Westhinder;
- Deepwater route (specifically for ships with a limited maneuverability due to their draught) for approaching the Western Scheldt;

- Precautionary area north of the Deepwater route;
- Traffic flow Westpit, along the southern side of the zone delineated by the domain concession for the windmills in east-western direction.

In addition to the frequently used routes for which IMO has created routing systems, other important and frequently used shipping routes towards the ports of the Scheldt area exist in the BNS. These routes are used by ships because they are marked and/or dredged, guaranteeing a safe shipping depth. Most of these routes within the territorial sea are also pilotage routes (most merchant ships are subject to compulsory pilotage). Furthermore, a precautionary area is defined around the zone reserved for the construction and exploitation of installations producing electricity from water, currents or winds (with a safety zone of 500 m). In the MSP, the anchorage zones of Oostdyck and Westhinder are demarcated. There is also a safety zone of 500 m around every fixed construction within the concession zone (RD of 11 April 2011, see also theme **Energy (including cables and pipes)**).

Information concerning shipping in the BNS is communicated via the Notices to Mariners ([Coastal Division, Notices to Mariners](#), more information: general provisions [BaZ 2018 nr. 1](#)).

3.2.1 Port zones

According to the spatial structure plan Flanders ([RSV](#)), the Port decree and the consecutive coalition agreements, every Flemish sea port should have a strategic plan (including an Environmental Impact assessment (EIA) (see also **3.4 Impact**) and spatial safety reports) in which it is investigated how the economic interests can be sustainably aligned with other societal interests when the port area is further developed. This plan is the basis of the demarcation of sea ports in a regional spatial implementation plan ([GRUP](#)) (GRUP demarcation for the port of Ghent: 2005, Zeebrugge: 2009, Ostend: 2013, Antwerp: 2013). The spatial development and the access to the ports are also addressed in the Green Paper [Groenboek Vlaanderen 2050: mensenmaat in een metropool \(2012\)](#) and in the White Paper of the policy plan: [Beleidsplan Ruimte Vlaanderen \(2017\)](#).

When the port development causes a loss of natural sites, this will usually be compensated by the creation and establishment of new natural sites in other areas. These nature compensation areas are delineated in agreement with the Flemish Land Agency ([VLM](#)) and are *inter alia* located in the area behind the port of Zeebrugge ([website VLM](#)) and in the basin of the Scheldt Estuary, as stipulated in the Sigmoidplan.

The demarcation of the different port zones has been stipulated in the RD of 2 February 1993 and in the decision of the Government of Flanders of 13 July 2001. The total surface and the water surface of the Flemish sea ports are presented in table 2.

The ports are not only discussed in spatial planning on land. In the MSP (RD of 20 March 2014, see also [Van de Velde et al. 2014](#)), space is reserved at the seaside to expand the ports of Zeebrugge and Ostend.

Table 2. Overview of the Flemish sea ports and their total surface area and water surface area ([Merckx 2018](#)).

| Port | Total surface area | Water surface area |
|-------------------|--------------------|--------------------|
| Port of Ostend | 658 ha | 199 ha |
| Port of Ghent | 4,648 ha | 623 ha |
| Port of Zeebrugge | 2,857 ha | 986 ha |
| Port of Antwerp | 12,068 ha | 2,005 ha |

3.3 Societal interest

3.3.1 Employment

The total employment in the Flemish sea ports in 2016 amounted to 230,340 full-time equivalents (FTEs), of which 103,333 direct FTEs (figure 2). In the field of direct employment, Antwerp is the main Flemish port with 60,849 direct jobs (58.9%), followed by Ghent (27,983 FTEs; 27.1%), Zeebrugge (9,589 FTEs; 9.3%) and Ostend (4,912 FTEs; 4.8%). This difference in employment is partly related to the type of industry and the shipment of goods in the different ports (see below). At the sectoral level, 34% is working in the maritime sector. The total employment (direct + indirect) in the ports amounted to 10% of the total wage-earning Flemish employment in 2016 ([Merckx 2018](#), [Coppens et al. 2018](#), [Kwartaalbericht Vlaamse Arbeidsmarkt april 2018](#)).

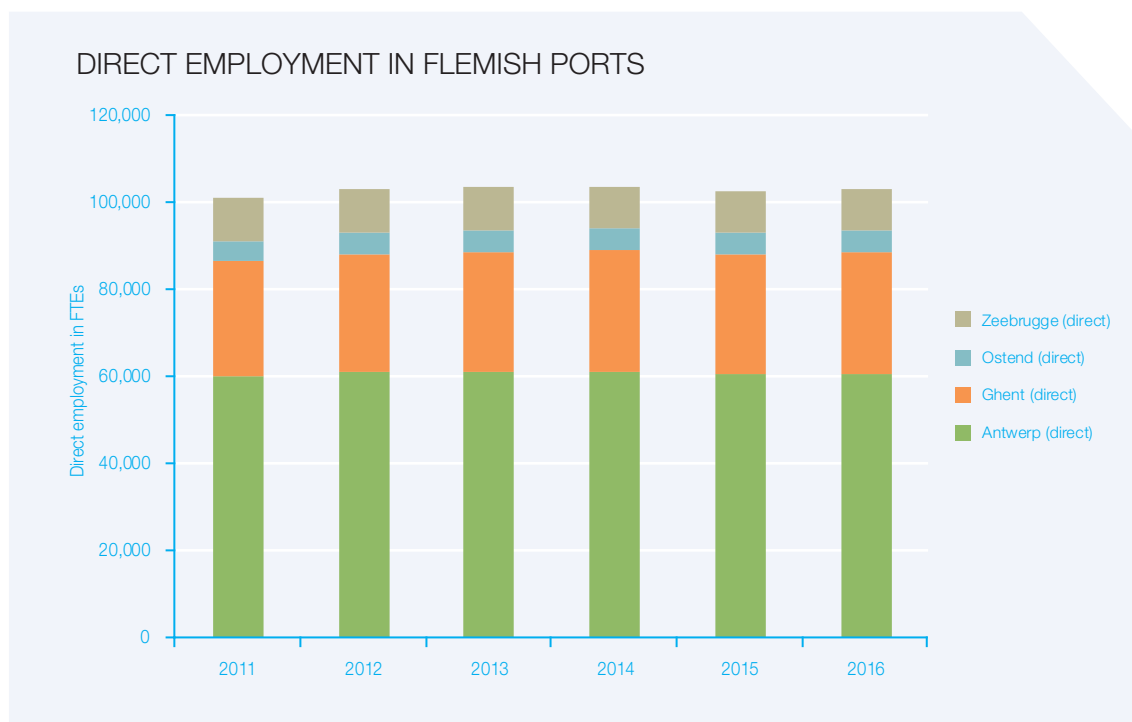


Figure 2. The direct employment in the Flemish ports (Source: [Merckx 2018](#), [Coppens et al. 2018](#)).

The ports of Liège and Brussels jointly amounted to a total direct employment of 11,807 FTEs. This brings the total direct employment for Belgium to 115,139 FTEs, of which Liège and Brussels jointly account for 10.2%. The total Belgian employment (direct + indirect) amounts to 252,537 FTEs ([Coppens et al. 2018](#)). The workforce in the Belgian ports remains relatively unchanged since several years and concerns mainly male employees (83%). The majority of the port personnel consists of blue-collar workers (52% in 2015), followed by the white-collar workers (44%) and the other staff (4%) ([Mathys 2017](#)).

3.3.2 Added value

The total added value of the Flemish ports amounted to 31 billion euro in 2016, of which 16.2 billion euro was direct added value (figure 3). Between 2011 and 2016 the direct added value of the ports increased with 11%. The port of Antwerp generates the highest direct added value and accounts for 10.8 billion euro (66.8%), followed by Ghent (3.9 billion euro; 23.8%), Zeebrugge (1 billion euro; 6.2%) and Ostend (0.5 billion euro; 3.1%) ([Merckx 2018](#), [Coppens et al. 2018](#)).

The ports of Liège and Brussels have a direct added value of respectively 1.2 and 0.7 billion euro, and a relative share of 10.5% of the total of the Belgian ports ([Coppens et al. 2018](#)).

3.3.3 Ship movements

In 2017, a total of 29,793 seagoing ships have visited a Flemish seaport, with a total of 650.9 million gross tonnage (GT). The number of seagoing ships that visit a Flemish sea port on a yearly basis is characterised by a decline during the last four decennia (-19% since 1980). This decline is however compensated by the increasing size of the ships, i.e. an increase in total GT of 338% (figure 4). On the level of the ship, this means an increase of the mean GT from 5,237 GT to 21,847 GT. The mean GT per ship varies strongly among ports: Antwerp (28,599 GT) and Zeebrugge (24,099 GT) have remarkably higher mean GT compared to Ghent (11,950 GT) and Ostend (1,007 GT) ([Merckx 2018](#)).

3.3.4 Shipment of goods

As a consequence of the global financial and economic crisis in 2009, the total maritime traffic in the Flemish ports declined with 14.3%, which was almost completely compensated (+13.6%) in 2010. With the exception of the year

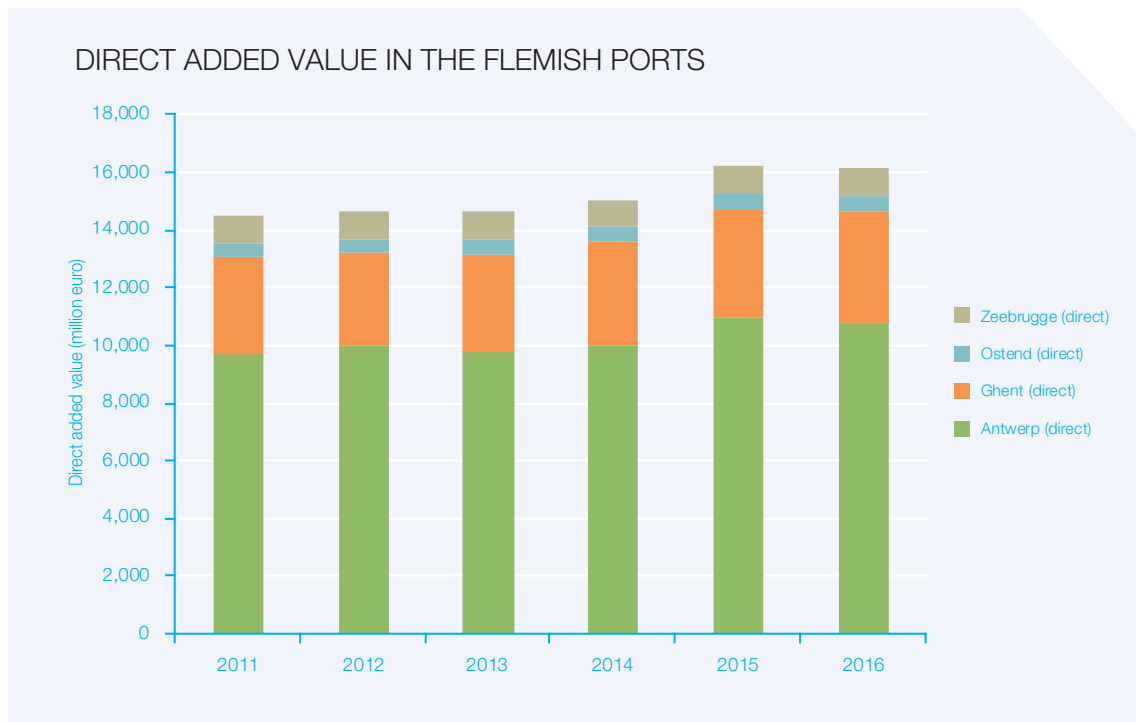


Figure 3. The direct added value in the Flemish ports in million euro (Source: [Merckx 2018](#), [Coppens et al. 2018](#)).

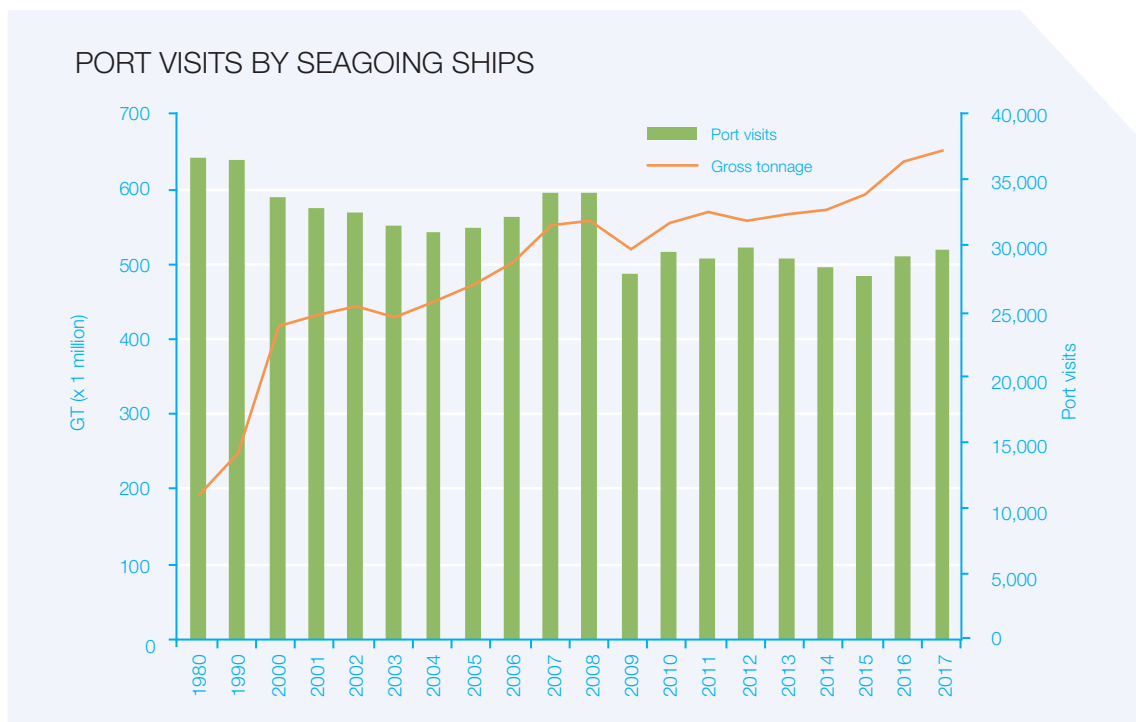


Figure 4. The number of port visits by sea ships and the associated total gross tonnage (GT) (Source: [Merckx 2018](#)).

2009, and to a lesser extent 2012, the traffic numbers are increasing gradually throughout the years. In 2017, a total of 294.7 million tonnes of goods were processed in the Flemish sea ports, which is an increase of 4% compared to 2016 (figure 5). This represents 24.7% of the Le Havre-Hamburg range, the highest share in history. Antwerp is the main Flemish port in terms of total cargo traffic with 223.7 million tonnes (18.7%), followed by Zeebrugge (37.1 million tonnes; 3.1%), Ghent (32.5 million tonnes; 2.7%) and Ostend (1.4 million tonnes; 0.1%) (*Merckx 2018*).

At the level of tonnage, the port of Antwerp is leader within Flanders in the field of fluid bulk (73.2 million tonnes; 88.5%), containers (123 million tonnes; 88.8%) and break bulk cargo (10.3 million tonnes; 67.4%). Zeebrugge is the main port for roll-on roll-off (15 million tonnes; 66.9%), while Ghent handles the biggest amount of dry bulk (21.1 million tonnes; 58.7%) (*Merckx 2018*).

A large share of the goods processed by Flemish ports is of European origin. With 43.8%, Antwerp has the lowest percentage of goods with a European origin, while Ostend has the highest relative share with 99% (including sand and gravel). With the exception of Antwerp, between 71.2% (Zeebrugge) and 100% (Ostend) of the goods have a European destination. For Antwerp this is only 27.5%, while 31.9% of the goods have an Asian destination (*Merckx 2018*).

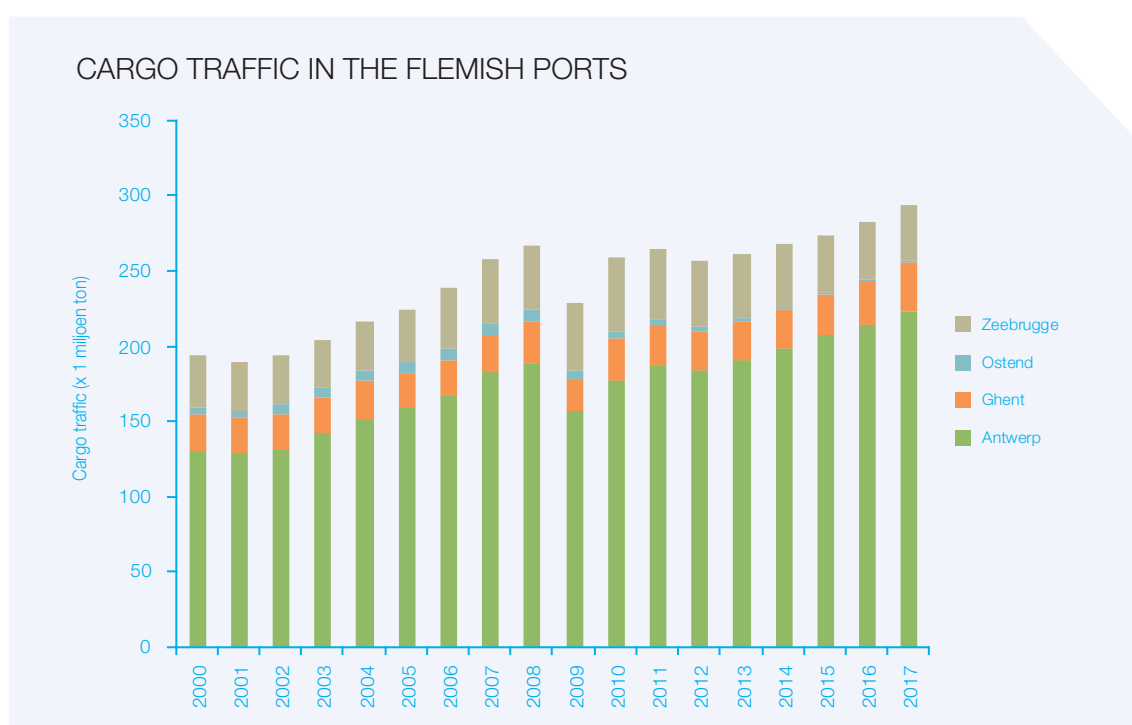


Figure 5. The cargo traffic in the Flemish ports (in tonnes) (Source: *Merckx 2018*).

3.3.5 Passenger traffic

A total of 1.1 million passengers embarked or disembarked in the Flemish seaports in 2017. Passenger traffic is almost entirely attributable to Zeebrugge (1.09 million passengers; 99.4%). This is the highest number since 2003, but still represents a decrease of 79% compared to 1980 (5.11 million passengers) (figure 6). This decline is due to the commissioning of the Channel Tunnel, the cessation of the *Regie voor Maritiem Transport* (RMT) ferry service and the cancellation of certain ferry lines to the United Kingdom (*Notteboom 2004*). Whereas Ostend accounted for more than 54% of passenger traffic in the 1980s, it now has an interest of just 0.2% (*Merckx 2018*).

3.3.6 Inland navigation to and from Flemish seaports

In 2017, a total of 126.4 million tonnes of goods were loaded and unloaded in and from inland vessels in the Flemish seaports, an increase of 5% compared to 2016. This represents 73.7% of the total cargo traffic by inland navigation in Flanders (171.5 million tonnes). Antwerp (102.3 million tonnes) and Ghent (23 million tonnes) together account for 73% of the total Flemish cargo traffic from inland vessels and represent 99% of the share of the sea ports (figure 7) (*Merckx 2018*).

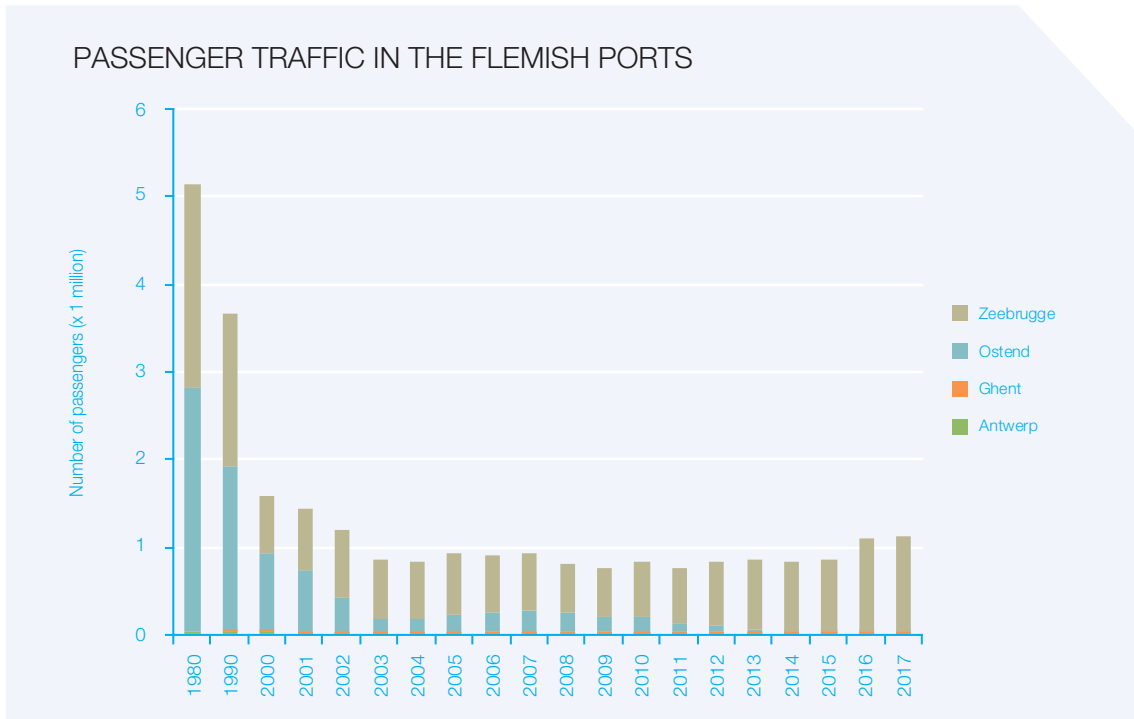


Figure 6. Passenger traffic in the Flemish ports (Source: *Merckx 2018*).

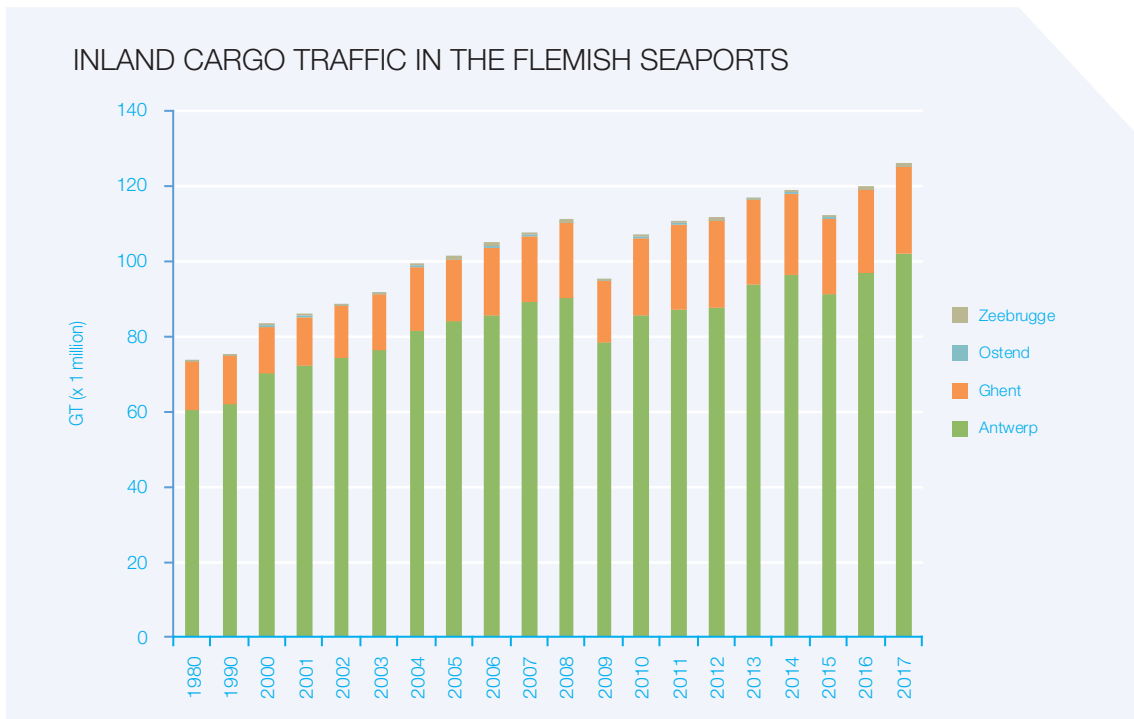


Figure 7. Inland cargo traffic in the Flemish seaports (Source: *Merckx 2018*).

3.3.7 Investments

In 2016, direct investments in Flemish seaports amounted to 4.3 billion euro, an increase of 41% since 2011 (figure 8). The port of Antwerp accounts for 79.1% of total investments, 3.429 billion euro. This is followed by the seaports of Ghent (530.8 million euro; 12.2%), Zeebrugge (294.6 million euro; 6.8%) and Ostend (81.4 million euro; 1.9%) (*Merckx 2018, Coppens et al. 2018*).

Investments in the ports of Liège and Brussels in 2016 amounted to 195.4 million euro and 64.7 million euro respectively. Together they represent 5.7% of the total investments in Belgian ports (4.596 billion euro) (*Coppens et al. 2018*).

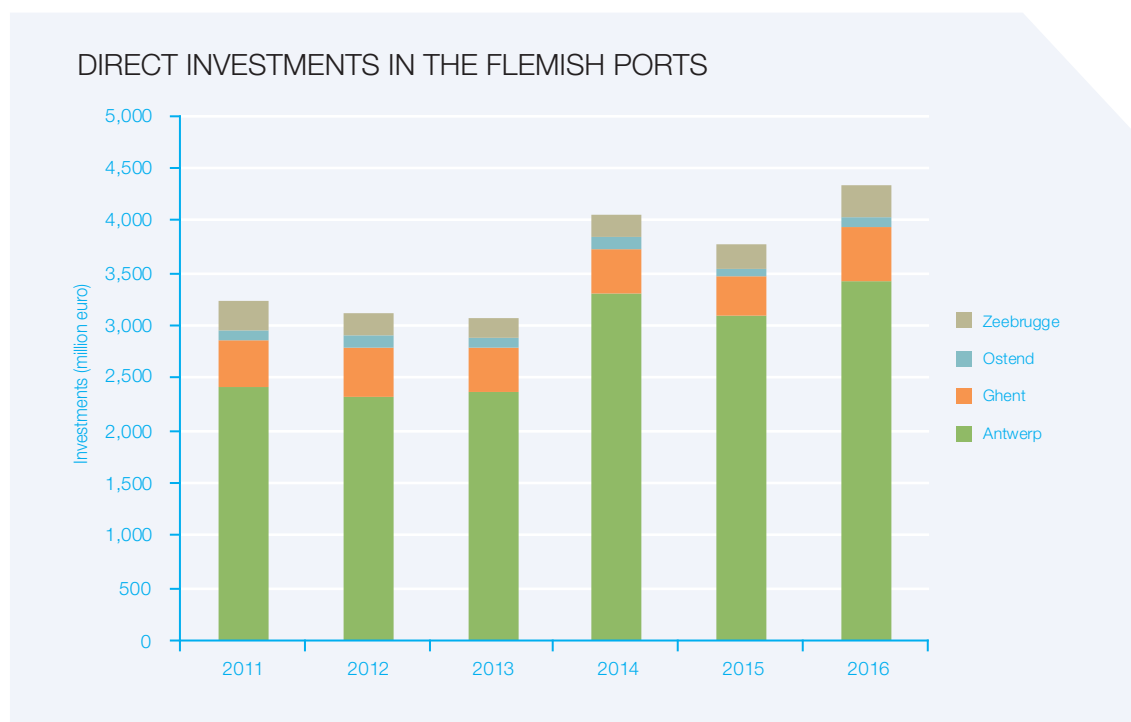


Figure 8. Direct investments in Flemish ports in million euro (Source: *Merckx 2018*).

3.3.8 Government expenditure

Total government spending on the Flemish seaports amounted to 414.9 million euro in 2017. With 255 million euro, 'maritime access' accounts for 61.5% of total government spending. This includes maintenance dredging at sea and on the Westerscheldt, various deepening programmes, wreck removal, vessel traffic services (VTS) and sludge processing. Among the port-related expenditures (120.4 million euro), the largest budget was provided for the port of Antwerp (68.9 million euro), followed by Zeebrugge (38.5 million euro), Ghent (7.9 million euro) and Ostend (5.2 million euro) (figure 9) (*Merckx 2018*).

3.4 Impact

Shipping has a series of effects on the marine environment. Table 3 gives an overview of the possible impacts and the relevant literature.

In addition, the port locations and operations also have an impact on the environment. These effects are listed in the (plan-) environmental impact assessments (EIAs) of the ports' strategic plans (table 4, non-exhaustive list, see also [file database, Department Environment](#)).

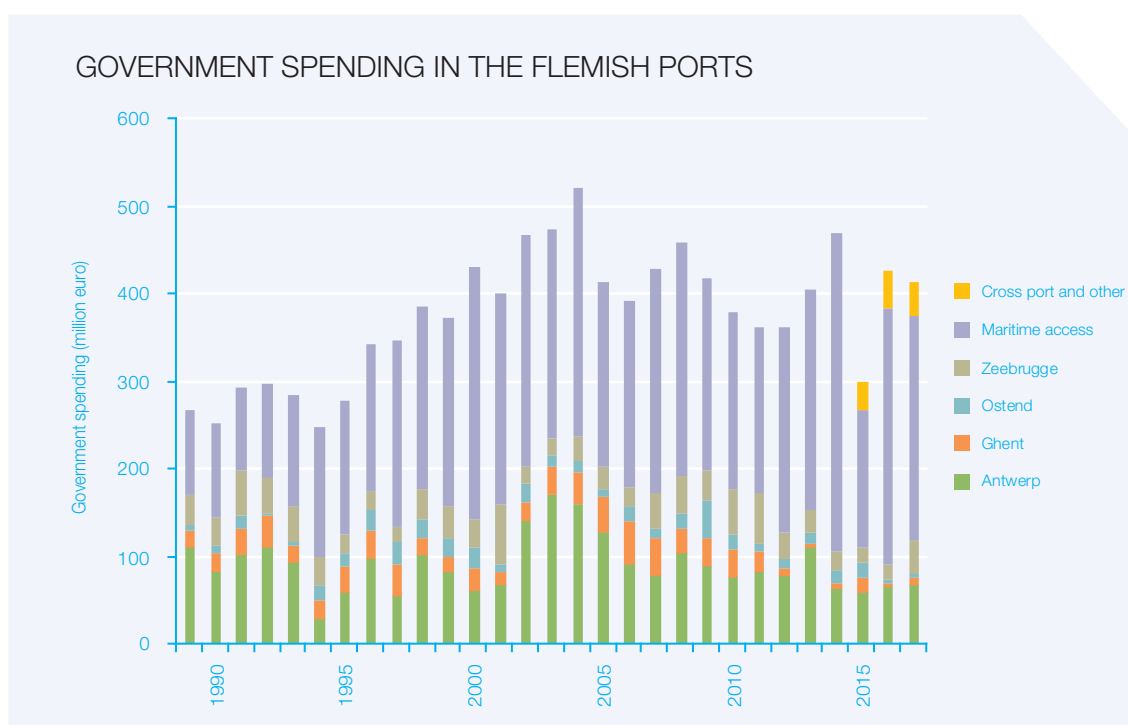


Figure 9. Government spending in Flemish ports (in million euro) (Source: [Merckx 2018](#)).

Table 3. Overviews of the shipping-related environmental impacts.

| Impact | Literature |
|--|---|
| Pollution from oil and other harmful substances by accidental, operational or illegal discharges | <i>Maes et al. 2004 (MARE-DASM project BELSPO), Schrijvers en Maes 2005 (GAUFRE project BELSPO), Le Roy et al. 2006 (RAMA project BELSPO), Volckaert et al. 2006 (MIMAC project BELSPO), Goffin et al. 2007, OSPAR QSR 2010, Dittman et al. 2012, Lagring et al. 2012, Maebe et al. 2012, Dulière et al. 2013 (OSERIT project BELSPO), Bonn Agreement 2014 (BE AWARE I Summary Report), Tweede Federaal Milieurapport 2015, Hjorth et al. 2015 (BE AWARE II Summary Report), Schallier en Van Roy 2016, OSPAR IA 2017</i> |
| Air pollution due to the emission of particles in the exhaust gases of ship engines (NO _x , SO _x , CO ₂ , etc.) | <i>Maes et al. 2004 (MARE-DASM project BELSPO), Schrijvers en Maes 2005 (GAUFRE project BELSPO), Goffin et al. 2007, Maes et al. 2007 (ECOSONOS project BELSPO), Gommers et al. 2007 (MOPSEA project BELSPO), OSPAR QSR 2010, Bencs et al. 2012 (SHIPFLUX project BELSPO), Van Roy en Scheldeman 2016</i> |
| The accidental or illegal discharge of waste or material | <i>Goffin et al. 2007, OSPAR QSR 2010, Claessens et al. 2013 (AS-MADE project BELSPO), Tweede Federaal Milieurapport 2015, Devriese en Janssen 2017</i> |
| Leaching of harmful anti-fouling substances (e.g. tributyltin (TBT)) | <i>Maes et al. 2004 (MARE-DASM project BELSPO), Schrijvers en Maes 2005 (GAUFRE project BELSPO), Goffin et al. 2007, OSPAR QSR 2010, OSPAR IA 2017</i> |
| Introduction of non-native species by hull fouling or ballast water discharges | <i>Maes et al. 2004 (MARE-DASM project BELSPO), Schrijvers en Maes 2005 (GAUFRE project BELSPO), Goffin et al. 2007, Kerckhof et al. (2007), OSPAR QSR 2010, Vandepitte et al. 2012, State of Europe's Seas 2015, Saelens en Verleye 2015, OSPAR IA 2017</i> |
| Pollution and physical impact due to loss of ships and cargo | <i>Le Roy et al. 2006 (RAMA project BELSPO), De Baere et al. 2010, OSPAR QSR 2010</i> |
| Other possible physical impact including noise and collision with marine mammals | <i>Maes et al. 2004 (MARE-DASM project BELSPO), OSPAR QSR 2010, State of Europe's Seas 2015, compilation national reports ASCOBANS</i> |
| Impact on other users (safety, spatial impact, etc.) | <i>Maes et al. 2004 (MARE-DASM project BELSPO), Schrijvers en Maes 2005 (GAUFRE project BELSPO), Le Roy et al. 2006 (RAMA project BELSPO), Volckaert et al. 2006 (MIMAC project BELSPO)</i> |

Table 4. An overview of the documents relating to the EIAs of the various Flemish seaports.

| Port | (Plan-)EIAs |
|-----------|--|
| Ostend | <i>Plan MER strategisch plan haven Oostende (kennisgevingsnota) 2004</i> <i>Plan MER kustverdediging en maritieme toegankelijkheid Oostende 2007</i> |
| Antwerp | <i>Kennisgeving plan MER Strategisch plan haven van Antwerpen 2006</i> <i>Plan MER strategisch plan haven van Antwerpen (niet-technische samenvatting) 2008</i> <i>Kennisgeving Verruiming vaargeul Beneden-Zeeschelde en Westerschelde 2006</i> <i>Tussentijds strategisch plan haven van Antwerpen 2006</i> <i>Alternatievenonderzoeksnota Complex project "Realisatie van extra container-behandelingscapaciteit in het havengebied Antwerpen" 2017</i> |
| Zeebrugge | <i>Plan MER strategisch plan haven van Zeebrugge 2004</i> <i>Kennisgeving project MER van het strategisch haveninfrastructuurproject (SHIP) in de westelijke achterhaven van Zeebrugge 2011</i> <i>Strategische milieubeoordeling Verbetering nautische toegankelijkheid tot de (achter)haven van Zeebrugge 2017</i> |
| Ghent | <i>Gewestelijk ruimtelijk uitvoeringsplan 'Afbakening Zeehavengebied Gent - Fase 2</i> <i>MER Nieuwe Sluis Terneuzen 2015</i> |

3.5 Sustainable use

3.5.1 Roadmap towards a sustainable EU maritime transport

COM (2009) 8 (see also 3.1 Policy context) developed strategic objectives and recommendations for the EU's maritime transport policy until 2018, followed by Resolution 2009/2095(INI) of 5 May 2010 in which the European Parliament called on the Commission to take further action against the abuse of flags of convenience, to draw up new State aid rules, to propose guidelines for ports, to take more account of maritime transport within the framework of the Trans-European Transport Networks (TEN-Ts), to reduce emissions from ships and to develop a European maritime transport area within a common maritime space. Following the White Paper 'Roadmap to a Single European Transport Area' (COM (2011) 144), which proposed 40 concrete initiatives to achieve a competitive and resource efficient European transport system, Resolution 2011/2096(INI) was adopted at the end of 2011. In this resolution, specifically for maritime transport, the European Parliament called, *inter alia*, for the establishment of a European policy for short- and medium-distance maritime traffic and a proposal for the development of a European maritime transport space without barriers (the 'Blue Belt'). The latter was followed up through COM (2013) 510, which aims to simplify customs formalities in order to reduce costs and facilitate trade. Regulation (EU) No. 1315/2013 provides guidelines for setting up a long-term strategy for the development of a TEN-T by road, rail, air and water. Through the Connecting Europe Facility (CEF) funding channel, TEN-T projects can be financed to remove bottlenecks in this network. 'Motorways of the Sea', with Short Sea Shipping (SSS) (COM (2004) 453) as the main transport mode, is the maritime component of TEN-T and contributes to the creation of a European Transport Space without Barriers. [Multimodaal.Vlaanderen](#) was established at the Flemish level in 2017 to act as an independent point of advice for companies with regard to the optimal choice of transport mode (including SSS) for each flow of goods.

3.5.2 Safety at sea: construction, equipment and crew of seagoing vessels

A lot of legislation exists concerning maritime safety, the prevention of maritime disasters and the safety of human life at sea. Table 5 lists the most relevant international conventions. These treaties are explained in more detail in [Verleye et al. \(2018\)](#).

DG Shipping (FPS Mobility and Transport) ensures that ships flying the Belgian flag comply with the international maritime regulations on shipping safety and protection of the marine environment (via, *inter alia*, the maritime inspection regulations - RD of 20 July 1973 and frequently amended). The Belgian Port State Control Department (FPS Mobility and Transport) inspects ships flying foreign flags that call at Belgian ports, in order to check whether they comply with the applicable international ILO (International Labour Organization) and IMO standards. In the event of infringements, port departure may be refused or conditions may be imposed, such as sailing to the nearest shipyard if the defects in a Belgian port cannot be repaired and are of such a nature that the safety of the ship and its crew may be endangered (for regional cooperation on Port State Control, see Memorandum of Understanding on Port State Control ([Paris MoU](#)) and the European Port State Control Directive (2009/16/EC)).

The [Shipping Assistance Division](#) (Agency for Maritime and Coastal Services) is responsible for the safe and smooth operation of shipping on the maritime access routes to and from the Belgian seaports by organising and offering Vessel Traffic Services (VTS).

Table 5. Most relevant international conventions regarding maritime safety.

| Convention | Explanation |
|----------------------------|---|
| SOLAS Convention | The SOLAS Convention is considered to be the most important international convention relating to the safety of merchant ships. The main objective of the convention is to specify minimum standards for the construction, equipment and operation of ships in order to ensure the safety of human life at sea. |
| COLREG Convention | This convention provides guidelines to determine safe speed limits, reduce the risk of collisions and to provide guidance to ships operating in, or in the vicinity of, traffic separation schemes. |
| Load Line Convention | This convention regulates the determination of the freeboards of ships, i.e. the distance from the top of the deck line to the top of the draught marks. |
| Maritime Labour Convention | The Maritime Labour Convention brings together all the existing maritime and other labour conventions of the International Labour Organization (ILO). |
| SAR Convention | The purpose of this convention is to establish an international search and rescue (SAR) plan so that, wherever a person is in distress at sea, the rescue is coordinated by a SAR organisation. Nowadays, more emphasis is also placed on the regional approach and coordination between SAR operations at sea and in the air. |
| STCW Convention | The STCW Convention is an international convention that stipulates the minimum requirements that have to be met by seafarers with regard to training, certification and watchkeeping. The convention also aims to promote the safety of human life and goods as well as the protection of the marine environment. The EU guidelines on the minimum level of training of seafarers are described in Directive 2008/105/EC. |
| TONNAGE Convention | The TONNAGE Convention provides for a universal tonnage measurement system for ships. |

3.5.3 Preventing and combating pollution from shipping

There is a wide range of regulations to prevent and combat pollution of the marine environment due to shipping. The United Nations Convention on the Law of the Sea (*UNCLOS 1982*) provides the general international legislative framework covering, *inter alia*, marine pollution (Part XII). The *MARPOL Convention (1973/1978)* is the most important international treaty on accidental or operational pollution of the marine environment by shipping. In addition, there are a number of important conventions under the umbrella of the *IMO* (table 6, more explanation of the relevant regulations in *Verleye et al. (2018)*).

Other relevant international conventions and agreements not drafted within the IMO concern the *Bonn Agreement* and the *OSPAR Convention*. The Bonn Agreement regulates cooperation between the coastal states of the North Sea in the detection, reporting and combating of pollution in the North Sea caused by oil and other harmful substances from ships and offshore installations. Since 1991 air surveillance has been organised within the framework of this agreement in the BNS in order to detect illegal discharges by ships and to provide evidence for a potential prosecution. The observation programme is carried out by the Management Unit of the North Sea Mathematical Models of the Royal Institute of Natural Sciences (*RBINS-MUMM*) in cooperation with the Ministry of Defence. The annual results of aerial surveillance are reported on the *MUMM-website*. Since the start of airborne observations in 1991, there has been a downward trend in the number of oil spills and in the estimated oil volume (figure 10). This shows that the measures taken within the framework of the European directive concerning port reception facilities (Directive 2000/59/EU) and MARPOL, as well as the increased supervision, have a positive effect (*Lagring et al. 2012, website MUMM*). There is no clear trend in the number of operational discharges of pollutants other than oil (*website MUMM*). Action was taken within the *Coast Guard* against this by drawing up more detailed follow-up procedures in a MARPOL roadmap.

In the framework of the OSPAR Convention, which aims at protecting the marine environment in the North-East Atlantic through international cooperation, the oil pollution rate of common guillemots is recognised as an indicator of the degree of chronic oil pollution of the marine environment, a so-called EcoQO (Ecological Quality Objective). The oil pollution level of the birds washed up on the Belgian beaches is reported annually by the Research Institute for Nature and Forest (INBO) (e.g. *Stienen et al. 2014*) and can be consulted online on the website of *bird victims*. In the revision of the initial assessment for Belgian marine waters (*public consultation, Belgian State 2018*), the oil pollution is evaluated (e.g. oil-stained guillemots, illegal oil discharges, acute oil pollution from the 'Flinterstar' incident in 2015) in relation to MSFD descriptor 8.

Furthermore, under the umbrella of OSPAR, operational discharge practices are tackled by a network of police experts and prosecutors called NSN (North Sea Network of Prosecutors and Investigators).

Following the Erika shipwreck in 1999, Europe adopted a series of measures known as Erika I (COM (2000) 142), II (COM (2000) 802) and III (COM (2005) 585) to improve maritime safety. Several EU directives and regulations implement these measures (table 7). In addition, the Marine Strategy Framework Directive (MSFD) (2008/56/EC)

Table 6. IMO Conventions on marine pollution.

| International IMO policy | | |
|--------------------------------|---|-------------------------|
| Convention | Explanation | Ratification by Belgium |
| MARPOL Convention | The purpose of this convention is to prevent the voluntary and accidental discharge of oil, chemicals, hazardous substances in packaged form, sanitary and household waste from ships, either directly through strict operational discharge conditions or a prohibition on discharge, or indirectly through the imposition of technical measures related to the construction and equipment of the ship. | x |
| AFS Convention | The convention prohibits the use of harmful organotin in anti-fouling paints for ships and introduces a mechanism to prevent the future use of other harmful substances in anti-fouling systems. | x |
| BWM Convention | The aim of the convention is to prevent the further spread of invasive aquatic organisms from one region to another by introducing standards and procedures for the management and control of ballast water and sediments onboard ships. | x |
| OPRC Convention | The convention deals with the preparedness for, response to and cooperation in oil pollution. | x |
| OPRC HNS protocol | The protocol deals with the preparedness, response and cooperation for pollution incidents from noxious and potentially hazardous substances. | x |
| HNS Convention – 2010 Protocol | The convention organises the liability and compensation for damage in connection with the carriage of hazardous and noxious substances by sea (not yet entered into force). | - |
| CLC Convention | This convention organises the civil liability for oil pollution damage. | x |
| FUND Convention | This convention foresees in the establishment of an international fund for compensation for pollution damage from persistent oil. | x |
| Bunker Convention | This convention organises the civil liability for bunker oil pollution damage. | x |
| LLMC Convention | This convention sets out the rules on limitation of liability for maritime claims. | x |
| Wreck Removal Convention | This convention organises the removal of wrecks. | x |

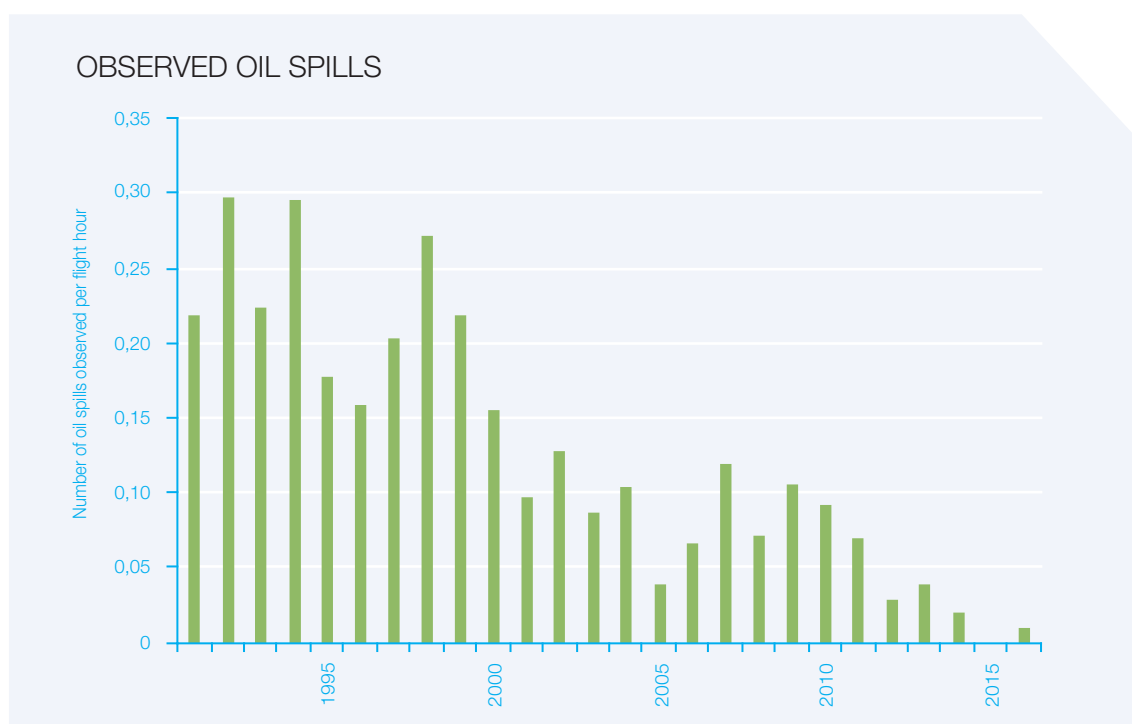


Figure 10. Number of oil spills observed per flight hour (RBINS-MUMM).

Table 7. Selection of European measures taken in the framework of the Erika initiatives.

| Selection of measures | Objective |
|---|--|
| Monitoring Directive (2002/59/EC) | To establish a vessel traffic monitoring and information system to enhance the safety and efficiency of maritime traffic within the EU. |
| Directive 2005/35/EC | Introduction of Community rules for the imposition of penalties for the discharge of oil or other polluting substances from ships in EU waters. |
| Framework Decision 2005/667/JHA | Improving the penal framework to combat ship-generated pollution. |
| Directive 2009/15/EC | Formulation of common rules and standards for the organisations competent for the inspection and survey of ships and for the relevant activities of maritime administrations. |
| Port State Control Directive (2009/16/EC) | Reformation of the control mechanisms in ports to ensure effective verification of ships' compliance with applicable regulations on maritime safety, maritime security, protection of the marine environment and living and working conditions. |
| Directive 2009/18/EC | Establishing the fundamental principles governing the investigation of accidents in the maritime transport sector. |
| Directive 2009/20/EC | Insurance of ship-owners against maritime claims. |
| Directive 2009/21/EC | Compliance with flag State requirements. |
| Reporting Directive (2010/65/EU) | Simplifying and harmonising the various administrative procedures applicable to maritime transport by introducing electronic data transmission (by 1 June 2015 at the latest) and rationalising reporting formalities. |
| Regulation (EC) No. 530/2012 | Introduction of an accelerated phasing-in scheme for the application of the double hull or equivalent design requirements of the MARPOL Convention to single hull oil tankers, with a deadline of 2015. |
| Regulation (EC) No. 1406/2002 | The establishment of a European Maritime Safety Agency (EMSA). This agency aims to reduce the risk of maritime accidents, pollution from ships and loss of life at sea. EMSA promotes initiatives such as SafeSeaNet (a centralised European information platform for the exchange of maritime data between competent authorities) and CleanSeaNet (Satellite service to detect oil pollution from ships). |
| Regulation (EC) No. 391/2009 | Formulation of common rules and standards for ship inspection and survey organisations. |
| Regulation (EC) No. 392/2009 | Rules governing the liability of carriers of passengers by sea in the event of accidents. |

included concentrations of pollutants as one of the descriptors to assess good environmental status and identified pollution from ships as an aggravating factor (more information: [Law et al. 2010](#)).

At the Belgian level, the law of 6 April 1995 on the prevention of marine pollution from ships constitutes the legal framework for the implementation of the MARPOL Convention. In the event of serious pollution, action in the BNS is regulated by the ANIP North Sea (ANIP: General Emergency and Intervention Plan, see Belgian Official Gazette 20 October 2016) in accordance with the principles of the RD of 16 February 2006 on emergency and intervention plans. The advanced 3D model OSERIT (*Oil Spill Evaluation Response Integrated Tool*, developed by the MUMM) provides scientifically based support to policymakers in the event of oil pollution. This integrated model provides an estimate of the environmental impact of oil pollution in the short term (1 to 5 days) and can be used to identify a polluter via backtracking ([Dulière et al. 2013](#), [OSERIT project BELSPO](#)). This tool is made available to the Coast Guard around the clock. In addition, since the Erika disaster (1999), the Belgian government has a more extensive core of specific oil spill combat resources at its disposal. If Belgium's control capacity is not attainable, it can call on the support of neighboring countries through the Bonn Agreement (see also [Verleye et al. \(2018\)](#)). The request for additional funds has been centralised in the 'Common Emergency Communication and Information System (CECIS) Marine Pollution' of the European Commission ([European Civil Protection and Humanitarian Aid Operations](#)). In 2005 (update in 2007), an intervention plan was also drawn up for the rescue and rehabilitation of birds affected by oil pollution at sea ([Intervention Plan Birds 2007](#)).

3.5.4 Measures against the disposal of ship-generated waste

The [MARPOL Convention](#) is the main international convention for the prevention of marine pollution from shipping. In the case of operational discharges, the convention limits pollution by setting discharge standards (or prohibition of discharge). At EU level, the problem of ship-generated waste is addressed by the Directive on port reception facilities for ship-generated waste and cargo residues (Directive 2000/59/EC, as amended). This directive intends to oblige ships to return their waste to the ports in a sustainable way. In the MSFD (2008/56/EC), marine litter is one of the descriptors for assessing good environmental status and has been identified as a physical disturbance of the environment. The criteria and methodological standards for determining good environmental status with regard to marine litter were laid down in [Galgani et al. \(2010\)](#) (see also theme [Nature and environment](#) and the EC Decision [2017/848/EU](#) and [public consultation, Belgian State 2018](#)).

In Flanders, the policy with regard to the management of ship-generated waste in ports is regulated by the Materials decree of 23 December 2011 (article 41) and VLAREMA (article 5.2.10 Maritime waste and article 5.2.11 Waste arising from navigation on inland waterways). The quantities of collected waste have evolved positively and can be consulted in [the waste management plan for the port area of Bruges-Zeebrugge \(2018-2020\)](#), [the waste management plan for the port area of Antwerp \(2018-2020\)](#) and [the waste management plan for the port of Ghent \(2018-2020\)](#). In the past, [Maes and Douvere \(2004\)](#) and [Belpaeme \(2006\)](#) mapped out the specific waste streams from fishing vessels. The [‘Fishing for Litter’ project](#) enables the waste caught by fishing vessels to be landed and its composition to be assessed. In addition, there is a European cooperation with fishermen in which the collected waste is evaluated and processed for upcycling ([Waste Free Oceans](#)).

3.5.5 Measures against air emissions from shipping

Air pollution from seagoing ships is regulated by Annex VI to the [MARPOL Convention](#). The 2008 revision of the Annex provides for stricter limits on the sulphur content of fuel up to 3.5% (0.5% after 1 January 2020) and 0.1% since 1 January 2015 in Emission Control Areas (ECAs). The Convention also prohibits emissions of ozone-depleting substances, including halons and CFCs, and imposes nitrogen emission limits. In 2018, the 72nd session of the IMO Marine Environment Protection Committee ([MEPC 72](#)) adopted a strategy aimed at reducing greenhouse gas emissions from international shipping by at least 50% by 2050 compared to those in 2008. Furthermore, an amendment to Annex VI from 2011 introduced an improved Energy Efficiency Design Index (EEDI) for new build vessels and a ship energy efficiency management plan for all ships above 400 GT. In 2017, the North Sea and the Baltic Sea were designated as low emission zones for nitrogen oxides (entry into force from 1 January 2021). For an overview of all amendments, reference is made to the [IMO website](#).

By means of Directive 2016/802/EU, the European Union also adopted a number of measures to combat air pollution from shipping. As a result, parallel conditions such as those set out in Annex VI of MARPOL 73/78 apply within the EU. Implementing Decision (EU) 2015/253 provides for the adoption of sampling and reporting requirements for the sulphur content of marine fuels.

At national level, the measures to combat air pollution from ships are discussed in the RD of 27 April 2007 (transposition of the MARPOL Convention and the European measures at Belgian level). Specially trained inspectors from [DG Shipping](#) carry out regular MARPOL Annex VI controls on moored ships in ports (including fuel sampling and analysis). Since January 2015, MUMM has been measuring the sulphur emissions from ships during offshore monitoring flights using a *‘sniffer sensor’*. These results are systematically communicated to inspectors of DG Shipping so that targeted controls can be carried out within the framework of port inspections. This pioneering work forms the basis of the current international consultation within the framework of the Bonn Agreement to roll out these controls across the entire North Sea ([CompMon project](#), [Schalier et al. 2018 in De Grote Rede 47](#)).

At the Flemish level, the Government of Flanders decided on 23 April 2014 to set up a Programmatic Approach to Nitrogen Depositions ([PAS](#)). The PAS is a program that aims to address the problem of nitrogen deposition in special protection areas under the European Habitats Directive (92/43/EC) by means of source-oriented (emission side) and effect-oriented measures .

In addition, the switch from ships to liquefied natural gas (LNG) as an alternative fuel and the provision of shore-based power facilities (*cold ironing*) are also important measures against air emissions from shipping ([Margarino 2014](#)). The use of LNG results in negligible emissions of sulphur and fine particles, while NO_x and carbon emissions of this fuel are respectively 85-90% and 15-20% lower. Preparations are being made in all Flemish seaports to enable LNG supplies. The shore-side electricity facilities in turn ensure that ships can switch off their engines or generators while at berth. In various Flemish ports and at quays on the inland waterway network, shore-based power facilities are provided for recreational boating, inland shipping and seagoing vessels (including [Shore Power in Flanders \(TEN-T project\)](#)). Furthermore, in the context of European Directive 2000/59/EU, a file can be submitted to the Flemish Public Waste Agency ([OVAM](#)) for a reduced contribution for ships sailing on environmentally friendly fuels.

3.5.6 Measures against the introduction of non-native species

In order to prevent the spread and introduction of non-native species through ships’ ballast tanks, the [Ballast Water Convention](#) (IMO 2004) requires ships to draw up a ballast water and sediment management plan and to carry a ballast water record book in which all ballast operations are recorded. In addition, the ballast water must be managed in accordance with standard procedures ([website IMO](#)) and the ballast water must be treated by the systems recognised by the IMO. The convention entered into force on 8 September 2017. More information on the

treaty can be found in [Verleye et al. \(2018\)](#). Exceptions to the application of this convention may be granted in certain circumstances. Prior to the entry into force of the convention, a [harmonized procedure](#) was developed by HELCOM/OSPAR for this purpose so that exceptions can be granted in a uniform manner without harming the environment, human health, property or resources. A first risk analysis for Belgium was drawn up by [Saelens and Verleye \(2015\)](#) in accordance with the HELCOM/OSPAR procedure (2015).

The International Council for the Exploration of the Sea ([ICES](#)) set up two working groups to study biological invasions and non-native species: the ICES/IOC/IMO Working Group on Ballast and Other Ship Vectors ([WGBOSV](#)) and the Working Group on Introduction and Transfers of Marine Organisms ([WGITMO](#)). In 2005 ICES published a new version of the 1995 [Code of Practice](#) on the introduction and transfer of marine organisms.

At European level, Regulation (EC) No. 1143/2014 regulates the prevention and control of the (deliberate and unintentional) introduction and spread of invasive non-native species. This regulation applies to terrestrial, freshwater and marine species. Furthermore, the introduction of non-native species is identified as a biological disturbance in the MSFD (2008/56/EC) and is also included as a descriptor of good environmental status. The criteria and methodological standards for determining good environmental status for non-native species were laid down in [Olenin et al. \(2010\)](#).

In Belgium, both the deliberate and unintentional introduction (via ballast water) of non-native species is prohibited by the law of 20 January 1999 and the RD of 21 December 2001. Invasive species are also included as one of the ten processes with the greatest negative impact on ecosystem components in the Ecosystem vision for the Flemish Coast ([Van der Biest et al. 2017b](#)). The coordinated implementation of Regulation (EC) No. 1143/2014 by the federal state, the Communities and the Regions, as well as the necessary exchange of information between the parties concerned will be regulated by a cooperation agreement (in signing phase). For this purpose, a National Committee, a National Scientific Council and a National Secretariat on Invasive Alien Species are established. In the framework of the [Belgian forum on invasive species](#), protocols (invasive species environmental impact assessment (ISEIA – [Branquart 2009](#)) and the [Harmonia+ protocol](#) – [D'hondt et al 2015](#)) were developed to assess the impact of species on the environment and the possibility of spreading and colonisation. The non-native species in the BNS are reported by the MUMM to the Marine Environment Service within the framework of the [Monitoring programme for Belgian marine waters](#) (MSFD) and the ICES working group [WGITMO](#). An overview of the non-native species in the BNS is given in [Kerckhof et al. \(2007\)](#) and the [list](#) of the [VLIZ alien species consortium](#) (more information: [Vandepitte et al. 2012](#)). An update of the latter list will be published in 2019.

Projects such as [RINSE](#), [MEMO](#), [SEFINS](#) and [THAS](#) focus on the problem of invasive non-native species in the Southern Bight of the North Sea and the adjacent estuaries by means of research, the development of instruments, the exchange of good practice examples, etc.

3.5.7 Measures against harmful anti-fouling substances

On 5 October 2001, the [International Convention on the Control of Harmful Anti-fouling Systems on Ships](#) (AFS Convention) was adopted by the [IMO](#) in London and entered into force on 17 September 2008. The convention prohibits the use of harmful substances, including organotin compounds, in anti-fouling paints for ships. Organotin compounds have also been included by OSPAR in the list of chemicals requiring priority action ([OSPAR List of Chemicals for Priority Action 2013](#), more information: [the background document on organotin compounds 2011](#)).

At European level, the use of organotin compounds in anti-fouling substances on ships as active biocides is prohibited by Regulations (EC) No 782/2003 and (EC) No 1907/2006. However, Decision 2009/425/EC provides for the possibility to allow dibutyltin dichloride compounds (DBT) to act as a catalyst in paints and coatings for an additional period of time if no suitable alternative is available, subject to compliance with the maximum concentration of 0.1% by weight of tin. The Water Framework Directive (WFD, 2000/60/EC) includes organotin compounds in the indicative list of main pollutants.

In Belgium, the transposition of the AFS Convention is ensured by the law of 16 February 2009 and the decree of 9 May 2008.

3.5.8 Measures against underwater noise from ships

At international level, within the *Marine Environment Protection Committee (MEPC)* of the IMO, recommendations were formulated to limit underwater noise effects on cetaceans (*Guidelines MEPC 2014*). In addition, *ASCOBANS* is also discussing measures to address the impact of submarine noise on small cetaceans (*ASCOBANS Resolution 2003, ASCOBANS 2006 Resolution, CMS Family Guidelines - Prideaux 2016*).

At European level, the problem of underwater noise was included in the MSFD (2008/56/EC), in which the supply of energy, including underwater noise, is identified as one of the descriptors for good environmental status (*Tasker et al. 2010*) (see also theme **Energy (including cables and pipes)**). The RD of 23 June 2010 provides for the transposition of the MSFD measures into national legislation.

Legislation reference list

Overview of the relevant legislation at the international, European, federal and Flemish level. For the consolidated European legislation we refer to [Eurlex](#), the national legislation can be consulted in the [Belgisch staatsblad](#) and the [Justel-databanken](#).

| International agreements, treaties, conventions, etc. | | |
|--|--------------------|---|
| Title | Year of conclusion | Year of entering into force |
| Convention of facilitation of international maritime traffic (FAL) | 1965 | 1967 |
| International Convention on load lines | 1966 | |
| International Convention on tonnage measurement of ships (TONNAGE) | 1969 | 1982 |
| International Convention on civil liability for oil pollution damage (CLC) | (1969) - 1992 | (1975) - 1996 |
| International Convention on the establishment of an international fund for compensation for oil pollution damage (FUND Convention) | 1992 - (2003) | 1996 |
| Convention on the international regulations for the prevention of collisions at sea (COLREG) | 1972 | 1977 |
| International Convention for the prevention of pollution from ships, as modified by the Protocol of 1978 (MARPOL) | 1973 | 1978 |
| International Convention for the safety of life at sea (SOLAS) | 1974 | 1980 |
| Convention on limitation of liability for maritime claims (LLMC) | 1976 | 1986 |
| International Convention on standards of training, certification and watch keeping for seafarers(STCW) | 1978 | 1984 (large revisions in 1995 and 2010) |
| International Convention on maritime search and rescue SAR | 1979 | 1985 |
| United Nations Convention on the law of the sea (UNCLOS) | 1982 | 1994 |
| Memorandum of Understanding on port state control (Paris MoU) | 1982 | |
| Agreement for cooperation in combating pollution of the North Sea by oil and other harmful substances (Bonn Agreement) | 1983 | 1989 |
| International Convention on liability and compensation for damage in connection with the carriage of hazardous and noxious substances by sea (HNS) | 1984 | |
| International oil pollution preparedness, response and cooperation convention (OPRC) | 1990 | 1995 |
| Agreement on the conservation of small cetaceans in the Baltic, North-East Atlantic, Irish Sea and North Sea (ASCOBANS) | 1991 | 1994 |
| Convention for the protection of the marine environment of the North-East Atlantic (OSPAR Convention) | 1992 | 1998 |
| Protocol on the preparedness for, response to and cooperation in the event of pollution by noxious and potentially hazardous substances (OPRC-HNS) | 2000 | 2007 |
| International Convention on the control of harmful anti-fouling systems on ships (AFS) | 2001 | 2008 |
| International Convention on civil liability for bunker oil pollution damage (Bunker) | 2001 | 2008 |
| International Convention for the control and management of ships' ballast water and sediments (BWM) | 2004 | 2017 |
| Nairobi International Convention on the removal of wrecks | 2007 | 2015 |

| European legislation | | |
|--|------|--------|
| Title | Year | Number |
| COM: Communication from the Commission (COM): On the safety of the seaborne oil trade (Erika I) | 2000 | 142 |
| COM: Communication from the Commission (COM): A second set of Community measures on maritime safety following the sinking of the oil tanker Erika (Erika II) | 2000 | 802 |
| COM: Communication from the Commission (COM): on short sea shipping | 2004 | 453 |
| COM: Communication from the Commission (COM): Third package of legislation on maritime safety in the European Union (Erika III) | 2005 | 585 |
| COM: Communication from the Commission (COM): Strategic goals and recommendations for the EU's maritime transport policy until 2018 | 2009 | 8 |

| | | |
|--|------|------|
| COM:White Paper (COM): Roadmap to a Single European Transport Area - Towards a competitive and resource-efficient transport system | 2011 | 144 |
| Directive on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) | 1992 | 43 |
| Directive on port reception facilities for ship-generated waste and cargo residues | 2000 | 59 |
| Directive establishing a framework for Community action in the field of water policy (Water Framework Directive) | 2000 | 60 |
| Directive on the minimum level of training of seafarers | 2001 | 25 |
| Directive establishing a Community vessel traffic monitoring and information system and repealing Council Directive 93/75/EEC | 2002 | 59 |
| Directive 2005/35/EC of 7 September 2005 on ship-generated pollution and on the introduction of penalties for infringements | 2005 | 35 |
| Directive establishing a framework for Community action in the field of marine environmental policy (Marine Strategy Framework Directive) | 2008 | 56 |
| Directive on common rules and standards for ship inspection and survey organizations and for the relevant activities of maritime administrations | 2009 | 15 |
| Directive on Port State Control | 2009 | 16 |
| Directive establishing the fundamental principles governing the investigation of accidents in the maritime transport sector and amending Council Directive 1999/35/EC and Directive 2002/59/EC of the European Parliament and of the Council | 2009 | 18 |
| Directive on the insurance of ship owners for maritime claims | 2009 | 20 |
| Directive on compliance with flag State requirements | 2009 | 21 |
| Directive on reporting formalities for ships arriving in and/or departing from ports of the Member States and repealing Directive 2002/6/EC (Reporting Directive) | 2010 | 65 |
| Directive on marine equipment and repealing Council Directive 96/98/EC | 2014 | 90 |
| Directive relating to a reduction in the sulphur content of certain liquid fuels | 2016 | 802 |
| Regulation establishing a European Maritime Safety Agency | 2002 | 1406 |
| Regulation banning organotin compounds from ships | 2003 | 782 |
| Regulation concerning the registration, evaluation, authorization and restriction of chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC | 2006 | 1907 |
| Regulation on common rules and standards for ship inspection and survey organizations | 2009 | 391 |
| Regulation on the liability of carriers of passengers by sea in the event of accidents | 2009 | 392 |
| Regulation on the accelerated phasing-in of double hull or equivalent design requirements for single hull oil tankers | 2012 | 530 |
| Regulation (EU) on Union guidelines for the development of the trans-European transport network and repealing Decision No 661/2010/EU | 2013 | 1315 |
| Regulation (EU) concerning the prevention and control of the introduction and spread of invasive alien species | 2014 | 1143 |
| Commission Implementing Decision (EU) 2015/253 of 16 February 2015 laying down the sampling and reporting requirements under Council Directive 1999/32/EC as regards the sulphur content of marine fuels | 2015 | 253 |
| Implementing Regulation specifying the requirements for the design, construction, performance and testing standards of marine equipment | 2017 | 306 |

Belgian and Flemish legislation

| Abbreviation | Title | File number |
|--|---|---------------|
| Decision of the Government of Flanders of 13 July 2001 | Besluit van de Vlaamse regering houdende de aanduiding van de voorlopige begrenzing van de havengebieden | 2001-07-13/93 |
| Decision of the Government of Flanders of 26 October 2007 | Besluit van de Vlaamse regering betreffende het Maritiem Reddings- en Coördinatiecentrum | 2007-10-26/30 |
| Decision of the Government of Flanders of 26 October 2007 | Besluit van de Vlaamse regering betreffende de begeleiding van de scheepvaart | 2007-10-26/31 |
| Decision of the Government of Flanders of 17 February 2012 (VLAREMA) | Besluit van de Vlaamse regering tot vaststelling van het Vlaams reglement betreffende het duurzaam beheer van materiaalkringlopen en afvalstoffen (VLAREMA) | 2012-02-17/18 |
| Decree of 2 March 1999 | Decreet houdende het beleid en het beheer van de zeehavens (Havendecreet) | 1999-03-02/37 |
| Decree of 16 June 2006 | Decreet betreffende de begeleiding van de scheepvaart op de maritieme toegangswegen en de organisatie van het Maritiem Reddings- en Coördinatiecentrum | 2006-06-16/51 |
| Decree of 9 May 2008 | Decreet houdende instemming met het Internationaal Verdrag betreffende de controle van schadelijke aangroeiwerende systemen op schepen, opgemaakt in Londen op 5 oktober 2001 | 2008-05-09/53 |
| Decree of 23 December 2011 | Decreet betreffende het duurzaam beheer van materiaalkringlopen en afvalstoffen (Materialendecreet) | 2011-12-23/33 |
| RD of 20 July 1973 | Koninklijk besluit houdende zeevaartinspectiereglement | 1973-07-20/30 |
| RD of 2 February 1993 | Koninklijk besluit tot vaststelling van de lijst van de havens en hun aanhorigheden overgedragen van de Staat aan het Vlaamse Gewest. | 1993-02-02/31 |
| RD of 21 December 2001 | Koninklijk besluit betreffende de soortenbescherming in de zeegebieden onder de rechtsbevoegdheid van België | 2001-12-21/72 |
| RD of 27 April 2007 | Koninklijk besluit betreffende de voorkoming van luchtverontreiniging door schepen en de vermindering van het zwavelgehalte van sommige scheepsbrandstoffen | 2007-04-27/37 |
| RD of 6 February 2009 | Koninklijk besluit tot oprichting en organisatie van het maritiem informatiekruispunt | 2009-02-06/39 |
| RD of 23 June 2010 | Koninklijk besluit betreffende de mariene strategie voor de Belgische zeegebieden | 2010-06-23/05 |
| RD of 11 April 2012 | Koninklijk besluit tot instelling van een veiligheidszone rond de kunstmatige eilanden, installaties en inrichtingen voor de opwekking van energie uit het water, de stromen en de winden in de zeegebieden onder Belgische rechtsbevoegdheid | 2012-04-11/15 |
| RD of 20 March 2014 | Koninklijk besluit tot vaststelling van het marien ruimtelijk plan | 2014-03-20/03 |
| Cooperation agreement of 8 July 2005 | Samenwerkingsakkoord tussen de Federale Staat en het Vlaamse Gewest betreffende de oprichting van en de samenwerking in een structuur Kustwacht | 2005-07-08/62 |
| Law of 8 August 1980 | Bijzondere wet tot hervorming der instellingen | 1980-08-08/02 |
| Law of 20 January 1999 | Wet ter bescherming van het mariene milieu in de zeegebieden onder de rechtsbevoegdheid van België | 1999-01-20/33 |
| Law of 6 April 1995 | Wet betreffende de voorkoming van de verontreiniging van de zee door schepen | 1995-04-06/94 |
| Law of 16 February 2009 | Wet houdende instemming met het Internationaal Verdrag van 2001 betreffende de controle op schadelijke aangroeiwerende systemen op schepen, en met de Bijlagen, gedaan te Londen op 5 oktober 2001 | 2009-02-16/51 |
| Law of 25 December 2016 | Wet tot instelling van administratieve geldboetes van toepassing in geval van inbreuken op de scheepvaartwetten | 2016-12-25/38 |

