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Maritime transport, shipping and ports

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Currently, more than 90% of the globally traded goods are transported by sea. In 2013, 9.5 billion tons of goods were transported by seagoing ships. By the end of 2014, the world merchant fleet consisted of 87,726 ships, equalling a total of 1,091.59 million GT. In 2014, the merchant fleet of the EU consisted of 13,603 ships, 203 of which were Belgian ([UNCTAD - Review of Maritime Transport](#), see also [list Belgian seaships](#)).

The Belgian sea ports are situated at some of the busiest trade routes worldwide (over 150,000 ship movements a year, [Goffin et al. 2007](#), [Vermeersch & Desnouck 2009](#)), in the so-called Le Havre-Hamburg range (with Antwerp, Ghent, Zeebrugge, Rotterdam, Amsterdam, Bremen, Hamburg, Dunkirk and Le Havre as the main sea ports). Ostend has also been taken into account in the figures of the Flemish sea ports. The total traffic in the Le Havre-Hamburg range in 2014 was 1,131 million tons, with the Flemish ports accounting for a market share of 23.8% ([Merckx & Neyts 2015](#)).

Maritime transport and shipping in the Belgian part of the North Sea (BNS) will be discussed in detail below. With regard to the ports, only sea ports (with the main purpose of handling sea-going 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](#)).

2.1 Policy context

On an international level, shipping and maritime transport are covered by several international treaties and resolutions of the International Maritime Organization ([www.imo.org](#), [Brochure IMO 2013](#)). 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 the constitution of the sea, discussing the general rights and obligations of nations (flag states, coastal states, port states). Furthermore, the IMO is responsible for a significant amount of other conventions about, *inter alia*, safety at sea, traffic regulations and pollution prevention (see [list at IMO website](#)). Some of these conventions are discussed further in the section **Sustainable use** and in [Verleye et al. \(2015\)](#).

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). Furthermore, the European Maritime Safety Agency ([EMSA](#)) is relevant 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 on the [website of the Flemish Port Commission \(VHC\)](#) and in the publication [Merckx et al. \(2012\)](#). Several of the policy instruments are also further elaborated in [Verleye et al. \(2015\)](#).

In Belgium, maritime transport is a federal matter, covered by the [FPS Mobility, Directorate-General \(DG\) Maritime Transport \(Policy statement Mobility 2014, Policy statement Social fraud, Privacy and North Sea 2014](#), other federal actors are listed in table 1). The DG Maritime Transport ensures that ships sailing under a Belgian flag or ships entering Belgian ports comply with the international maritime regulations 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 Maritime Transport represents Belgium within the IMO. The regulations with regard to navigation which ships have to follow, 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 \(2014\)](#).

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 law of 2 March 1999 that constitutes the basis for the current port policy (see also the website of [VHC](#)). Moreover, a [Long term vision for the Flemish port policy](#) was developed between 2002 and 2005.

The coordination and the consultation between federal, Flemish as well as regional authorities (table 1) and the Province of West Flanders (cooperation agreement of 8 July 2005) is carried out by the [Coast Guard](#). The organisational structure of the Coast Guard consists of a policy-making body, a consultation body and a secretariat. The policy-

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

FLEMISH PARTNERS OF THE COAST GUARD	FEDERAL PARTNERS OF THE COAST GUARD
<i>Fleet</i>	<i>FPS Interior</i> (Civil protection, Crisis Centre, Maritime and River Police)
<i>Ports and Water Policy division</i>	<i>FPS Foreign Affairs</i>
<i>International Environmental Policy division</i>	<i>FPS Economy, S.M.E.s, Self-Employed and Energy</i>
<i>Maritime Access division</i>	<i>FPS Finances (Belgian Customs)</i>
<i>Shipping Assistance division</i>	<i>FPS Mobility and Transport (DG Maritime Transport)</i>
<i>Coastal division</i>	<i>FPS Health, Food Chain Safety and Environment (Marine Environment department)</i>
<i>Pilotage</i>	<i>Ministry of Defence</i>
<i>Sea Fisheries service</i>	<i>PPS Sustainable Development</i>
	<i>PPS Science Policy</i> (Management Unit of The North Sea Mathematical Models (<i>MUMM</i>), scientific service of the Royal Belgian Institute of Natural Sciences (<i>RBINS</i>))

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).

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 (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 and the border control 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 Flemish government of 26 October 2007 and the royal decree of 6 February 2009.

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

- The Flemish Port Commission (*VHC*) – advice and information on socio-economic aspects of port projects as well as advice on port projects of over 10 million euros which have requested subsidies;
- *Milieu- en Natuurraad van Vlaanderen (Minaraad)* – advice on environmental aspects of port projects of over 10 million euros which have requested subsidies;
- The initiative *Flanders Port Area* aims to promote the cooperation between the four Flemish sea ports. Within this context, the Flemish ports of Antwerp, Ghent, Ostend and Zeebrugge and the Flemish Port Associations have concluded a cooperation agreement. Based on 30 points of action, this agreement intends to strengthen the competitiveness of the Flemish ports on an international scale.

An overview of the legislation concerning shipping and ports is also available in the coastal codex, 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)*.

2.2 Spatial use

In the Marine Spatial Plan (MSP, royal decree of 20 March 2014, see also *Van de Velde et al. 2014*), the most important shipping routes necessary 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. Other activities are allowed, as long as shipping is not threatened. For a number of these routes, a routeing system (*ship's routeing, IMO*) has been adopted within the International Maritime Organisation (*IMO*):

- Traffic separation scheme Noordhinder South;
- Precautionary area (where ships have to navigate carefully) Noordhinder Junction;

INDICATION OF THE IMO FAIRWAYS, ANCHORAGE PLACES, AREAS TO BE AVOIDED AND POTENTIAL HARBOUR EXTENSIONS

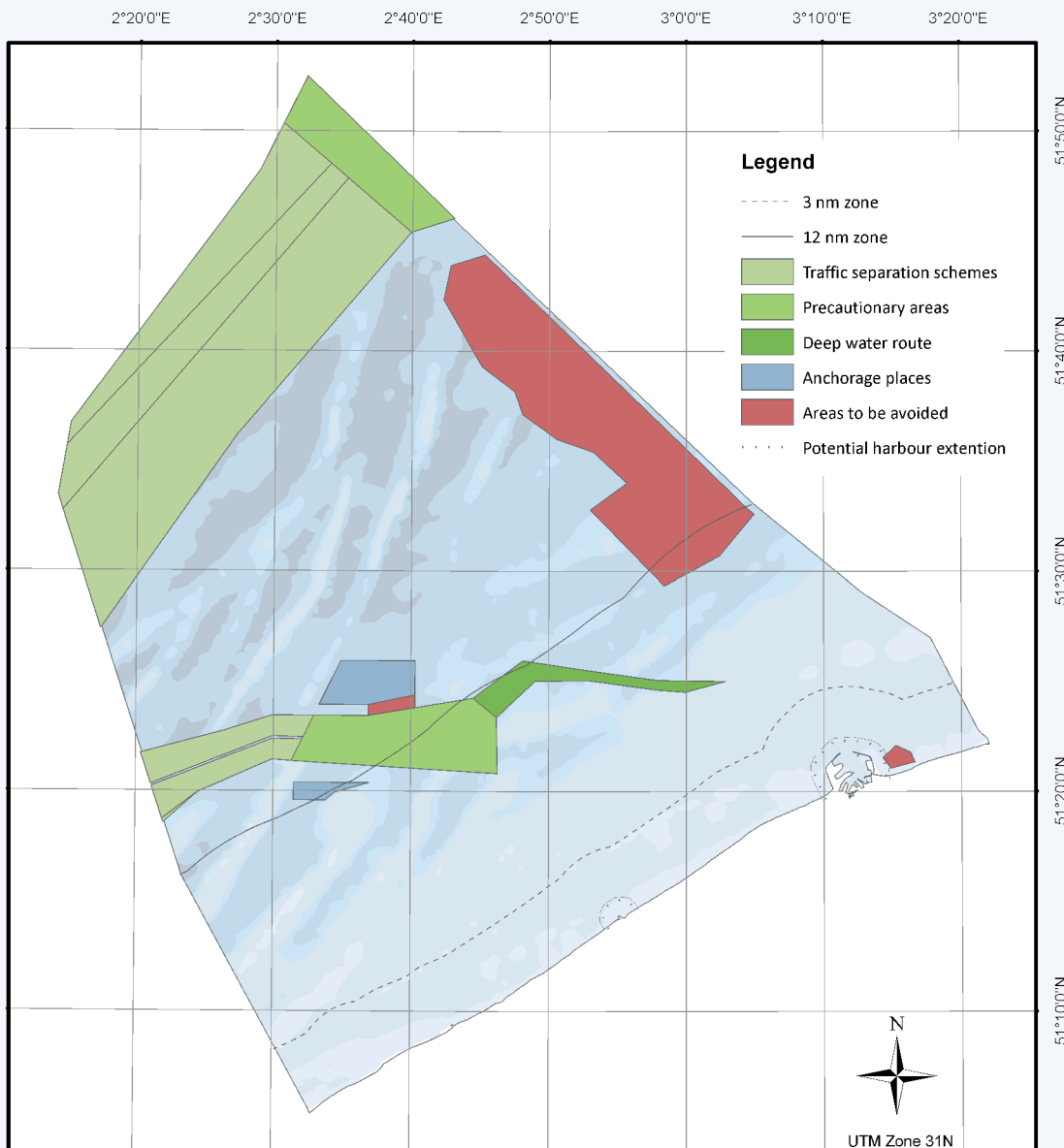


Figure 1. Indication of the IMO fairways, anchorage places, areas to be avoided and potential harbour extensions (Source: RBINS/IRSNB, marineatlas.be, based on RD of 20 March 2014).

- Traffic separation scheme Westhinder;
- Precautionary area Westhinder;
- Area to avoid Westhinder;
- Deepwater route (specifically for ships with a limited manoeuvrability due to their draught) for approaching the Western Scheldt.

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 are also pilotage routes

where a maritime pilot will board the ship to advise the captain on the navigation. Most of the merchant ships are subject to compulsory pilotage.

- Precautionary area around the zone reserved for the construction and exploitation of installations for the production of electricity from water, currents or winds (with a safety zone of 500 m). There is also a safety zone around every fixed construction within the concession zone (royal decree of 11 April 2011, see also theme **Energy (including cables and pipelines)**);
- Traffic route Westpit, along the south side of the zone reserved for wind turbines in an east-west direction;
- Traffic route of the precautionary area Westhinder via Scheur and Zand to the port of Zeebrugge;
- Traffic route of the precautionary area Westhinder via Scheur and Zand to the Scheldt Estuary;
- Traffic route between Ostend and Zeebrugge, south of Wenduine Bank;
- Traffic route Ostend-Dover, north of Stroom Bank and Nieuwpoort Bank, south of Oostende Bank, Middelkerke Bank and Kwinte Bank, between Binnen Ratel and Buiten Ratel;
- Traffic route of Scheur to the port of Ostend, west of Wenduine Bank;
- Traffic route to the port of Nieuwpoort across Westdiep;
- Traffic route of Westpit, west of the zone reserved for wind turbines, towards the precautionary area Noordhinder Junction;
- Traffic route of Goote Bank, over Westhinder Bank, east of Fairy Bank, joining the International Maritime Organisation traffic separation scheme Noordhinder Zuid;
- Traffic route of Goote Bank over Oosthinder Bank, south of Noordhinder Bank, joining the International Maritime Organisation traffic separation scheme Noordhinder Zuid;
- Traffic route from the buoy Noordoost Akkaert and in western direction between Goote Bank and Akkaert Bank, along the north side of the deepwater route, to the precautionary area Wandelaar.

In the MSP, the anchorage zones of Oostdyck and Westhinder are demarcated and space is provided for the construction of a mooring platform on the location of a high voltage station, on the condition that it will not disturb the primary function.

Information concerning shipping in the BNS is communicated via the Notices to Mariners ([BaZ](#), general provisions: [BaZ 2015 nr. 1](#)).

2.2.1 Port zones

According to the spatial structure plan Flanders ([RSV](#)), the Port Decree and the coalition agreements, every Flemish sea port should have a strategic plan (including a strategic environmental assessment (SEA) (see also **Impact**) and spatial safety reports (RVR)) in which it is investigated how the economic interests can be aligned with other societal interests when the port area is developed further. This plan is the basis of the demarcation of 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 spatial policy plan: [Beleidsplan Ruimte](#).

When the port development causes a loss of natural sites, this will be compensated by creating new nature 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 Sigmaphan (see theme **Scheldt Estuary**).

The demarcation of the different port zones has been stipulated in the royal decree of 2 February 1993 and in the decision of the Flemish government 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 (royal decree 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. An expansion of the mole of Zeebrugge has also been included in the [Masterplan Vlaamse Baaieren \(2014\)](#) which provides a vision of coastal development on the long term (2100, see also theme **Safety against flooding**). In this masterplan, the accessibility of the ports is discussed as well. In this context, the development of an island belt, east of Zeebrugge, is identified as a potential solution with regard to the accessibility of the Scheldt ports.

Table 2. Overview of the Flemish sea ports and their total surface and water surface (Merckx & Neyts 2015).

PORTS	TOTAL SURFACE	WATER SURFACE
Port of Ostend	658 ha	199 ha
Port of Ghent	4,648 ha	623 ha
Port of Zeebrugge	2,857 ha	1,000 ha
Port of Antwerp	13,057 ha	1,992 ha

2.3 Societal interest

2.3.1 Employment

The total employment in the Belgian ports (= the Flemish sea ports of Antwerp, Zeebrugge, Ghent and Ostend, and the ports of Liège and Brussels) amounted to 259,168 full-time equivalents (FTEs) in 2013 (figure 2). This figure can be divided into 116,724 direct FTEs and 142,444 indirect FTEs. The Flemish sea ports account for 88.8% of this employment, with Antwerp accounting for more than half (52.7%), followed by Ghent (23.4%), Zeebrugge (8.3%) and Ostend (4.4%). This difference in employment is partly related to the type of industry and shipment of goods in the different ports (see below). In 2013, the total employment in the ports equalled 6.5% of the Belgian employment. Until 2008, there was a slow increase in the number of FTEs in the Belgian ports, followed by a decrease from 2009, as a result of the global economic crisis (Van Nieuwenhove 2015).

The Economic importance of the Belgian ports in 2013 (Van Nieuwenhove 2015) also presents a social balance of the employment in the ports (composition of the staff, education, rotation of the staff, working time, type of contract, wage costs, promotion measures and training). The workforce in the ports in 2013 largely consisted of males (84%). Blue-collar workers constitute the majority of the port staff, with 52% in 2013, followed by white-collar workers (44%) and other staff (4%).

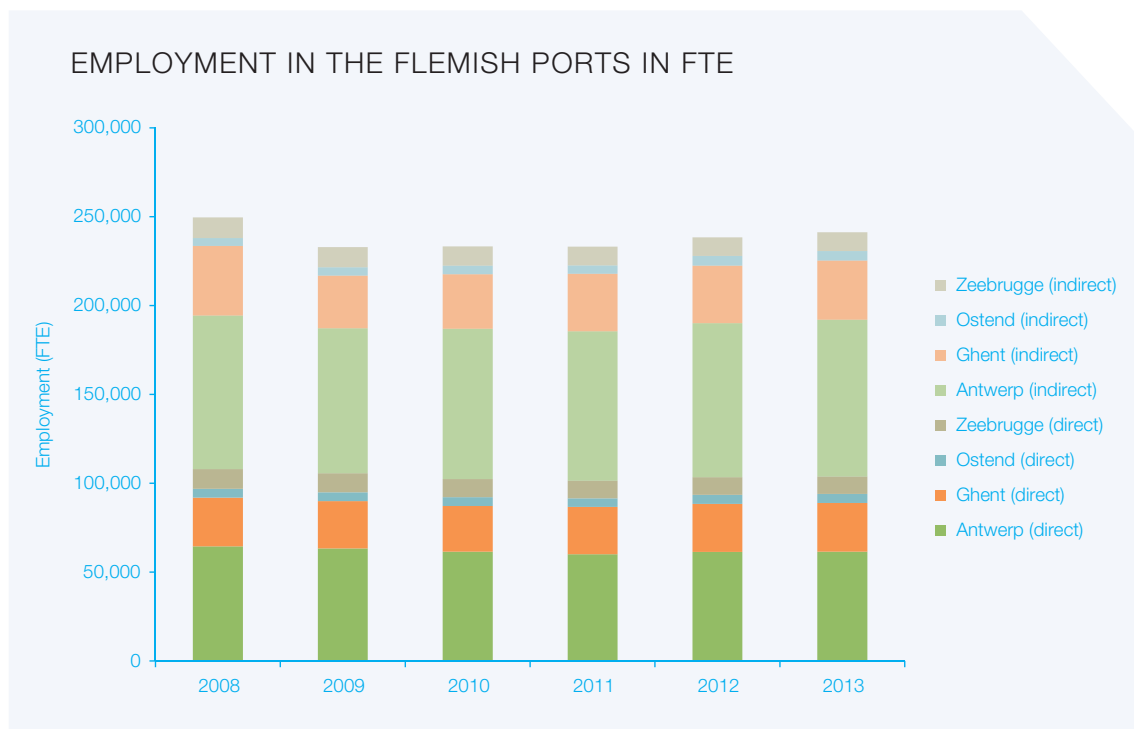


Figure 2. Employment in the Flemish ports in FTE (Source: Van Nieuwenhove 2015).

2.3.2 Added value

The total added value of the Belgian ports equalled 30,408.5 million euros in 2013. A distinction can be made between the direct (16,446.3 million euros) and indirect added value (13,962.2 million euros) (figure 3). Between 2008 and 2013, the total added value of the ports decreased by 0.2%. The Flemish sea ports accounted for 89.7% of the direct added value in 2013, with Antwerp accounting for more than half of the direct added value (59.9%), followed by Ghent (20.8%), Zeebrugge (6.0%) and Ostend (3.0%) (*Van Nieuwenhove 2015*).

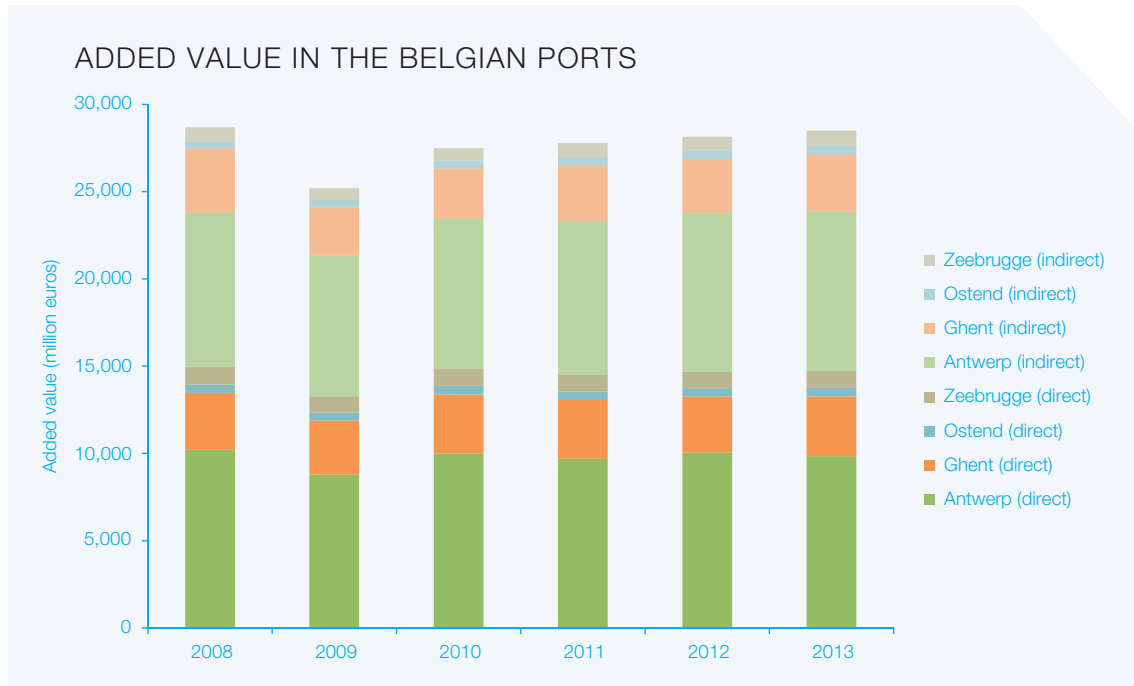


Figure 3. Added value in the Belgian ports (Source: *Van Nieuwenhove 2015*).

2.3.3 Shipment of goods

After a decrease in 2009 due to the worldwide economic crisis, cargo traffic in the Flemish ports increased to more than 265 million tons in 2011. In 2014, the traffic amounted to 268.880 million tons (figure 4). In terms of shipment of goods, Antwerp remains by far the most important port with 199.012 million tons in 2014. Cargo traffic in Zeebrugge, Ostend and Ghent amounted to 42.548, 1.431 and 25.889 million tons respectively. In 2014, cargo traffic in the Flemish ports accounted for 23.8% of the total amount in the Le Havre-Hamburg range (*Merckx & Neyts 2015*).

In 2014, the port of Antwerp was the leader in the handling of containers (108.317 million tons) (more information on intermodal container traffic: *Notteboom 2006, Merckx & Neyts 2009*), liquid cargo (62.834 million tons) and break bulk cargo (9.885 million tons). Zeebrugge is the most important port with regard to roll-on/roll-off traffic with 13.043 million tons and Ghent with regard to dry bulk (16.740 million tons) (*Merckx & Neyts 2015*, more information on car traffic: *Notteboom 2010*).

2.3.4 Passenger traffic

In 2014, a total of 822,173 passengers embarked or disembarked in the Flemish ports (figure 5). Zeebrugge accounted for the majority of this figure with 806,265 passengers, followed by Ostend (11,690 passengers), Antwerp (3,204 passengers) and Ghent (1,014 passengers). Since the 1980s, passenger traffic in the Flemish ports has decreased substantially as more than 5 million passengers embarked or disembarked in 1980 (*Merckx & Neyts 2015*). This decline can be attributed to the opening of the Channel Tunnel, the cessation of the *Regie voor Maritiem Transport* (RMT) ferry service and the cancellation of certain ferry lines (*Notteboom 2004*).

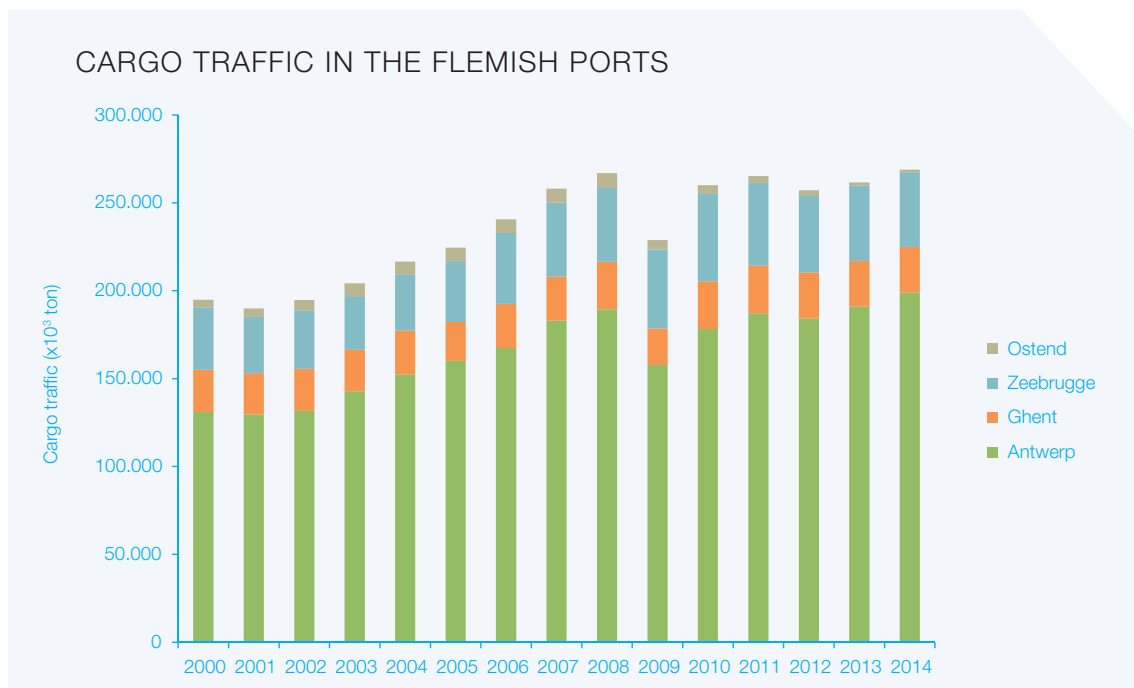


Figure 4. Cargo traffic in the Flemish ports (Source: *Merckx & Neyts 2015*).

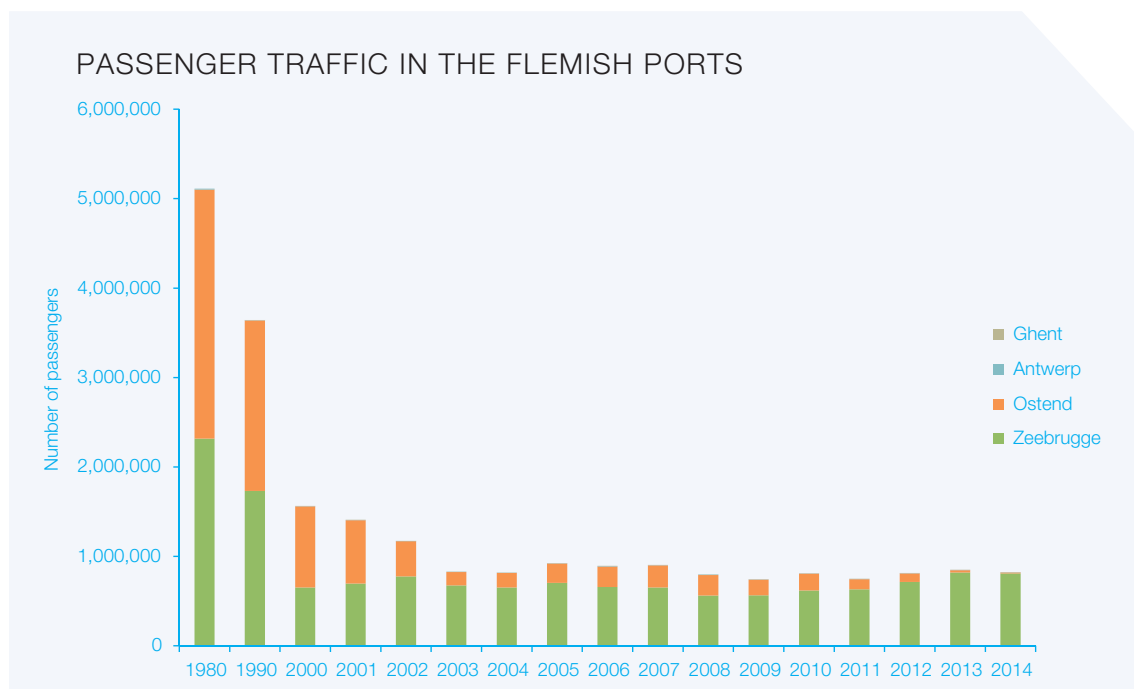


Figure 5. Passenger traffic in the Flemish ports (Source: *Merckx & Neyts 2015*).

2.3.5 Investments

In 2013, direct investments in the Belgian ports equalled 3,305.7 million euros, a decrease of 3.3% in comparison to 2012 (figure 6). In total, 3,027.2 million euros were invested in the Flemish sea ports. The majority of these investments were destined for the port of Antwerp (2,314.3 million euros), followed by Ghent (424.7 million euros),

Zeebrugge (212.3 million euros) and Ostend (75.9 million euros). Moreover, 202.4 million euros were invested in maritime companies outside the Belgian port areas (*Van Nieuwenhove 2015*). Public expenditures in the Flemish ports in 2014 equalled 453.63 million euros, 349.68 million euros (77.1%) of which were allocated to maritime access (figure 7). Besides maritime access, 61.57 million euros were spent on the port of Antwerp, 5.91 million euros on Ghent, 20.42 million euros on Zeebrugge and 16.05 million euros on Ostend (*Merckx & Neyts 2015*).

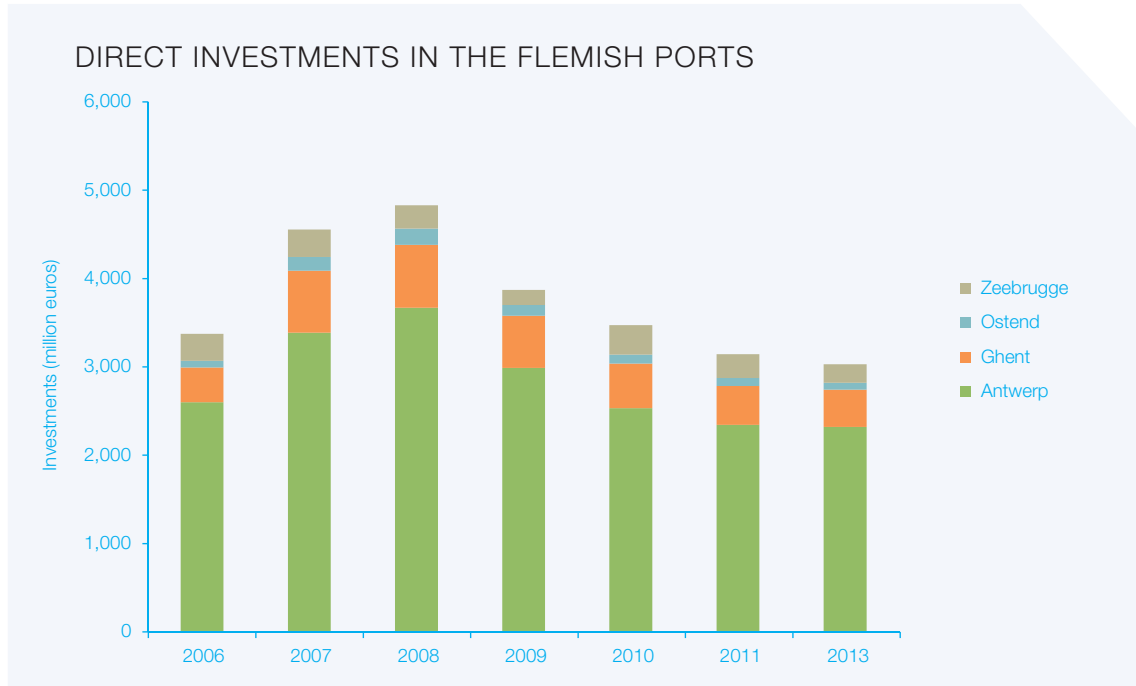


Figure 6. Direct investments in the Flemish ports (Source: *Van Nieuwenhove 2015*).

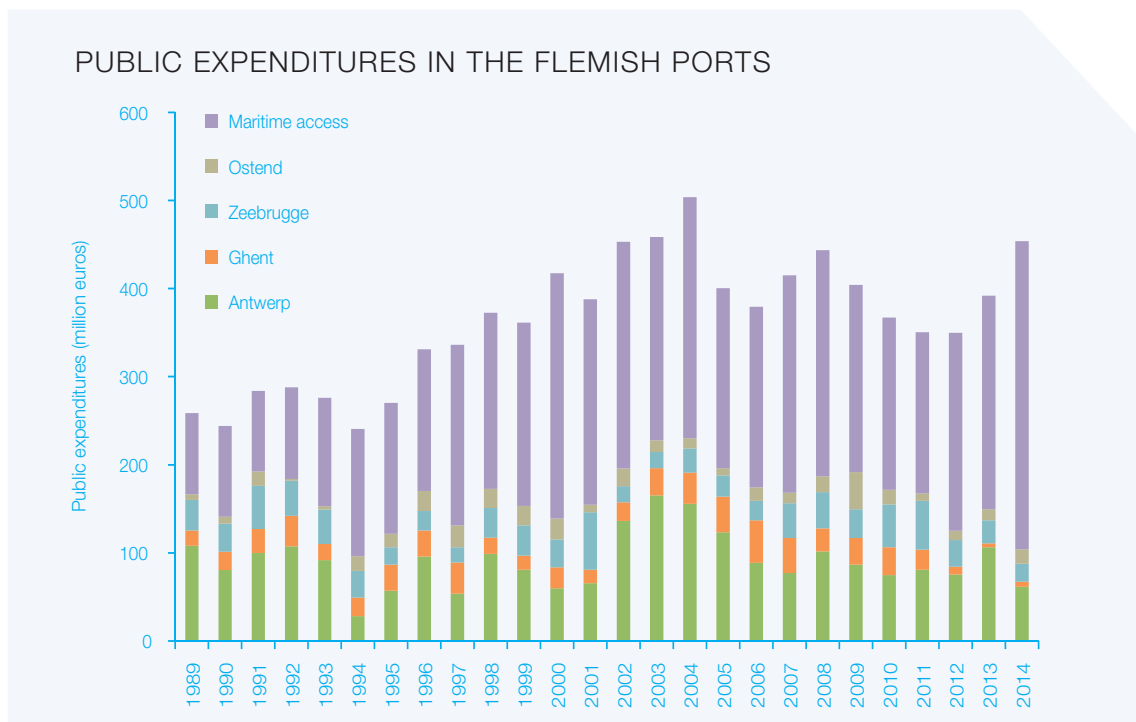


Figure 7. Public expenditures in the Flemish ports (Source: *Merckx & Neyts 2015*).

2.4 Impact

Shipping traffic has a number of effects on the marine environment. Table 3 gives an overview of the different types of impact and the relevant literature.

Table 3. Overview of the effects of shipping on the environment.

IMPACT	LITERATURE
Oil pollution and pollution by other pollutants and toxic materials due to accidental, operational or illegal discharge	<i>Schallier 2001, Seys & Kerckhof 2003, Maes et al. 2004 (MARE-DASM project BELSPO), Seys 2004, Schrijvers & Maes 2005 (GAUFRE project BELSPO), Le Roy et al. 2006 (RAMA project BELSPO), Lescauwae et al. 2006, Volckaert et al. 2006 (MIMAC project BELSPO), Goffin et al. 2007, OSPAR QSR 2010, André et al. 2010, Dittman et al. 2012, Lagring et al. 2012, Maebe et al. 2012, Van Roy et al. 2013, Dulière et al. 2013 (OSERIT project BELSPO)</i>
Air pollution caused by particles in the emissions of marine engines (NO _x , SO _x , CO ₂ , etc.)	<i>Maes et al. 2004 (MARE-DASM project BELSPO), Schrijvers & 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)</i>
Waste dumping	<i>Schallier 2001, Lescauwae et al. 2006, Goffin et al. 2007, Claessens et al. 2010, OSPAR QSR 2010, André et al. 2010, Van Franeker et al. 2011, Claessens et al. 2013 (AS-MADE project BELSPO), Van Cauwenberghe et al. 2013, State of Europe's Seas 2015, Devriese et al. 2015, Van Cauwenberghe et al. 2015</i>
Leaching of polluting anti-fouling substances (e.g. tributyltin (TBT))	<i>Maes et al. 2004 (MARE-DASM project BELSPO), Schrijvers & Maes 2005 (GAUFRE project BELSPO), Goffin et al. 2007, OSPAR QSR 2010, Claessens et al. 2010</i>
Introduction of non-indigenous species due to their attachment to the keel or the discharge of ballast water	<i>Maes et al. 2004 (MARE-DASM project BELSPO), Schrijvers & 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</i>
Pollution and physical impact due to the loss of ships or cargo	<i>Schallier 2001, Seys & Kerckhof 2003, Le Roy et al. 2006 (RAMA project BELSPO), Goffin et al. 2007, De Baere et al. 2010, OSPAR QSR 2010</i>
Other physical impact such as noise and collisions with marine mammals	<i>Maes et al. 2004 (MARE-DASM project BELSPO), OSPAR QSR 2010, André et al. 2010, compilation national reports ASCOBANS</i>
Impact on other users (safety, spatial impact, etc.)	<i>Maes et al. 2004 (MARE-DASM project BELSPO), Schrijvers & Maes 2005 (GAUFRE project BELSPO), Le Roy et al. 2006 (RAMA project BELSPO), Volckaert et al. 2006 (MIMAC project BELSPO), State of Europe's Seas 2015</i>

Moreover, the installation and operation of the ports also have certain effects on the environment. These effects are *inter alia* indicated in the environmental impact assessments (EIAs) and strategic environment assessments (SEAs) of the strategic plans of the ports (see table 4, non-exhaustive list, see also [dossierdatabank](#), [departement LNE](#)).

2.5 Sustainable use

2.5.1 Sustainable development of EU maritime transport

On a European level, a White Paper Roadmap to a Single European Transport Area (COM (2011) 144) was drafted in 2011 with 40 concrete initiatives to achieve a resource-efficient and competitive European traffic system. Specifically for maritime transport, the strategic objectives and recommendations for the EU maritime traffic policy until 2018 have already been elaborated in COM (2009) 8. In table 5, a selection of important initiatives and concepts within this European maritime transport policy are discussed. More information about the European policy instruments/regulations is available on the [website of the Flemish Port Commission \(VHC\)](#) and in the publication [Merckx et al. \(2012\)](#).

Table 4. An overview of the documents concerning the SEAs and EIAs of the Flemish sea ports.

PORT	EIAs
Ostend	<ul style="list-style-type: none"> • <i>Plan MER strategisch plan haven Oostende (kennisgevingsnota) 2004</i> • <i>Richtlijnen milieueffectrapportage Strategisch plan haven Oostende</i> • <i>Goedkeuring milieueffectrapport Strategisch plan haven Oostende</i> • <i>Plan MER kustverdediging en maritieme toegankelijkheid Oostende 2007</i>
Antwerp	<ul style="list-style-type: none"> • <i>Richtlijnen milieueffectrapportage Strategisch plan haven van Antwerpen</i> • <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>Goedkeuring MER Strategisch plan haven van Antwerpen 2009</i> • <i>Kennisgeving Verruiming vaargeul Beneden-Zeeschelde en Westerschelde 2006</i> • <i>Tussenstijds strategisch plan haven van Antwerpen 2006</i>
Zeebrugge	<ul style="list-style-type: none"> • <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>Richtlijn milieueffectrapportage van het strategisch haveninfrastructuurproject (SHIP) in de westelijke achterhaven van Zeebrugge 2011</i>
Ghent	<ul style="list-style-type: none"> • <i>Nota-plan MER strategisch plan haven van Gent</i> • <i>Gewestelijk ruimtelijk uitvoeringsplan 'Afbakening Zeehavengebied Gent - Fase 2</i>

Table 5. A number of important initiatives and concepts within the European maritime transport policy.

INITIATIVE/CONCEPT	EXPLANATION	SOURCE
Trans-European Transport Network (<i>TEN-T</i>)	A European network of transport infrastructure of roads, railways, air and water. The Connecting Europe Facility (<i>CEF</i>) funds TEN-T projects to eliminate bottlenecks in this network.	Regulation 1315/2013
<i>Motorways of the Sea</i>	The Motorways of the Sea concept aims at introducing new intermodal maritime-based logistics chains in Europe, which should bring about a structural change in our transport organisation within the next years.	SEC (2007) 1367
Short Sea Shipping (<i>SSS</i>)	SSS comprises transport of goods and/or passengers on water using short sea lanes. SSS is the most important mode of transport in the concept of the Motorways of the Sea. On a Flemish level, the government started a <i>Promotion Centre on Shortsea Shipping</i> in 1998. This neutral advisory body has gathered <i>statistics</i> on SSS since 1999 for the 4 Flemish ports.	COM (2004) 453
European maritime transport space without barriers	Proposal for a maritime transport space without barriers to decrease and harmonise the administrative procedures for SSS.	COM (2009) 10
Blue Belt initiative	The further development of a European maritime transport space without barriers to a blue belt in which maritime transport can operate freely (reduction of the administrative burden for maritime transport to a level that is comparable to that of other modes of transport).	COM (2012) 573

2.5.2 Measures with regard to safety at sea: construction, equipment and crew of sea-going ships

A lot of legislation exists concerning safety at sea, the prevention of ship disasters and the protection of human life at sea. In table 6, the most relevant international conventions are presented. These conventions are further elaborated in [Verleye et al. \(2015\)](#).

The DG Maritime Transport (FPS Mobility and Transport) ensures that all ships navigating under the Belgian flag comply with the international maritime regulations concerning shipping safety as well as the protection of the marine environment (*inter alia* by means of the ship inspection regulation – royal decree of 20 July 1973 and often revised). The Belgian Port State Control (FPS Mobility and Transport) inspects ships under foreign flag that call at Belgian ports to investigate whether they meet all international regulations accepted by the IMO and the International Labour Organisation (ILO). When ships do not meet these standards, departure can be refused or special conditions can be

Table 6. Most relevant international conventions concerning safety at sea.

CONVENTION	EXPLANATION
<i>SOLAS Convention</i> (International Convention for the Safety of Life at Sea)	The SOLAS Convention is considered as the most important international convention concerning safety on merchant ships. The principal aim is to specify minimum standards for the construction, equipment and operation of ships to guarantee the safety of human life at sea.
COLREG (The International Regulations for Preventing Collisions at Sea, <i>IMO</i>)	This convention provides regulations to determine safe speed limits, to reduce the risk of collisions and to provide guidance to ships which operate in, or in proximity of, traffic separation schemes.
<i>SAR Convention</i> (International Convention on Maritime Search and Rescue, <i>IMO</i>)	The international convention on search and rescue (SAR) at sea aims at developing an international SAR-plan to ensure that rescue-operations are conducted by a SAR-organisation in every sea. Currently, more emphasis is put on the regional approach and the coordination between SAR operations at sea and in the air.
<i>STCW Convention</i> (International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, <i>IMO</i>)	The STCW Convention is an international convention that stipulates the minimum requirements that have to be met by seafarers with regard to training, diplomacy and watchkeeping. The convention also aims to promote the safety of human life and goods as well as the protection of the marine environment. With directive 94/58/EC on the minimum level of training of seafarers, the EU has also drafted rules concerning the minimum level of training of seafarers on EU ships, and on ships calling at EU ports.

imposed (e.g. reparations in the nearest shipyard when the damage cannot be fixed in a Belgian port and the repairs are necessary to guarantee the safety of the ship and its crew) (for the 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) guarantees safe and smooth shipping on the access routes from and to the Belgian ports by providing Vessel Traffic Services (VTS).

2.5.3 Preventing and combating pollution from shipping

There is a wide range of regulations to prevent and combat the pollution of the marine environment due to shipping. The UN Convention on the Law of the Sea (*UNCLOS*, 1982) provides a general international legal framework which *inter alia* addresses pollution of the sea (part XII). In case of accidental or operational pollution of the marine environment, the *MARPOL Convention (1973/1978)* is the most important international treaty. In addition, there are some other important conventions from the *IMO* (table 7, more information about this regulation is provided in *Verleye et al. 2015*).

Other relevant international conventions and agreements not drafted within the *IMO* are the *Bonn Agreement* and the *OSPAR Convention*:

- The *Bonn Agreement* regulates the collaboration between the coastal states of the North Sea with regard to the detection, reporting and combating of pollution in the North Sea caused by oil and other pollutants from ships and offshore installations. Since 1991, air surveillance on the BNS has been organised in the context of this agreement to detect illegal discharges by ships and to provide evidence for potential prosecution. The observation programme is executed by MUMM (Operational Directorate Natural Environment, RBINS) in cooperation with the Ministry of Defense (*website MUMM*). The annual results of the air surveillance are reported in *Van Roy et al. (2013)* (see also *website MUMM*). Since the beginning of the air surveillance, a decreasing trend has been observed in the number of discharges and the estimated oil volume (figure 7). Hence, the measures taken in the framework of European directive 2000/59/EU concerning the port reception facilities and the *MARPOL* Convention, as well as the increased surveillance have a positive effect (*Goffin et al. 2007, André et al. 2010, Lagring et al. 2012, Maebe et al. 2012*). In recent years, an increase in operational discharges of hazardous substances other than oil has been observed (*Van Roy et al. 2013* and *website MUMM*). Within the Coast Guard, action is taken by developing more detailed monitoring procedures in the framework of *MARPOL*;
- In the context of the *OSPAR Convention*, certain biological indicators have been set, e.g. the degree of oil contamination in guillemots is considered a proxy for oil pollution in the marine environment. This indicator is a so-called EcoQO or Ecological Quality Objective. The Research Institute for Nature and Forest (INBO) annually reports the degree of oil contamination of the birds washed ashore on the Belgian beaches (*Verstraete et al.*

2007, 2008, 2009, Stienen & Van de Walle 2010, Stienen et al. 2014). The statistics can also be consulted on the following [website about beached birds](#). Furthermore, operational discharge practices are managed in the framework of OSPAR by a North Sea Network of Prosecutors and Investigators (NSN).

Table 7. IMO conventions on pollution from shipping.

INTERNATIONAL IMO REGULATION		
Convention	Explanation	Ratification by Belgium
<i>MARPOL Convention (MARPOL 73/78)</i> (International Convention for the Prevention of Pollution from Ships, IMO)	This convention aims to prevent pollution of the marine environment by ships from operational or accidental causes.	x
<i>OPRC Convention (IMO)</i>	International convention on oil pollution preparedness, response and co-operation	-
<i>OPRC-HNS protocol (IMO)</i>	Protocol on preparedness, response and co-operation to pollution incidents by hazardous and noxious substances, 2000	-
<i>HNS Convention (IMO)</i>	The international convention on liability and compensation for damage in connection with the carriage of hazardous and noxious substances by sea	-
<i>CLC Convention (IMO)</i>	International convention on civil liability for oil pollution damage	x
<i>FUND Convention (IMO)</i>	International fund for compensation for oil pollution damage	x
<i>Bunker Oil Convention (IMO)</i>	International convention on civil liability for bunker oil pollution damage	x
<i>LLMC Convention (IMO)</i>	International convention on limitation of liability for maritime claims	x
<i>Nairobi International Convention on the Removal of Wrecks (IMO)</i>	Nairobi international convention on the removal of wrecks	-

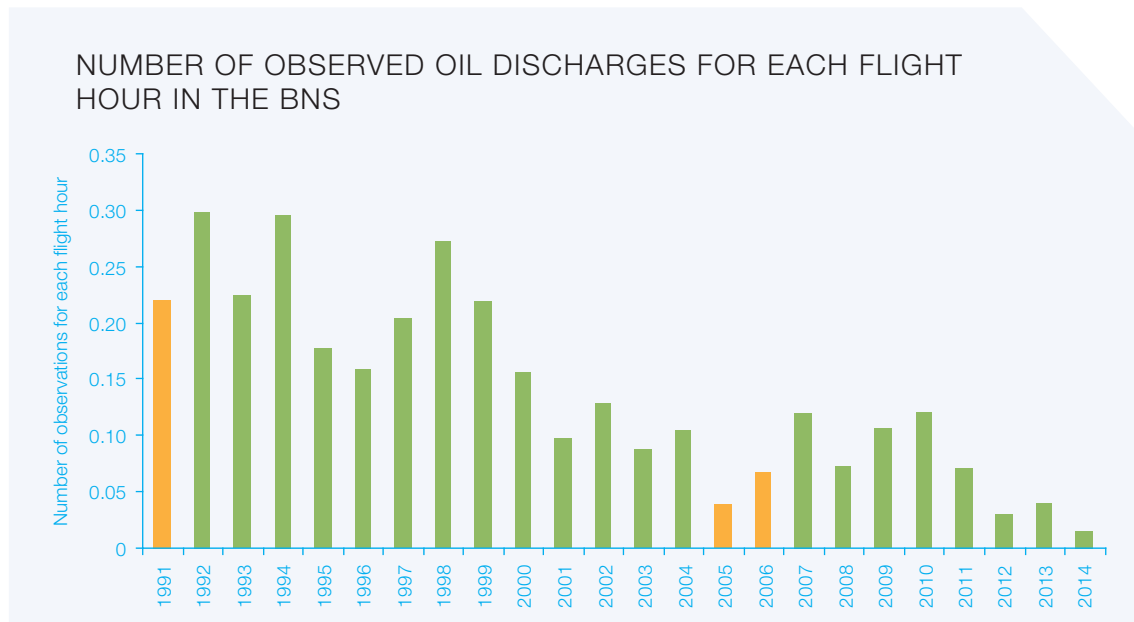


Figure 8. Number of observed oil discharges for each flight hour of the observation programme in the BNS (1991, 2005 en 2006 were transitional years, indicated in orange) (RBINS, Operational Directorate Natural Environment).

At a European level, a lot of measures have been taken in the context of the so-called Erika legislative packages (table 8). In addition, concentrations of polluting substances have been included in the Marine Strategy Framework Directive (MSFD) (2008/56/EC), as one of the descriptors for the environmental status, and pollution by ships has been identified as a pressure (more information: [Law et al. 2010](#)).

On the Belgian level, the law of 6 April 1995 constitutes the legislative framework for the implementation of the MARPOL Convention. In case of severe pollution, the intervention will be executed according to the new ANIP North Sea which has been operational since 2015 and replaces the MD of 19 April 2005. Since the shipping disaster with the oil tanker Erika (1999), the Belgian government has a more elaborate set of instruments at its disposal to combat oil pollution ([website FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu](#)). Furthermore, an intervention plan was drafted in 2005 for the shelter and care of birds affected by oil pollution at sea ([Interventieplan Vogels, 2007](#)). A new instrument in the fight against oil pollution is the advanced 3D-model OSERIT (Oil Spill Evaluation Response

Table 8. Selection of European measures adopted in the framework of the Erika initiatives.

ERIKA LEGISLATIVE PACKAGE	SELECTION OF MEASURES	EXPLANATION
After the shipping disaster with the oil tanker Erika in 1999, a series of measures, known as Erika I (COM (2000) 142), II (COM (2000) 802) and III (COM (2005) 585) have been issued by Europe in order to enhance the maritime safety.	Monitoring Directive (2002/59/EC)	Directive establishing a community vessel traffic monitoring and information system to increase safety and efficiency of sea traffic in Europe.
	Directive 2009/15/EC	Common rules and standards for ship inspection and survey organisations and for the relevant activities of maritime administrations.
	Directive on Port State Control (2009/16/EC)	This directive aims to reform the control mechanisms in ports to efficiently ascertain if ships meet the regulations concerning safety at sea, maritime security, protection of the marine environment as well as living and working conditions.
	Directive 2009/17/EC	Establishing a community vessel traffic monitoring and information system.
	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 for maritime claims.
	Directive 2009/21/EC	Compliance with flag state requirements.
	Directive 2010/65/EU	The aim of this directive is the simplification and harmonisation of the reporting formalities for ships arriving in and/or departing from ports of the member states by means of the introduction of an electronic transfer of data (at the latest by 1 June 2015).
	Regulation on the design requirements for double-hull oil tankers	As a consequence of the accident with the oil tanker Prestige off the Spanish coast in November 2002, the EU has accelerated the phasing-out of single-hull tankers according to regulation 417/2002/EC by means of regulation 1726/2003/EC and 530/2012/EC. The IMO has adopted this accelerated phase-out and followed the EU example. According to regulation 1726/2003/EC, single-hull oil tankers sailing under the flag of a member state and other oil tankers may not enter the ports or offshore terminals under the jurisdiction of a member state after 2010.
	Regulation establishing a European Maritime Safety Agency (EMSA) (1406/2002/EC)	This agency wants to decrease the risk of maritime accidents, pollution by ships and the loss of human life at sea. EMSA manages initiatives such as SafeSeaNet (a central European information platform for the exchange of maritime data between the competent authorities) and CleanSeaNet (satellite service to detect oil pollution from ships).
	Regulation 391/2009/EC	Common rules and standards for ship inspection and survey organisations
	Regulation 392/2009/EC	The liability of carriers of passengers by sea in the event of accidents

Integrated Tool, developed by MUMM (Operational Directorate Natural Environment, RBINS)). The model can simulate the impact of oil pollution (including the water column) and identify the polluter by means of backtracking ([Dulière et al. 2013](#), [OSERIT project BELSPO](#)).

2.5.4 Measures against the disposal of waste from ships

The [MARPOL Convention \(1973/1978\)](#) regulates which waste can be discharged into the marine environment by ships (see also above). In this regard, a remarkable increase of Annex V violations (waste from ships) has been observed during recent years ([Van Roy et al. 2013](#) and [website MUMM](#)). The problem of ship-generated waste is also addressed by directive 2000/59/EC concerning the port reception facilities for ship-generated waste and cargo residues. This directive intends to oblige ships to return their waste to the ports in a sustainable way. In the MSFD (2008/56/EC), the presence of marine litter has been included as one of the descriptors for the marine environmental status and has been identified as a physical pressure on the environment. The criteria and methodological standards concerning the determination of the Good Environmental Status (GES) with regard to marine litter have been elaborated in [Galgani et al. \(2010\)](#).

In Flanders, the policy with respect to the management of ship-generated waste in ports is stipulated in the decree of 23 December 2011 and VLAREMA (decision of the Flemish government of 17 February 2012) (article 5.2.10 marine shipping and article 5.2.11 inland shipping). The waste management of ships in the Flemish ports between 2004 and 2006 is also discussed in [Goffin et al. \(2007\)](#). An exhaustive study of the waste streams in the ports has been conducted in the context of the ECOWARE project ([Maes & Buyse 2000](#)). The waste streams of fishing boats have been discussed in [Maes & Douvere \(2004\)](#) and [Belpaeme \(2006\)](#). In the Fishing for Litter project, fishermen have been reimbursed for collecting marine-sourced litter ([Bonne & Tavernier 2007](#)). Furthermore, there is a new European project called [Waste Free Oceans](#), in which the industry pays fishermen for removing litter ([Vanagt et al. 2012](#)).

2.5.5 Measures against air pollution from shipping

The air pollution generated by sea-going ships is regulated in Annex VI of the [MARPOL Convention \(1973/1978\)](#). This annex was amended in 2008 reducing the sulphur content of fuel to a maximum of 3.5% (0.5% after 1 January 2020) and 1% (0.1% after 1 January 2015) in certain areas (Emission Control Areas, ECAs). The convention also prohibits the emission of substances damaging the ozone layer such as CFCs, and imposes emission limits for nitrogen. Furthermore, the amendment of Annex VI in 2012 introduced a new Chapter 4 concerning a better energy efficiency technology (EEDI) for newly built ships and an efficient management plan with regard to energy for all ships over 400 BT.

The EU has also issued a series of measures in order to combat air pollution generated by ships: directive 1999/32/EC (sulphur content of liquid fuels), modified by directive 2005/33/EC (sulphur content of shipping fuels) and directive 2012/33/EU. These directives ensure that similar conditions as those stipulated in Annex VI of MARPOL 73/78 will be applied in the EU (see above). In addition, a maximum sulphur content of 0.1% for gasoline fuels has been introduced for the auxiliary engines of sea-going ships in the European ports.

On a national level, the measures against air pollution from shipping are discussed in the royal decree of 27 April 2007 (implementation of the MARPOL Convention and the EU directives on the Belgian level). Since January 2015, employees of [DG Maritime Transport](#) have carried out inspections aboard ships in ports in the framework of MARPOL Annex VI (including fuel sampling and analyses).

On a Flemish level, the government decided on 23 April 2014 to introduce an Integrated Approach to Nitrogen Depositions ([PAS](#)). The PAS programme addresses the problem of nitrogen depositions in the special protection areas of the Habitats Directive (directive 92/43/EC) by means of measures targeting the source as well as the effects of the emission.

Other important measures with respect to the reduction of air pollution from shipping are the conversion of ships to Liquefied Natural Gas (LNG) as an alternative fuel and the improved availability of cold ironing (see [Margarino 2014](#)). The use of LNG causes a negligible emission of sulphur and particulates. The NO_x and carbon emissions of this fuel are 85 to 90% and 15 to 20% lower, respectively. In all Flemish sea ports, preparations are in progress to enable LNG supply. On the other hand, cold ironing facilities ensure that ships at the quayside do not have to use their generators

or engines while in port. In several Flemish ports and at quays of the inland shipping network, cold ironing facilities will be installed for boating, inland shipping and sea shipping. Moreover, it is possible to submit a request to the Public Waste Agency of Flanders ([OVAM](#)) for a reduced contribution for ships which use environmentally friendly fuel in the context of the European directive 2000/59/EU.

2.5.6 Measures against the introduction of non-indigenous species

In order to combat the introduction of non-indigenous species by means of the ballast tanks of ships, the [Ballast Water Convention](#) (IMO, 2004) obliges ships to draft a 'Ballast Water and Sediment Management Plan' and to keep a 'Ballast Water Record Book', reporting all ballast operations. In addition, the management of ballast water must take place according to standard procedures (see [website IMO](#)) and systems recognised by IMO should be used for the treatment of ballast water. Until the ratification of this convention, OSPAR advises to adopt certain measures concerning the ballast water of ships on a voluntary basis ([OSPAR general guidance 2010](#)). Prior to the IMO Ballast Water Convention, the IMO resolution from 1997 ([A.868\(20\)](#)) provided guidelines for the control and treatment of ballast water in order to reduce the transfer of harmful aquatic organisms and pathogens.

The International Council for the Exploration of the Sea ([ICES](#)) has established two working groups in order to investigate biological invasions and non-indigenous 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 the European level, regulation 1143/2014 prevents and manages the (intentional and unintentional) introduction and distribution of invasive alien species. This regulation applies to terrestrial species, freshwater species as well as marine organisms. The introduction of non-indigenous species has been included in the MSFD (2008/56/EC) as a biological disturbance. It has also been introduced as a descriptor for a Good Environmental Status (GES). The criteria and methodological standards for the determination of the GES concerning non-indigenous species have been elaborated in [Olenin et al. \(2010\)](#).

In Belgium, the intentional as well as the accidental introduction of non-indigenous species (through ballast water) is prohibited by the law of 20 January 1999, and the subsequent implementation by means of the royal decree of 21 December 2001. In the context of the [Belgian Forum on Invasive Species](#), a protocol has been elaborated (invasive species environmental impact assessment (ISEIA), [Branquart 2009](#)) in order to evaluate the impact of non-indigenous organisms on the environment as well as the potential distribution and colonisation. The non-indigenous species in the BNS are reported to the ICES working group ([WGITMO](#)) by MUMM. An overview of the alien species in the BNS is given by [Kerckhof et al. \(2007\)](#) and the [list](#) of the [VLIZ alien species consortium](#) (more information: [Vandepitte et al. 2012](#)).

Projects such as [RINSE](#), [MEMO](#) and [SEFINS](#) address the problem of invasive non-native species in the Southern Bight of the North Sea and its estuaries by conducting scientific research, developing tools, exchanging best practices, etc.

2.5.7 Measures against harmful anti-fouling substances

On 5 October 2001 (London), [IMO](#) adopted the [International Convention on the Control of Harmful Anti-fouling Systems on Ships](#) which entered into force on 17 September 2008. This convention prohibits the use of harmful substances in anti-fouling paint for ships (e.g. tributyltin compounds (TBT)) and resulted from the IMO resolution (A.895(21)) ([Goffin et al. 2007](#)). Organic tin compounds have been included in the [OSPAR list of chemicals for priority action 2011](#) (more information: [OSPAR background document on organic tin compounds 2011](#)).

At the European level, the use of organic tin compounds in anti-fouling substances of ships is prohibited by directive 2002/62/EC, which was preceded by directives 89/677/EC and 99/51/EC. In regulation 782/2003 the measures of the IMO convention have been implemented in the European legislation. In the Water Framework Directive (2000/60/EC) organic tin compounds have been included in the list of priority substances and certain other pollutants.

In Belgium, the IMO Convention on the Control of Harmful Anti-fouling Systems on Ships has been implemented by the law of 16 January 2009 and the decree of 9 May 2008.

2.5.8 Measures against underwater noise from shipping

On the international level, recommendations have been formulated in the context of the Marine Environment Protection Committee (*MEPC*) of the IMO by means of resolutions which limit the effects of underwater noise on cetaceans (*Guidelines MEPC 2014*). In the context of *ASCOBANS*, measures against the impact of underwater noise from shipping on small cetaceans are discussed (*resolution ASCOBANS 2003*, *resolution ASCOBANS 2006*).

On the European level, the problem of underwater noise has been included in the MSFD (2008/56/EC) where underwater noise and other forms of energy have been identified as a descriptor for a GES (*Tasker et al. 2010*) (see also Energy (incl. cables and pipelines)).

Legislation reference list

Table with international agreements, conventions, etc.

INTERNATIONAL AGREEMENTS, CONVENTIONS, ETC.			
Abbreviations	Title	Year of conclusion	Year of entering into force
<i>CLL Convention</i>	International Convention on Load Lines	1966	
<i>CLC Convention</i>	International Convention on Civil Liability for Oil Pollution Damage	(1969) - 1992	(1975) - 1996
<i>FUND Convention</i>	International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage	1992 – (2003)	1996
<i>COLREG</i>	Convention on the International Regulations for Preventing Collisions at Sea	1972	1977
<i>MARPOL Convention</i>	International Convention for the prevention of pollution from ships, as modified by the Protocol of 1978 relating thereto	1973	1978
<i>SOLAS Convention</i>	International Convention for the Safety of Life at Sea	1974	1980
<i>LLMC Convention</i>	Convention on Limitation of Liability for Maritime Claims	1976	1986
<i>STCW Convention</i>	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers	1978	1984 (major revisions in 1995 and 2010)
<i>SAR Convention</i>	International Convention on Maritime Search and Rescue	1979	1985
<i>UNCLOS</i>	United Nations Convention on the Law of the Sea	1982	1994
<i>Paris MoU</i>	Paris Memorandum of Understanding on Port State Control	1982	
<i>Bonn Agreement</i>	Agreement for cooperation in dealing with pollution of the North Sea by oil and other harmful substances	1983	1989
<i>HNS Convention</i>	The International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea	1984	
<i>OPRC Convention</i>	International Convention on Oil Pollution Preparedness, Response and Co-operation	1990	1995
<i>ASCOBANS</i>	Agreement on the conservation of small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas	1991	1994
<i>OSPAR Convention</i>	The Convention for the Protection of the marine Environment of the North-East Atlantic	1992	1998
<i>OPRC-HNS protocol</i>	Protocol concerning the preparation on, the battle against and the collaboration with the cases of pollution of damaging and hazardous substances	2000	2007
	<i>International Convention on the Control of Harmful Anti-fouling Systems on Ships</i>	2001	2008
<i>Bunker Oil Convention</i>	International Convention on Civil Liability for Bunker Oil Pollution Damage	2001	2008
<i>Ballast Water Convention</i>	International Convention for the Control and Management of Ships' Ballast Water and Sediments	2004	
	<i>Nairobi International Convention on the Removal of Wrecks</i>	2007	

Table with European legislation. The consolidated version of this legislation is available on [Eurlex](#).

EUROPEAN LEGISLATION			
Abbreviations	Title	Year	Number
Directives			
	<i>Council Directive of 21 December 1989 amending for the eighth time Directive 76/769/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations</i>	1989	677
<i>Habitats Directive</i>	Directive on the conservation of natural habitats and of wild fauna and flora	1992	43
	<i>Council Directive of 22 November 1994 on the minimum level of training of seafarers</i>	1994	58
	<i>Directive relating to a reduction in the sulphur content of certain liquid fuels and amending Directive 93/12/EEC</i>	1999	32
	<i>Commission Directive 1999/51/EC of 26 May 1999 adapting to technical progress for the fifth time Annex I to Council Directive 76/769/EEC on the approximations of the laws, regulations, and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (tin, PCP and cadmium)</i>	1999	51
	<i>Directive port reception facilities for ship-generated waste and cargo residues</i>	2000	59
<i>Water Framework Directive (WFD)</i>	Directive establishing a framework for community action in the field of water policy	2000	60
	<i>Directive on the minimum level of training of seafarers</i>	2001	25
	<i>Directive establishing a Community vessel traffic monitoring and information system and repealing Council Directive 93/75/EEC</i>	2002	59
	<i>Directive adapting to technical progress for the ninth time Annex I to Council Directive 76/769/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (organostannic compounds)</i>	2002	62
	<i>Directive amending Directive 1999/32/EC as regards the sulphur content of marine fuels</i>	2005	33
<i>Marine Strategy Framework Directive (MSFD)</i>	Directive establishing a framework for community action in the field of marine environmental policy	2008	56
	<i>Directive on common rules and standards for ship inspection and survey organisations and for the relevant activities of maritime administrations</i>	2009	15
<i>PSC Directive</i>	Directive on port State Control	2009	16
	<i>Directive establishing a Community vessel traffic monitoring and information system</i>	2009	17
	<i>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</i>	2009	18
	<i>Directive on the insurance of shipowners for maritime claims</i>	2009	20
	<i>Directive on compliance with flag State requirements</i>	2009	21
	<i>Directive on reporting formalities for ships arriving in and/or departing from ports of the Member States and repealing Directive 2002/6/EC</i>	2010	65

EUROPEAN LEGISLATION (continuation)			
Abbreviations	Title	Year	Number
	<i>Richtlijn tot wijziging van Richtlijn 1999/32/EG van de Raad wat het zwavelgehalte van scheepsbrandstoffen betreft</i>	2012	33
Regulations			
	<i>Regulation on the accelerated phasing-in of double hull or equivalent design requirements for single hull oil tankers and repealing Council Regulation (EC) No 2978/94</i>	2002	417
	<i>Regulation establishing a European Maritime Safety Agency</i>	2002	1406
	<i>Regulation on the prohibition of organotin compounds on ships</i>	2003	782
	<i>Regulation amending Regulation (EC) No 417/2002 on the accelerated phasing-in of double-hull or equivalent design requirements for single-hull oil tankers</i>	2003	1726
	<i>Regulation on common rules and standards for ship inspection and survey organisations</i>	2009	391
	<i>Regulation on the liability of carriers of passengers by sea in the event of accidents</i>	2009	392
	<i>Regulation on the accelerated phasing-in of double-hull or equivalent design requirements for single-hull oil tankers</i>	2012	530
	<i>Verordening (EU) betreffende richtsnoeren van de Unie voor de ontwikkeling van het trans-Europees vervoersnetwerk en tot intrekking van Besluit nr. 661/2010/EU</i>	2013	1315
	<i>Verordening (EU) betreffende de preventie en beheersing van de introductie en verspreiding van invasieve uitheemse soorten</i>	2014	1143
Other			
<i>Erika I</i>	Communication from the Commission to the European Parliament and the Council on the safety of the seaborne oil trade	2000	142
<i>Erika II</i>	Communication from the Commission to the European Parliament and the Council on a second set of community measures on maritime safety following the sinking of the oil tanker Erika	2000	802
	<i>Communication from the Commission on Short Sea Shipping</i>	2004	453
<i>Erika III</i>	Communication from the Commission: Third package of legislative measures on maritime safety in the European Union	2005	585
	<i>Communication from the Commission: Keep Europe moving - Sustainable mobility for our continent Mid-term review of the European Commission's 2001 Transport White Paper</i>	2006	314
	<i>Commission staff working document (SEC): Report on the Motorways of the Sea State of play and consultation</i>	2007	1367
	<i>Communication from the Commission: towards an EU strategy on invasive species</i>	2008	789
	<i>Communication from the Commission: Strategic goals and recommendations for the EU's maritime transport policy until 2018</i>	2009	8
	<i>Communication from the Commission: Communication and action plan with a view to establishing a European maritime transport space without barriers</i>	2009	10
	<i>White Paper: Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system</i>	2011	144
	<i>Communication from the Commission: Single Market Act II Together for new growth</i>	2012	573

Table with Belgian and Flemish legislation. The consolidated version of this legislation is available on [Belgisch staatsblad](#) and the [Justel-databases](#).

BELGIAN AND FLEMISH LEGISLATION		
Date	Title	File number
Laws		
Bijzondere wet van 8 augustus 1980	Bijzondere wet tot hervorming der instellingen	1980-08-08/02
Wet van 20 januari 1999	Wet ter bescherming van het mariene milieu in de zeegebieden onder de rechtsbevoegdheid van België	1999-01-20/33
Wet van 6 april 1995	Wet betreffende de voorkoming van de verontreiniging van de zee door schepen	1995-04-06/94
Wet van 16 februari 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
Royal decrees		
KB van 20 juli 1973	Koninklijk besluit houdende zeevaartinspectiereglement	1973-07-20/30
KB van 2 februari 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
KB van 21 december 2001	Koninklijk besluit betreffende de soortenbescherming in de zeegebieden onder de rechtsbevoegdheid van België	2001-12-21/72
KB van 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
KB van 6 februari 2009	Koninklijk besluit tot oprichting en organisatie van het maritiem informatiekruispunt	2009-02-06/39
KB van 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
KB van 20 maart 2014	Koninklijk besluit tot vaststelling van het marien ruimtelijk plan	2014-03-20/03
Decrees		
Havendecreet (2 maart 1999)	Decreet houdende het beleid en het beheer van de zeehavens	1999-03-02/37
Decreet van 16 juni 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
Decreet van 9 mei 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
Materialendecreet (23 december 2011)	Decreet betreffende het duurzaam beheer van materiaalkringlopen en afvalstoffen	2011-12-23/33
Ministerial decrees		
MB van 19 april 2005	Ministerieel besluit tot vaststelling van het « Rampenplan Noordzee »	2005-04-19/40
Other		
Besluit van de Vlaamse regering van 13 juli 2001	Besluit van de Vlaamse regering houdende de aanduiding van de voorlopige begrenzing van de havengebieden	2001-07-13/93
Besluit van de Vlaamse regering van 26 oktober 2007	Besluit van de Vlaamse Regering betreffende het Maritiem Reddings- en Coördinatiecentrum	2007-10-26/30
Besluit van de Vlaamse regering van 26 oktober 2007	Besluit van de Vlaamse Regering betreffende de begeleiding van de scheepvaart	2007-10-26/31

BELGIAN AND FLEMISH LEGISLATION (continuation)		
Date	Title	File number
Besluit van de Vlaamse regering van 17 februari 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
Samenwerkingakkoord van 8 juli 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