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Chapter 3

The marine science-policy interface

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1 Relevant policy instruments and authorities

1.1 Introduction

The seas and oceans act as a very important component regarding the global level of well-being and prosperity. They form a great source of food supply and natural resources, supply a lot of ecosystem services, are the global trade routes, offer a wide range of recreational possibilities and have a climate regulating effect. The persistent intensification of the use of the sea and coastal areas has led to a package of legislative and regulating instruments in order to guarantee the sustainable use of the marine space and its resources. The chapter 'Relevant policy instruments and authorities' provides an overview of a selection of marine and maritime policy instruments and rules of law that relate to topics discussed in **Chapter 2**. This overview shows the measures taken by different policy levels, i.e. the international, European, federal and Flemish level.

1.2 International treaties

Written agreements with a binding character between two or more nations (and international organisations) are called treaties or conventions. Following the acceptance and signature of a negotiated text at an international conference by the delegations of the participating countries, the respective governments need to officially ratify the treaty through its implementation into national legislation. The signing of the text by a negotiating delegation only concerns the formal closure of the negotiations and has no legal binding value. The Belgian Constitution ([Art. 167](#)) states that Belgium can only be officially bound by a convention after the approval by the federal parliament, consisting of the Senate and the Chamber of Representatives.

Most multilateral conventions state that the treaty will enter into force after a certain number of nations (usually in the context of the United Nations and the Council of Europe) or all parties (common for bilateral or trilateral conventions) have ratified the convention. The international entry into force of a convention is not necessarily the entry into force for Belgium. If a treaty does not require the ratification by all nations before it enters into force, it is possible that the treaty has entered into force between a number of nations excluding Belgium. For our country, this will only be the case when we have ratified the treaty ourselves.

The main aim of marine/maritime international conventions includes the harmonisation of the marine/maritime policies and the related strategies, including the development of programmes and measures, which is necessary given the transboundary and international character of maritime activities such as shipping and the protection of the marine environment. The guiding principle of marine multilateral environmental agreements (MEAs) is the ecosystem-based approach. This approach was accepted as a strategic policy principle in the [Convention on Biological Diversity](#) of 1992. This principle is based on a healthy ecosystem as a basis for the economic use, also in the long term. The [OSPAR Convention](#) (see **Regional conventions and agreements**) defines the ecosystem approach as the '*the comprehensive integrated management of human activities based on the best available scientific knowledge about the ecosystem and its dynamics, in order to identify and take action on influences which are critical to the health of marine ecosystems, thereby achieving sustainable use of ecosystem goods and services and maintenance of ecosystem integrity*'.

Below, several types of conventions are distinguished, i.e. (1) United Nations (UN) conventions, (2) non-UN conventions with a global geographical perspective, (3) regional conventions and (4) bi- or trilateral conventions.

UNITED NATIONS

The most important organisation responsible for the construction of international treaties is the United Nations ([UN](#)). The UN is an intergovernmental organisation and, within a marine/maritime context, it aims to promote and facilitate collaboration in the field of international law ([Law of the Sea](#)), economic development ([green economy](#)), global safety ([shipping and ports](#)) and working conditions ([shipping and ports](#)).

In September 2003, the Ocean and Coastal Areas Network ([UN-Oceans](#)) was founded within the UN. This network aims at (1) strengthening the coordination and collaboration between several authorities concerning ocean- and coast-related UN activities; (2) evaluating the executed UN programmes and activities that are set within the UN

contribution to the implementation of the *Convention of the Law of the Sea of 1982*; (3) identifying emerging issues (common actions, task forces); (4) promoting the integrated management of the oceans on an international level; (5) facilitating the input for the annual report on oceans and the Law of the Sea of the UN secretariat and (6) fostering the cohesion of the oceanic and coastal UN activities. The network deals with a broad range of marine and coastal topics, and consists of the following UN and UN-related authorities (see also figure 1):

- Departments of the UN secretariat
 - Division for Ocean Affairs and the Law of the Sea ([UN-DOALOS](#))
 - United Nations Department of Economic and Social Affairs ([UN-DESA](#))
- UN programmes
 - United Nations Development Programme ([UNDP](#))
 - United Nations Environment Programme ([UNEP](#))
- Specialised UN organisations
 - Food and Agriculture Organization ([FAO](#))
 - Intergovernmental Oceanographic Commission of the United Nations Educational Scientific and Cultural Organization ([IOC-UNESCO](#))
 - World Bank ([WB](#))
 - International Maritime Organization ([IMO](#))
 - World Meteorological Organization ([WMO](#))
 - International Labour Organization ([ILO](#))
 - United Nations Industrial Development Organization ([UNIDO](#))
- Related organisations
 - International Atomic Energy Agency ([IAEA](#))
- Secretariats of relevant international conventions
 - International Seabed Authority ([ISA](#))
 - Convention on Biological Diversity ([CBD](#))

For a detailed description of all these organisations we refer to their respective websites or to the [UN-Oceans website](#) for an overview. Some UN organisations are discussed in more detail below, given their important contribution to the construction of international conventions within a marine/maritime context.

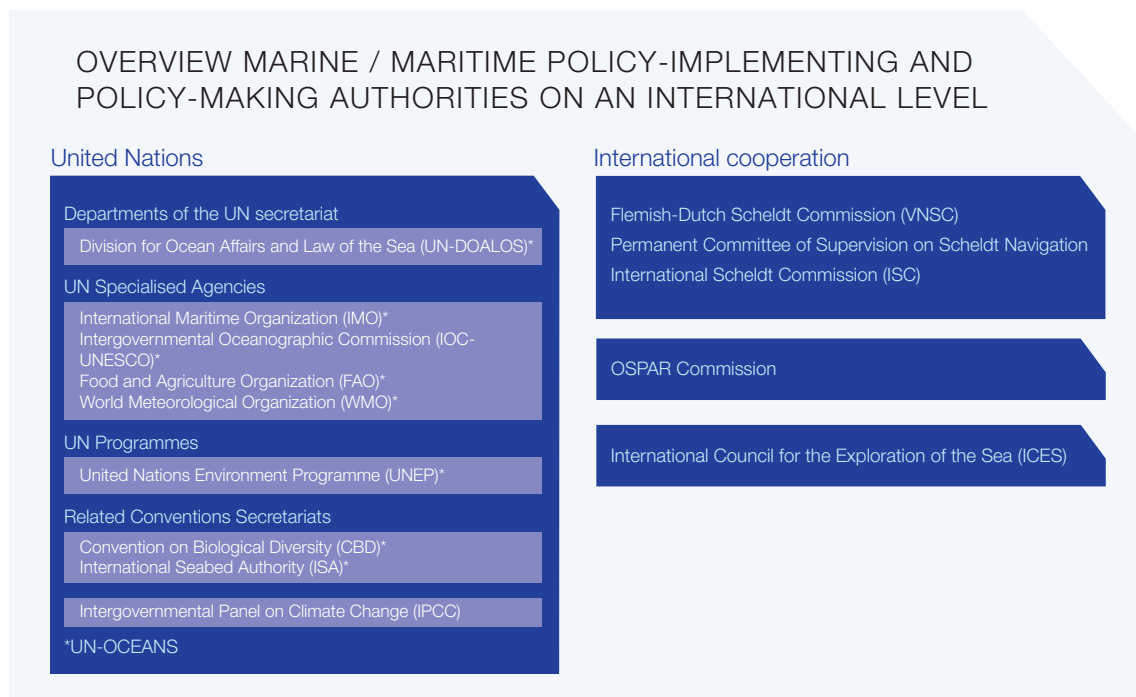


Figure 1. An overview of policy-implementing and policy-making authorities on an international level.

Convention on the Law of the Sea 1982

The Division for Ocean Affairs and the Law of the Sea ([UN-DOALOS](#)) plays a leading role in the widespread adoption and the substantiated, consistent application of the *United Nations Convention on the Law of the Sea* ([UNCLOS](#)), and operates as the secretariat for this convention. The division monitors developments in all relevant areas in order to report annually to the General Assembly on matters relating to the law of the sea and ocean affairs. Further, it formulates recommendations to the Assembly and other intergovernmental forums aimed at promoting a better understanding of the convention, and ensures that the organisation has the capacity to respond to requests for advice and assistance from states in the implementation of the convention.

UNCLOS defines the rights and responsibilities of nations in their use of the sea and its natural resources. The classic international Law of the Sea originated in the 17th century, and was largely based upon the *Mare liberum* principle (liberty of the sea) of Grotius. This principle was based upon two main premises, according to which (1) no occupation and exclusive jurisdiction by a nation were possible and (2) marine resources were unlimited ([Somers, 2010](#)²¹³⁸⁶⁴). A fundamental change in the use of the sea regarding the exploitation of marine resources, pollution, trade, etc. resulted in gradual regulation of the use of the (high) seas in the second half of the 20th century, and was finally written down in *UNCLOS*.

More specifically, *UNCLOS* includes stipulations on topics such as borders, maritime trade and transport (including safety), the maintenance of the marine environment and ecosystems, fisheries and the exploitation of natural resources on the seabed, as well as marine scientific research, economic and commercial activities and the mediation of disputes with regard to the oceans. The operational role concerning the implementation of this convention lies with organisations such as the International Maritime Organization ([IMO](#)), International Seabed Authority ([ISA](#)) and the International Whaling Commission ([IWC](#)).

The convention forms a legal framework for the demarcation of maritime areas subject to the territorial or functional jurisdiction of the coastal state (figure 2). *UNCLOS* determines the rules for the demarcation of the baseline (average low low-water line at spring tide), which acts as the seaward border of the internal waters (figure 2). The territorial sea has been defined as the area extending up to 12 nautical miles (22.224 km) seawards from the baseline (figure 2). The territorial sea is regarded as the sovereign territory of the state ([Somers, 2010](#)²¹³⁸⁶⁴), although foreign merchant ships are allowed innocent passage through it. The contiguous zone can reach maximum 24 nautical miles (44.448 km) measured from the baseline (figure 2). In this area, the jurisdiction of the coastal state is rather limited and of fragmentary nature. The coastal state has control and prevention competencies such as supervision regarding fiscal, customs, immigration or health regulations ([Somers, 2010](#)²¹³⁸⁶⁴). The contiguous zone is also part of the exclusive economic zone (EEZ). This zone extends from the outer limit of the territorial sea to a maximum of 200 nautical miles seaward from the baseline. The EEZ is a functional marine area where the coastal state has certain sovereign rights

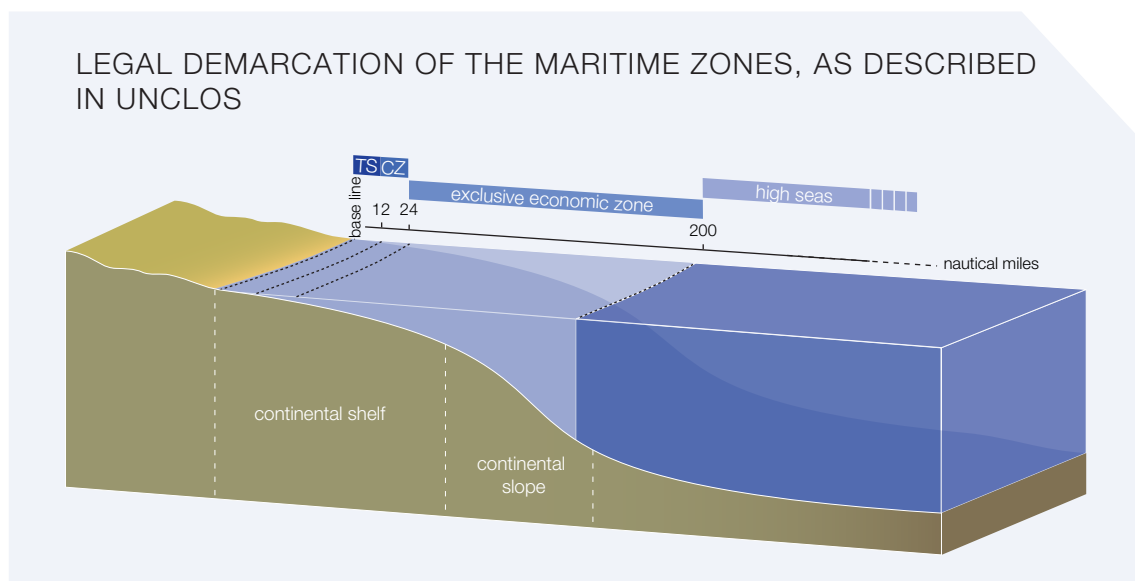


Figure 2. Legal demarcation of the maritime zones, as described in *UNCLOS*. Abbreviations: TS, territorial sea; CZ, contiguous zone.

over the exploration, exploitation, conservation and management of the living and non-living resources of the sea bottom and the seabed, as well as the overlying waters (for other competences, see **Federal legislative framework**). Other nations have the right of freedom of navigation and overflight in the EEZ, as well as the freedom to install cables and pipelines. However, these freedoms have some restrictions. For example, the trajectory of pipelines requires the permission of the coastal state. The Belgian continental shelf (figure 2), which is a seaward continuation of the continental landmass, has the same demarcation as the Belgian EEZ. For defining the demarcation of the continental shelf, we refer to the [Convention of Geneva on the Continental Shelf \(1958\)](#). The coastal state has exclusive sovereign rights over the continental shelf for the exploration and exploitation of the natural resources (living and non-living resources of the sea bottom or surface). This is limited by the fact that no unjustifiable inconvenience may be caused to shipping, fisheries, conservation of living resources and scientific research aimed at publishing the results. The coastal state is free to grant a concession for the exploration and exploitation of resources, and to gain compensations from this ([Somers, 2010](#)²¹³⁸⁶⁴). Finally, the high seas (figure 2) include all parts of the sea that do not belong to the EEZ, the territorial sea and the internal waters. The high seas are open to all states, and no state can claim sovereignty over any part of this area. The freedoms of the high seas include: freedom of navigation, freedom of fishing, freedom to lay submarine cables and pipelines, freedom to fly over the high seas, freedom of scientific research and freedom to construct artificial islands and other installations permitted under international law.

Sectoral UN conventions

Apart from the integrated *UNCLOS*, the UN conventions focus on topics such as shipping and ports, nature and environment, heritage and the dumping of waste and other materials (dredging and dumping) (figures 3 and 4, table 1).

The specialised UN organisations *IMO* and *ILO* have prepared numerous international conventions. The IMO is responsible for the safety and security of ships, as well as for the prevention of marine pollution by ships (including dumping of waste and other materials). International standards are crucial since the ownership and the ship management often include several countries and ships navigate through various jurisdictions during their economic life. Furthermore, IMO also adopts conventions covering liability and compensations for oil pollution damage. The

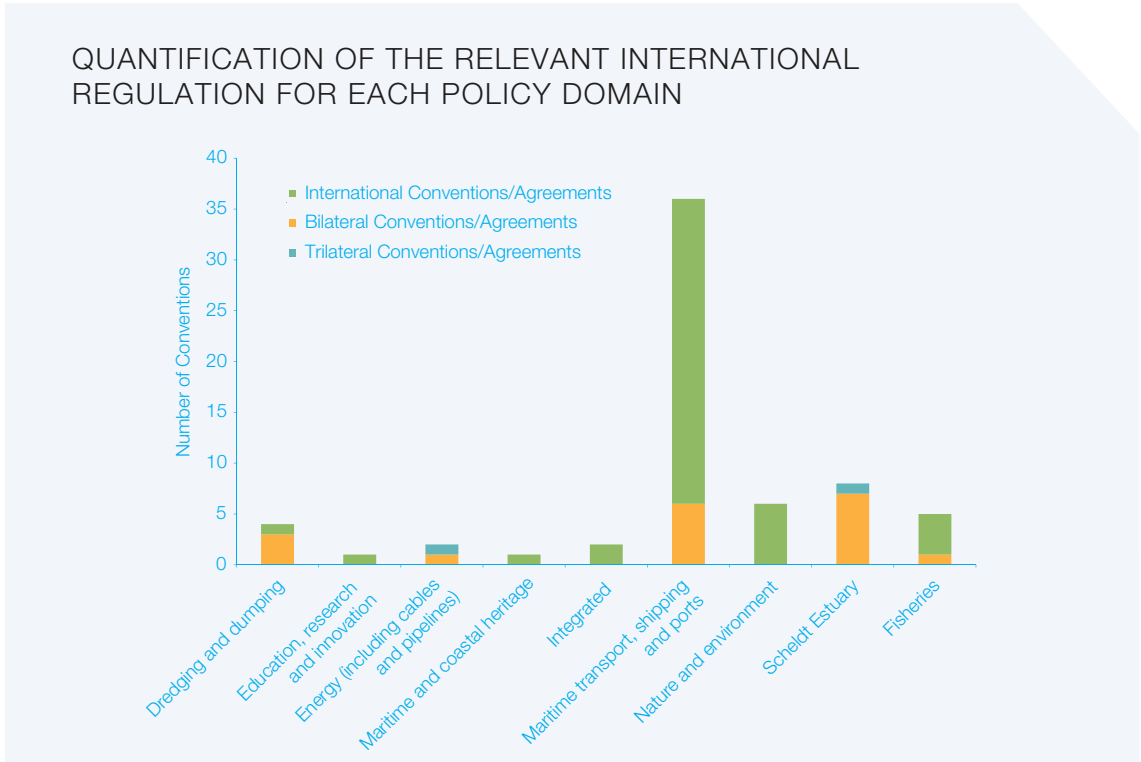


Figure 3. Quantification of the relevant international regulations for each policy domain. Notwithstanding this is a non-exhaustive representation, it indicates which topics are regulated on the international level. For details about the regulation included in this figure, we refer to Annex 3.

Table 1. Selection of the sectoral UN conventions.

TOPIC	INSTRUMENT	CONTEXT
Shipping and ports	MARPOL	The international <i>Convention for the prevention of pollution by ships (MARPOL 1973)</i> , as amended by the Protocol of 1978 and the Protocol of 1997, aims at protecting the marine environment. This includes the determination of discharge standards and technical requirements.
Shipping and ports	SOLAS	The most important goal of the international <i>Convention for the safety of life at sea (SOLAS 1974)</i> is to specify minimum standards for the construction, equipment and operation of ships, compatible with their safety, in order to promote the safety of human life at sea. This convention also includes control measures, known as the port state control.
Shipping and ports	STCW	The international <i>Convention on standards of training, certification and watchkeeping for seafarers (STCW 1978)</i> describes minimum standards for seafarers, allowing individual countries to set higher standards for their seafarers.
Shipping and ports / Dredging and dumping	London Convention	The <i>Convention on the prevention of marine pollution by dumping of wastes and other matter (1972)</i> and the Protocol (1996) regulate the dumping of waste and other matter at sea. The protocol replaces the entire convention, and is based upon the precautionary principle.
Heritage	UNESCO Convention on Underwater Cultural Heritage	The <i>UNCLOS</i> already required that Member States protect their underwater heritage, without stating how to regulate this protection measure. This allowed the preparation of a specific international regulation for the protection of the underwater cultural heritage, namely the <i>UNESCO Convention on the Protection of the Underwater Cultural Heritage (2001)</i> .
Nature and environment	Convention on Biological Diversity	The <i>Convention on Biological Diversity (1992)</i> meant a big step forward in the protection of biological diversity, the sustainable use of its components and the honest and equitable division of benefits resulting from the use of genetic resources. The <i>Secretariat of the Convention on Biological Diversity</i> is institutionally linked to the UNEP.
Nature and environment	Bonn Convention	The <i>Convention on the conservation of migratory species of wild animals (Bonn Convention 1979)</i> focuses on the protection of migratory aquatic, terrestrial and bird species, as well as their habitats. The secretariat also functions under the authority of UNEP.

most important IMO conventions are the [MARPOL](#), [SOLAS](#) and [STCW](#) conventions and the [London Convention](#) (table 1). For an overview of all conventions, we refer to the [IMO website](#).

The ILO in turn deals with international labour standards and decent work for all, including ship crews. The ILO aims to obtain social justice and similarity of working conditions in countries competing for markets. More than 40 conventions have been adopted with a maritime focus, such as the accommodation on board fishing vessels, minimum standards for crews on merchant ships, seafarers' hours of work and the manning of ships, etc. For an overview, we refer to the [ILO website](#).

Conventions with respect to nature and the environment mainly result from efforts of UNEP. Under the supervision of this UN programme, conventions have been adopted with respect to the protection of biological diversity and wild migratory species (table 1). The future role of ecosystems supporting our prosperity depends largely on the future management of human activities and their associated effects, in order to ensure that the ecosystem integrity and self-healing capacity will not be affected (ecosystem approach). Sustainable exploitation of the sea requires a transformation from sectoral maritime and coastal policies towards an integrated policy based upon a spatial planning perspective. Within this context, UNEP published the guide '[Taking Steps toward Marine and Coastal Ecosystem-Based Management](#)' to assist countries and communities in implementing the marine and coastal ecosystem management.

The maritime heritage section is treated by UNESCO (table 1).

SELECTION OF INTERNATIONAL POLICY AND LEGAL INSTRUMENTS

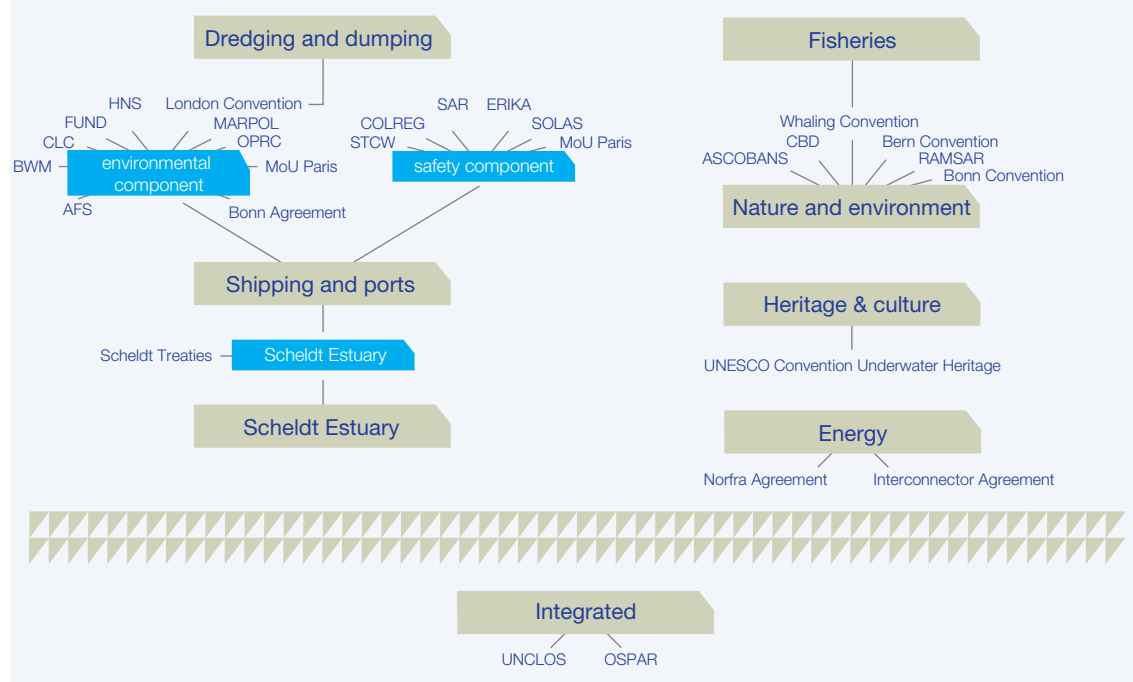


Figure 4. Selection of international policy and legal instruments. Abbreviations: AFS, Anti-Fouling Systems; BWB, Ballast Water Management; CBD, Convention on Biological Diversity; CLC, Civil Liability Convention; COLREG, Collision Regulations; FUND, Compensation fund for oil pollution damage; HNS, Hazardous and Noxious Substances; MARPOL, Marine Pollution; OPRC, Oil Pollution Preparedness, Response and Co-operation; SOLAS, Safety of Life at Sea; STCW, Standards of Training, Certification and Watchkeeping.

INTERNATIONAL NON-UN CONVENTIONS

Besides UN multilateral agreements, non-UN conventions with a global geographical perspective have been adopted as well. Within the marine context, this particularly concerns the multilateral environmental agreements (MEAs) regarding the protection of wetlands ([Ramsar](#)) and the regulation of whaling (table 2).

Table 2. Selection of the non-UN MEAs.

TOPIC	INSTRUMENT	CONTEXT
Nature and Environment	Ramsar	The <i>Convention on wetlands of international importance</i> (1971), also called the <i>Ramsar Convention</i> , states that the convention parties need to maintain the ecological character of their wetlands of international importance and need to manage all wetlands in a sustainable way. In contrast with other global environmental conventions, <i>Ramsar</i> is not affiliated with the UN-system of MEAs, but there is intense collaboration with the cluster of biological diversity-related MEAs (<i>Convention on Biological Diversity</i> , <i>Convention on the conservation of migratory species of wild animals</i> , etc.).
Nature and Environment	International Convention for the Regulation of Whaling	The <i>international Convention for the regulation of whaling</i> (1946) regulates whaling activities and is the foundation document of the <i>International Whaling Commission</i> which is responsible for the conservation of whales and the management of whaling.

REGIONAL CONVENTIONS AND AGREEMENTS

Contrary to the global international conventions (see above) which can be signed by every nation, the regional conventions and agreements only have a limited (regional) geographical dimension. The most important regional conventions that also impact the Belgian part of the North Sea (BNS) can be divided in two main groups: the integrated conventions such as the [OSPAR Convention](#), and the sectoral conventions and agreements such as the [Paris Memorandum of Understanding on Port State Control](#) (shipping and ports), the [Bonn Agreement](#) (shipping and ports) and [ASCOBANS](#) (nature and environment) (table 3).

Table 3. Selection of the regional conventions and agreements.

TOPIC	INSTRUMENT	CONTEXT
Integrated	OSPAR Convention	The <i>Convention on the protection of the marine environment in the North-East Atlantic</i> or the OSPAR Convention (1992) combines and updates the Oslo Convention (1972) for the prevention of marine pollution by dumping from ships and aircraft and the Paris Convention (1974) for the prevention of marine pollution from land-based sources. The overall goal of the OSPAR Commission as stated in the North-East Atlantic Environment Strategy 2010-2020 is to conserve marine ecosystems and safeguard human health and, when practicable, restore marine areas which have been adversely affected by preventing and eliminating pollution and by protecting the maritime area against the adverse effects of human activities. Using the <i>ecosystem approach</i> to manage human activities is the basic principle. The OSPAR Commission developed and implemented a series of five thematic strategies in order to focus on the most important identified threats to the marine environment. The strategies relate to the following topics: <i>Biological diversity and ecosystems</i> , <i>Eutrophication</i> , <i>Hazardous Substances</i> , <i>Offshore Oil and Gas Industry</i> and <i>Radioactive Substances</i> . The sixth strategy is the <i>Strategy for the Joint Assessment and Monitoring Programme (JAMP)</i> that provides a framework for work to develop OSPAR's monitoring and assessment programmes, with a particular focus on supporting the work to implement the <i>EU Marine Strategy Framework Directive</i> (see Integrated maritime policy) that needs to be done by Contracting Parties that are EU Member States over the period 2010-2014.
Shipping and ports	MoU Paris	The <i>Paris Memorandum of Understanding on Port State Control</i> (MoU Paris 1982) acts as a regional coordinated control mechanism for the conditions set by the <i>IMO</i> and <i>ILO</i> conventions. Its geographical scope includes the waters of the European coastal states and the North Atlantic, from North America to Europe. The MoU obliges Member States to construct a control system in order to ensure compliance with the <i>international Convention on load lines</i> , <i>SOLAS</i> , <i>MARPOL</i> , <i>STCW</i> , <i>COLREGs</i> and the <i>Convention concerning minimum standards in merchant ships</i> (Somers, 2010 ²¹³⁸⁶⁴).
Shipping and ports	Bonn Agreement	The <i>Bonn Agreement for co-operation in dealing with pollution of the North Sea by oil and other harmful substances</i> (1983) promotes the collaboration between the coastal states of the North Sea during the detection, reporting and combating of pollution in the North Sea by oil and other harmful substances, originating from ships and offshore installations.
Nature and environment	ASCOBANS	The <i>Agreement on the conservation of small cetaceans of the Baltic, North-East Atlantic, Irish and North Seas</i> (ASCOBANS) was adopted in the context of the <i>Convention on the conservation of migratory species of wild animals</i> (Bonn Agreement 1979). The ASCOBANS Agreement covers all species, subspecies or populations of toothed whales (Odontoceti) in the agreement area, with the exception of the sperm whale. The ASCOBANS Agreement includes a concise Conservation and Management Plan that describes the conservation, research and management measures that should be implemented by the Parties.

BI- AND TRILATERAL AGREEMENTS

Belgium entered into several bilateral and trilateral agreements, such as the [Scheldt Agreements](#) (policy and management, nautical management, widening and improvement of the waterway, pilotage charges, Scheldt-Rhine connection), conventions dealing with submarine gas pipelines (Interconnector, Norfra, Zeepipe) and conventions with regard to fisheries in the territorial sea (e.g. the Agreement of 30 September 1975 for the catch of herring and sprat in the Belgian and French territorial waters). A concise selection of the above-mentioned agreements is shown in table 4, for a detailed overview of the Scheldt Agreements, we refer to the [VNSC website](#).

Table 4. Selection of the bilateral and trilateral agreements.

TOPIC	INSTRUMENT	CONTEXT
Scheldt Estuary	Scheldt Agreement	According to the Scheldt Agreement of 3 December 2002, convention parties (Belgium, Flemish Region, Walloon Region, Brussels Capital Region, the Netherlands and France) must implement sustainable and integrated water management in the international Scheldt basin in accordance with the Water Framework Directive , particularly taking into account the multifunctional use of the respective waters.
Fisheries	Agreement of 30 September 1975 for the catch of herring and sprat in the Belgian and French territorial waters	This agreement allows French fishermen to catch herring and sprat in the Belgian territorial sea and vice versa. Between 3 and 6 nautical miles, fishing vessels with a tonnage smaller than or equal to 60 gross tons or a power smaller than or equal to 400 hp are allowed to fish. Up to 3 nautical miles, fishing is allowed for fishing vessels with a tonnage smaller than or equal to 35 gross tons or with a power smaller than or equal to 250 hp.

1.3 European policy and legal instruments

The European Union (EU) exerts increasing influence on the policies and management in different policy domains and sectors. The EU uses different legal instruments to coordinate or harmonise Member States policies. Two major categories of European legal instruments can be distinguished: the non-legally binding and the legally binding instruments. Examples of non-legally binding instruments are recommendations, communications, Green Papers and White Papers. A recommendation is a non-binding instrument, but the EU expects that the respective Member States follow the recommendations on a voluntary basis. A Green Paper is a discussion document in which the European Commission (EC) inventories the state-of-the-art of a problem or topic, and may give rise to legislative developments that are then outlined in White Papers. The latter explains how to reach certain goals, and thus includes more concrete propositions. Communications in turn do not include specific propositions for future policy, but are used for policy evaluations, the explanation of Action Programmes and as a discussion document for future or current policies.

The legally binding instruments include, amongst other things, the directives, regulations, conventions and protocols. In contrast with the regulations, which have binding legal force throughout every Member State without national governments having to take action to implement them, the directives need to be implemented in the national and regional legislation. The directive prescribes the goals that have to be achieved by the EU Member States, but allows the national authorities to choose the form and means. A directive is the main legal instrument in Europe used for the conservation of marine biological diversity and for the substantiation of the ecosystem approach in the EU marine waters (see also figure 7). It is an essential pillar for the protection of marine ecosystems and resources which support our marine/maritime economy and social activities.

INTEGRATED MARITIME POLICY

The ecosystem approach is a guiding principle for the European marine/maritime regulations and policies, and is the basis for, amongst other things, the future *Integrated Maritime Policy* (IMP) ([COM \(2007\) 575](#)) and the *Common Fisheries Policy* (CFP) ([Regulation 2371/2002](#); [COM \(2011\) 417](#)). While pursuing an ecosystem approach, the importance of an integrated approach is ever more important, where the policy aligns and sets goals of different domains and sectors. The future IMP, coordinated by the Directorate-General for Maritime Affairs and Fisheries ([DG MARE](#)) (figure 5), is an example of a policy instrument that focuses on the protection and the conservation of the coastal and marine environment on the one hand, and on sustainable use of the economic potential of seas and oceans on the other hand (figure 6). It concerns a holistic approach of all maritime policy matters, and believes that such an approach will lead to higher yields with less damage to the environment. An IMP of the EU needs to keep in mind the following goals:

- Maximising the sustainable use of the oceans and seas while enabling growth of the maritime economy and coastal regions;
- Building a knowledge and innovation base for the maritime policy (impact of human activities, climate change, etc.);
- Delivering a higher quality of life in coastal and outermost regions, reconciled with economic development and environmental sustainability;
- Promoting its leading position in international maritime affairs;
- Raising the visibility of Maritime Europe and improving the image of this sector's activities and professions.

OVERVIEW OF POLICY-IMPLEMENTING AND POLICY-MAKING AUTHORITIES ON THE EUROPEAN LEVEL

Europe

European Commission

DG Energy
DG Maritime Affairs and Fisheries
DG Mobility and Transport
DG Environment
DG Research and Innovation
DG Joint Research Centre

European Union

European Maritime Safety Agency (EMSA)
European Environment Agency (EEA)
European Fisheries Control Agency (EFCA)

Figure 5. Overview of policy-implementing and policy-making authorities on the European level.

SELECTION OF THE EUROPEAN LEGAL AND POLICY INSTRUMENTS

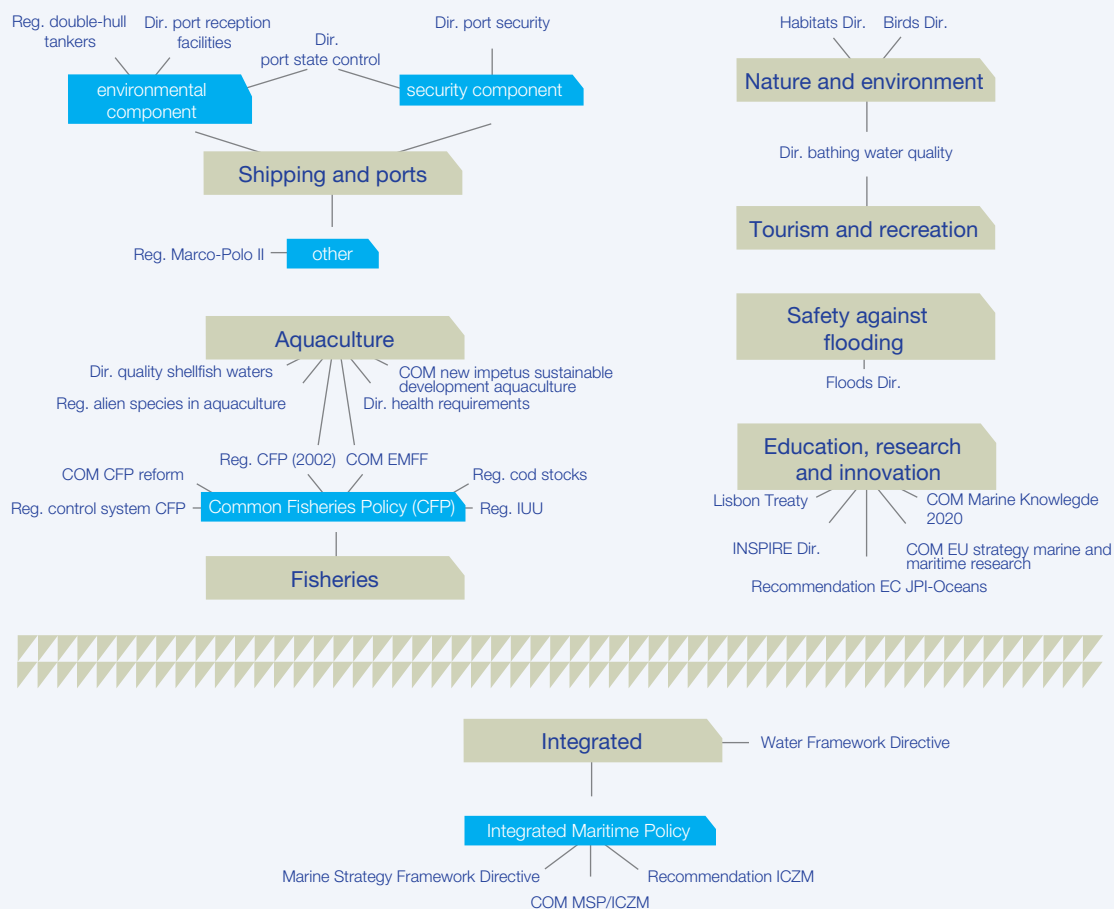


Figure 6. Selection of the European legal and policy instruments. Abbreviations: EMFF, European Maritime and Fisheries Fund; ICZM, Integrated Coastal Zone Management; CFP, Common Fisheries Policy; IUU, Illegal, Unreported and Unregulated fishing; MSP, Maritime Spatial Planning; Dir, Directive; Reg, Regulation.

Three instruments are of particular importance for creating *IMP*. These are (1) a European network for maritime surveillance to ensure the safe use of the sea and the security of the EU's maritime borders; (2) integrated coastal zone management (land and sea) to enable maritime spatial planning and (3) a complete and accessible source of data and information on natural and human activities on the oceans to facilitate strategic decision-making on maritime policy.

For the marine environment, a first step towards an integrated approach was taken with the *Water Framework Directive* (WFD; [2000/60/EC](#)) (figure 6), which applies to the coastal waters up to 1 mile seaward from the baseline for a good ecological status, while for certain aspects of chemical water quality it applies to the entire territorial sea. The road towards an ecosystem and integrated approach was officially pursued with the publication of the *Marine Strategy Framework Directive* (MSFD; [2008/56/EC](#)), the environmental pillar of the EU *Integrated Maritime Policy* (IMP; [COM \(2007\) 575](#)), which aims for efficient protection of the marine environment in the EU marine waters by 2020. The Directorate-General for the Environment ([DG Environment](#)) is responsible for the follow up of both directives (figure 5). In particular, the *MSFD* aims for a 'good environmental status' (GES) for all seas under the jurisdiction of the Member States by 2020, with the maintenance of biological diversity as the main objective. The Member States need to develop marine strategies, taking into account their national socio-economic and regulating context. Regional collaboration is a necessity and should result in consistent measures. These strategies need to promote the integration of environmental considerations into all relevant policy domains. By doing this, the ecosystem approach to the management of human activities (according to the precautionary principle) is set within a legal framework, in which the central concepts are 'environmental protection' and 'sustainability'. The *MSFD* is therefore complementary to the existing directives on the conservation of the marine environment, such as the *Habitats Directive* ([92/43/EEC](#)), the *Birds Directive* ([2009/147/EC](#)) and the *Water Framework Directive* ([2000/60/EC](#)) (figure 6).

The improvements in the spatial planning of maritime activities and coastal zone management are considered an important instrument within the scope of the *IMP*, as mentioned above (figure 6). The *Proposal for a directive establishing a framework for maritime spatial planning and integrated coastal management* ([COM \(2013\) 133](#)) (DG MARE, DG Environment) focuses on the support of the *EU blue growth strategy* ([COM \(2012\) 494](#)) which, in turn, contributes to achieving the goals of the *Europe 2020 - A strategy for smart, sustainable and inclusive growth* ([COM \(2010\) 2020](#)), and focuses on the sustainable growth of maritime activities and sustainable use of natural marine resources. The integrated coastal management strategies have to be based upon the principles and elements as described in the *Recommendation concerning the implementation of integrated coastal zone management in Europe* ([2002/413/EC](#)) (figure 6). This conceptual framework results into an efficient use of the space, and can therefore contribute to a better implementation of the EU environmental laws, such as the *MSFD* ([2008/56/EC](#)) and the *Habitats Directive* ([92/43/EEC](#)) by means of reducing environmental effects, in order to fulfil the ecological and socio-economic goals.

The EU *IMP* aims to create optimum conditions for the growth of the maritime sectors on the one hand, and aims to achieve the EU environmental goals (such as *MSFD*) on the other hand. Science and technological innovation are essential to reconcile the increasing marine activities and the environmental goals. In this respect, a more eco-efficient production and efficient coordination of marine research activities are the main points of interest. Therefore, *A European strategy for marine and maritime research* ([COM \(2008\) 534](#)) was published, coordinated by the Directorate-General for Research and Innovation ([DG Research](#)) (figure 5). It is an essential pillar of the *IMP* and offers a broad reference framework for European marine research priorities (figure 6). The strategy focuses on the complexity of marine ecosystems and aims at a more purposeful integration and gathering of knowledge and research, and the stimulation of long-term partnerships dealing with research needs and priorities. The strategy also highlights the need for new types of governance in the field of research, focusing on a permanent dialogue between scientists, policymakers, industrialists and societal interest groups. These elements also form the pillars of the *Ostend Declaration* (2010) and of the implementation and funding mechanisms of the EU science policy (see [Chapter 1](#)).

SECTORAL POLICY

The sectoral marine/maritime policy objectives are the basis of the above-mentioned *IMP*. The *IMP* is aimed at the integration and alignment of sectoral policy goals in order to prevent or reduce intersectoral conflicts, and therefore contributes to the sustainability of marine activities and the achievement of the goals of EU marine/maritime sectoral policy.

Besides on the international level (see **United Nations**), the policy domain Maritime transport, shipping and ports is also regulated on the EU level, which mainly includes a ratification by the EU of UN conventions (figure 7). Shipping and ports are considered as a catalyst for the economic development and prosperity in the EU, given the importance of the sector in the intra- and extra-European trade (see Chapter 2, theme **Maritime transport, shipping and ports**). The EC (DG MARE) focuses, amongst other things, on the compliance of strict safety standards for ships and ports (e.g. *Port Security Directive*, [2005/65/EC](#); *Port State Control Directive*, [2009/16/EC](#)), reducing the risk of serious maritime accidents (e.g. *Monitoring and Information Directive*, [2002/59/EC](#)), minimising the environmental impact of shipping and ports (e.g. *Phasing-in of double-hull oil tankers* through [Regulation 530/2012](#)) and the elaboration of the Motorways of the Sea, which are considered an integrating and important part of the trans-European transport network (e.g. *Marco-Polo II*, [Regulation 1692/2006](#)) (figure 6).

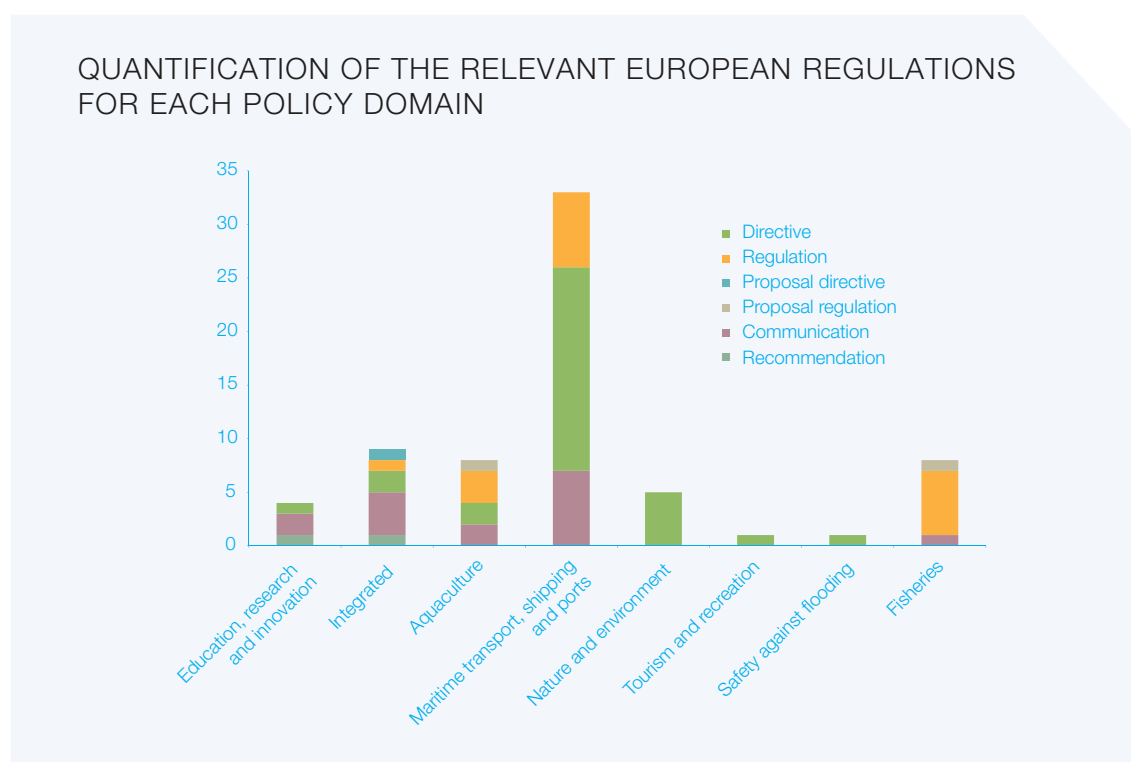


Figure 7. Quantification of the relevant European regulations for each policy domain. Notwithstanding this is a non-exhaustive representation, it indicates which topics are regulated on the European level. For details about the regulation included in this figure, we refer to Annex 3.

Fisheries management on EU level (DG MARE) is regulated by the *Common Fisheries Policy (CFP)* ([Regulation 2371/2002](#)) due to the transboundary character of fisheries. The *Green Paper on the reform of the fisheries policy* ([COM \(2009\) 163](#)) and the subsequent EC consultation ([SEC \(2010\) 428](#)) concluded that the essential *CFP* goals were not achieved, leading to the reform of the *CFP*. The *Reform of the CFP* ([COM \(2011\) 417](#)) particularly focuses on the goal alignment with the *MSFD* and other environmental legislations, as well as on the application of the ecosystem approach. The measures accepted within the scope of the *CFP* need to ensure that fish stocks are at a level in accordance with the principle of the 'maximum sustainable yield' (MSY) by 2015, in accordance with *UNCLOS* article 61 part 3 and as stated during the World Summit for Sustainable Development in Johannesburg in 2002. The reform of the *CFP* focuses on a sustainable exploitation of living marine resources, which makes this reform a prominent part of the Europe 2020 flagship initiative 'An efficient use of resources'. The compliance with *CFP* regulations is guaranteed by a EU fisheries control system, that amongst other things, combats illegal, unreported or unregulated fishing (IUU fishing; [Regulation 1005/2008](#)) (figure 6).

The most important directives dealing with the conservation of the marine environment on the European level are the *Habitats* (92/43/EEC) and *Birds Directives* (2009/147/EC) (DG Environment). The network of special protection areas is known as the European ecological *Natura 2000 network*, which is the centrepiece of EU nature and biodiversity policy. The *Habitats Directive* and the *Natura 2000 network* result from the EU obligations regarding habitat protection

within the scope of the [Bern Convention](#) (1989) in which the EU is a convention party. The [Emerald Network](#) (*Bern Convention*) and the Natura 2000 network are therefore based upon the same principles, while the first is *de facto* an extension to non-EU Member States. The main aim of the *Habitats Directive* is to promote the maintenance of biodiversity in the Member States, through the maintenance and restoration of European endangered natural habitats and the associated wild fauna and flora. The conservations status of an area must be analysed in line with the scientific standards as determined by the conservation objectives. The *Birds Directive* aims at the protection of all wild bird species. Special protection measures are taken for habitats of bird species listed in Annex I of the directive as well as for areas with a significant proportion of the international migratory birds population. For further information on this topic, we refer to Chapter 2, theme **Nature and environment**.

1.4 Federal and Flemish policy and legal instruments

The legal rules that have been drawn up and adopted by the federal legislative body ([Belgian Constitution art. 36](#)) are called ‘laws’. Laws are adopted by the federal parliament (legislative body), in which both parliamentarians and the government have the right to take initiative. A law approved by the parliament enters into force subsequent to the signing by the government, i.e. the ministers and the king. The federal government makes sure that the legislation is complemented by implementation measures; Royal Decrees ([Belgian Constitution art. 108](#)), which are signed by the king as well as by the competent minister ([Belgian Constitution art. 106](#)). Hence, a Royal Decree (RD) is only legal when a law already exists. The responsible federal minister can further elaborate detailed measures by means of a Ministerial Decree (MD).

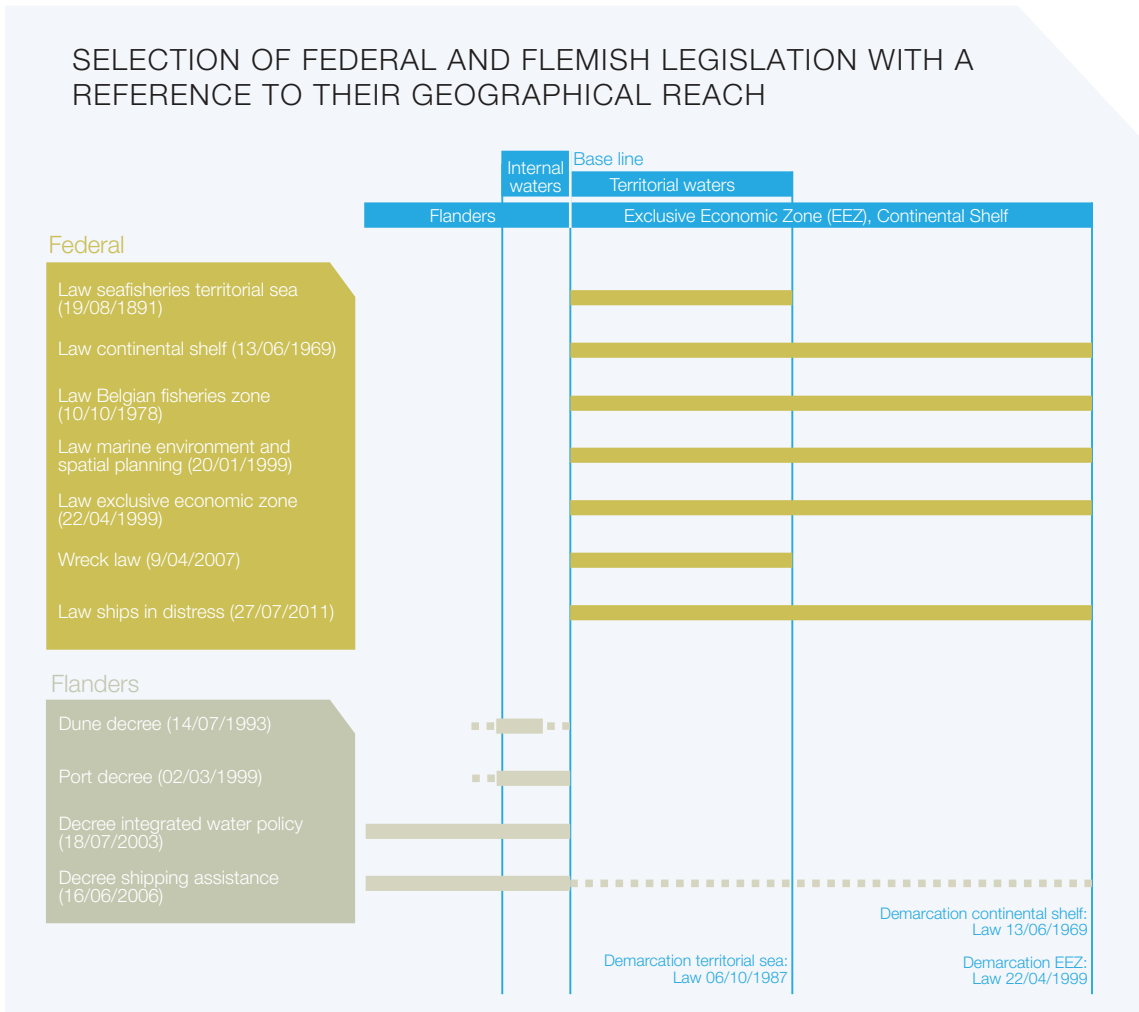


Figure 8. Selection of federal and Flemish legislation with a reference to their geographical reach.

On the Flemish level, ‘decrees’ are promulgated. A decree of the Flemish parliament is a Flemish law with the same legality as a law promulgated by the federal parliament. Similar to the federal level, the Flemish representatives as well as the Flemish government have the right of initiative. The representatives file a ‘proposition for a decree’ while the government elaborates a ‘design for a decree’. A decree enters into force after the ratification and promulgation by the Flemish government. Comparable to the federal level, the policies written in decrees are elaborated by means of implementing decrees (decision of the Flemish government and Ministerial Decrees).

DIVISION OF COMPETENCES

In general, we can say that the federal authorities are responsible for the activities that take place seaward from the baseline, in particular in the territorial sea, the EEZ and on the continental shelf, to the extent that national sovereign rights are valid in the latter zones (see *Convention on the Law of the Sea*) (figure 8). However, there are a few exceptions. The *law of 8 August 1988* amending the special *law of 8 August 1980* for the institutional reform gives Flanders the authority to work in the territorial waters and on the continental shelf, and to carry out activities necessary for the execution of these matters. The law states that waterways and their appurtenances, the ports and their appurtenances, pilotage services and beaconing services from and to the ports, the rescue and the towing services at sea as well as dredging activities are covered by the Flemish region, within the policy domain Mobility and Public Works (MOW) (figure 10). Moreover, MOW is in charge of the determination of the exact locations of shipwrecks in the BNS that can potentially cause nuisance to shipping as well as of the storage of obstacles that impede maritime access.

The agricultural and sea fisheries policy was regionalised through the *special law of 13 July 2001*, transferring several matters to the regions and communities within the scope of the reform of the special *law of 8 August 1980* for the institutional reform (art. 6, §1, V). This means that the Flemish Region (*Policy Domain Agriculture and Fisheries*) has to regulate fisheries in the sea areas covered by the Belgian legislation (figure 10). The sea fisheries policy of the Flemish government still finds its legal base in federal laws adopted before the regionalisation. For this purpose, the *decree of 28 June 2013* concerning the agriculture and fisheries policy was drafted (entry into force on 1 January 2014), aiming to transform the still existing federal legal framework concerning regional matters into a legal regional (Flemish) framework. This reform has resulted in increased legal certainty and impedes vagueness with regard to the scope of the articles of law that include both federal and Flemish matters.

The activities in the BNS (seaward from the baseline) regulated on the federal level are (figure 9):

- Shipping
FPS Mobility and Transport; DG Maritime Transport
- Military activities
Ministry of Defence; Naval Component
- Sand extraction
FPS Economy, SMEs, Self-employed and Energy; Continental Shelf Service
- Energy
FPS Economy, SMEs, Self-employed and Energy; DG Energy
- Cables and pipelines
FPS Economy, SMEs, Self-employed and Energy; DG Energy
- Protection of the marine environment
FPS Health, Food Chain Safety and Environment; Marine Environment Department
- Combating pollution
FPS Health, Food Chain Safety and Environment; Marine Environment Department
Ministry of Defence; Naval Component
FPS Mobility and Transport; DG Maritime Transport
FPS Home Affairs; Civil Security
- Science policy
PPS Science Policy
- Control (police)
FPS Mobility and Transport; DG Maritime Transport; Shipping Control
FPS Home Affairs; Shipping Police
Ministry of Defence; Naval Component



Figure 9. Overview of policy-implementing and policy-making bodies on the federal level.

FEDERAL LEGISLATIVE FRAMEWORK

Integrated legislation

The Belgian policy for protection of the marine environment is determined by international treaties and organisations, the European Union, and regional partnerships, as discussed above. The statements made at the North Sea Ministerial Conferences also play an important role in the protection strategy of the North Sea environment ([Calewaert et al. 2005](#)⁷⁸⁵⁶⁴). The Belgian policy for marine pollution, nature conservation and spatial planning in the Belgian part of the North Sea is mainly determined by the *law of 20 January 1999 for the protection of the marine environment and the organisation of marine spatial planning in the sea regions under jurisdiction of Belgium* ([MMM law](#)) (figure 11). This law aims to protect the marine environment through sustainable management and enforcement measures and to preserve the unique, pristine character and the biodiversity of the marine environment through prevention, limitation and remediation of environmental damage. This is the basis for the establishment and demarcation of marine protected areas, the drafting of area-specific policy plans including the ban on certain activities in these regions (*RD of 15 October 2005* and *RD of 16 October 2012 – special protection areas*; *RD of 14 October 2005 – policy plans*; *RD of 5 March 2006 – marine reserve*) (see Chapter 2, theme **Nature and environment**), the introduction of objective liability in case of environmental damage (*RD of 25 October 2007*) as well as the coupling of concessions for maritime activities

OVERVIEW OF POLICY-IMPLEMENTING AND POLICY-MAKING BODIES ON THE FLEMISH LEVEL



Figure 10. Overview of policy-implementing and policy-making bodies on the Flemish level.

to an environmental impact assessment (*RD of 7 September 2003*; *RD of 9 September 2003*). Besides the principle of objective liability, users of the sea should also take into account the prevention principle, the precautionary principle, the sustainable management principle, the polluter pays principle and the restoration principle.

The *law of 20 January 1999* was amended and completed by the *law of 20 July 2012* concerning legislation for the organisation of marine spatial planning in the Belgian part of the North Sea. The latter includes regulations regarding the adoption procedure of a marine spatial plan (*RD of 13 November 2012*) as well as demands related to the content of this plan, such as a spatial analysis of the Belgian marine areas, a long-term perspective for spatial use, clear economic, social, environmental and safety goals (including indicators) and measures, instruments and actions for policy implementation ([art. 5bis](#)).

The *law of 22 April 1999 (EEZ law)* puts the EEZ under a specific legal regime. In the EEZ, whose borders match those of the continental shelf as established by bilateral agreements with the neighbouring countries, Belgium has sovereign rights for exploration and exploitation, and for protection and management of the natural living and non-living resources in the entire water column, the sea floor and the subsoil, as stipulated in *UNCLOS*. Furthermore, Belgium has exclusive jurisdiction over the construction and use of artificial islands, installations and equipment for *inter alia* the production of water and wind energy, marine scientific research, and the protection and conservation of the marine environment. Belgium also has other jurisdictions as formulated in *UNCLOS*, including the right to survey in the contiguous zone to (1) prevent violations of laws and decrees, which is supervised by national customs in Belgian territory and the territorial sea; and (2) punish violations of these laws and decrees, committed in Belgian territory or territorial seas (*UNCLOS art. 33*; *EEZ law art. 47*).

Sectoral legislation

The majority of federal legislation on **shipping and ports** includes the ratification of international treaties and protocols established by the IMO and the implementation of European directives (figure 11). Considering the international character of this activity, national programmes and policies are synchronised by means of international and European policy and legal instruments. An important legislative instrument on the federal level is the *law of 6 April 1995 regarding the prevention of pollution by ships (MARPOL law)*. This law stipulates the regulations for ships to prevent discharge of harmful substances. It also determines construction, accommodation, equipment and operation requirements with which ships under the Belgium flag must comply. Furthermore, the law discusses the supervision of compliance with this law, including procedures of appeal and penalty clauses. Other important laws are the *law of 16 February 2009 on the ratification of the international Convention on the supervision of harmful anti-fouling systems on ships (AFS law)*; the *law of 16 June 1989 on the ratification of the Agreement on cooperation for controlling pollution in the North Sea by oil and other harmful substances (Bonn law)*; the *law of 20 July 1976 on the ratification and implementation of the international Convention concerning civil liability for damages by pollution by oil* and the *law of 10 August 1998 on the approval of the Protocol of 1992 to amend this international Convention (CLC law)* (figure 11).

The *law of 9 April 2007 regarding the finding and protection of shipwrecks* (figure 11) stipulates the procedure to be followed in case of finding or salvaging wrecks in the territorial sea of Belgium. This law also includes stipulations on **archaeologically and historically valuable wrecks** and the designation of protected wrecks (see also Chapter 2, theme **Maritime and coastal heritage**). Until now, this law has not been provided with the necessary implementing measures (i.e. RDs).

An important law with regard to the **exploitation of non-living resources** is *the law of 13 June 1969* on the exploration and exploitation of non-living resources of the territorial sea and the continental shelf (figure 11). This law was amended in 1999 by both the *EEZ law* and the *MMM law*. The law states that the aforementioned activity necessitates a concession, granted under the conditions and rules determined by the king (*RD of 1 September 2004 – concessions*). Every application for a concession or authorisation has to include an environmental impact assessment (*RD of 1 September 2004 - EIA*). An authorisation is also needed for the construction of cables and pipelines, granted or revoked by the rules determined by the king. For pipelines, the law states that a royal approval is needed regarding the proposed trajectory.

The federal government is also responsible for the **protection of the marine environment**. The main law is the aforementioned *law of 20 January 1999 for the protection of the marine environment and the organisation of marine spatial planning in the sea regions under jurisdiction of Belgium (MMM law)* (figure 11). The law was already discussed above due to its integrated character (see **Federal legislative framework – integrated legislation**). This law provides the basis for measures necessary in order to comply with the international and European (directives/regulations) obligations with regard to the protection of the marine environment, such as the *Birds (2009/147/EC)* and *Habitats Directives (92/43/EEC)*, the *Ramsar Convention*, the *Bern Convention*, the *Bonn Convention*, the *Convention on Biological Diversity* and the *Law of the Sea Convention*. In the theme ‘nature and environment’ we also include the *law of 9 July 2004 on the accession of Belgium to the international Convention for the regulation of whaling* (1946) and to the *Protocol* (1956). Thereby Belgium acceded to the International Whaling Commission, composed of a representative of every participating government, potentially accompanied by experts and advisors.

On 12 July 1973, the *law on nature conservation* was adopted (figure 11). This law aimed to maintain the integrity, diversity and pristine nature of the natural environment by taking measures for the protection of flora and fauna, their communities and habitats, and the soil, subsoil, water and air. For the Flemish Region, the law on nature conservation

SELECTION OF FEDERAL LEGAL AND POLICY INSTRUMENTS

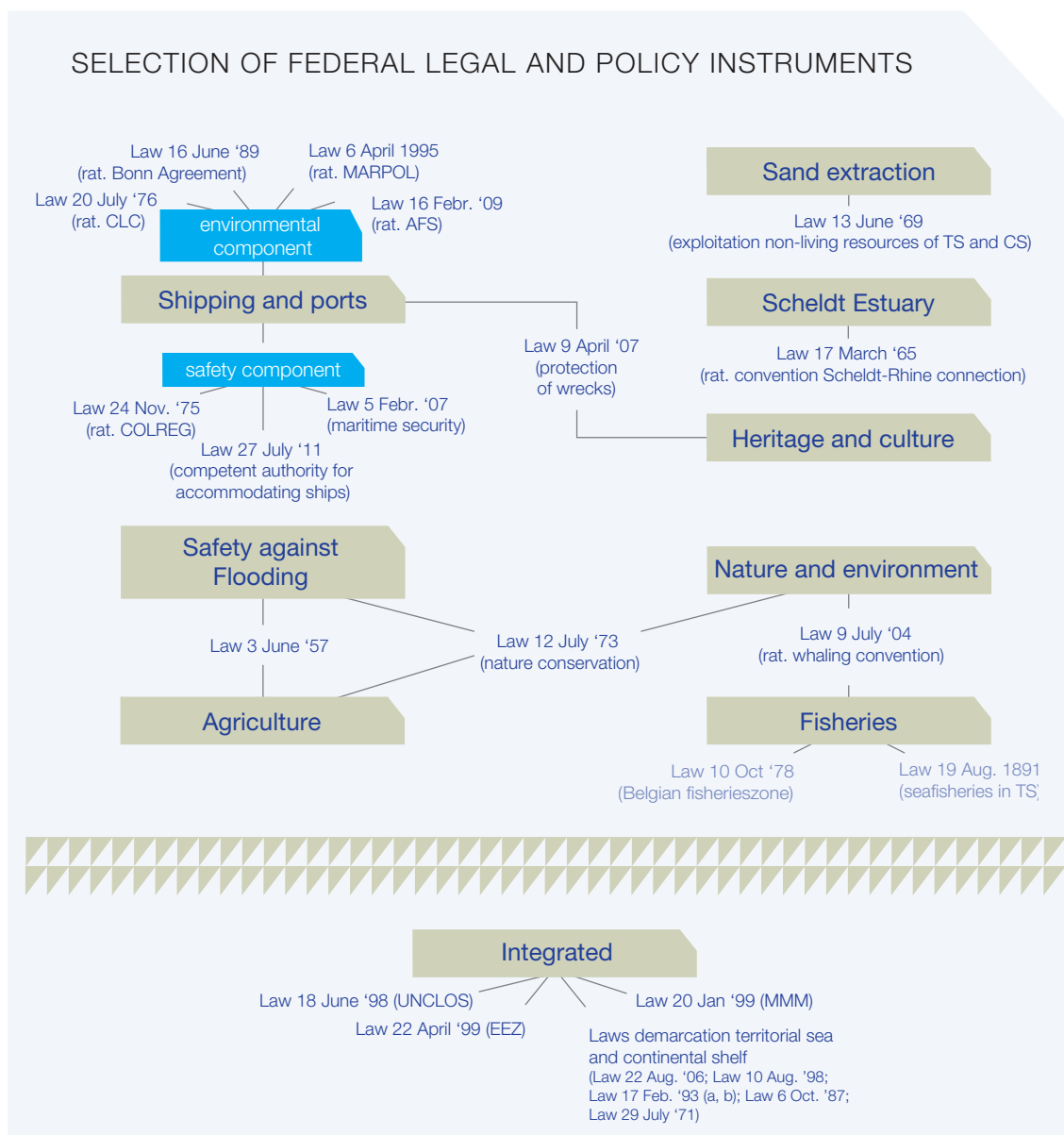


Figure 11. Selection of federal legal and policy instruments. Abbreviations: AFS, Anti-Fouling Systems; COLREG, Collision Regulations; CLC, Civil Liability Convention; CS, Continental Shelf; EEZ, Exclusive Economic Zone; MARPOL, Marine Pollution; TS, Territorial Sea.

is practically abolished and replaced by decrees of the Flemish High Council, namely by the *Forest Decree* of 13 June 1990 and the *decree of 21 October 1997 on nature conservation and the natural environment (Nature Decree)*. Therefore, only a few stipulations of the initial law have been retained, such as stipulations on the preservation of coastal dunes (set by the *decree of 14 July 1993 on measures for the protection of coastal dunes – the Dune Decree*).

FLEMISH LEGISLATIVE FRAMEWORK

Integrated legislation

On the Flemish level there are two important decrees with an integrated character: *the decree of 14 July 1998 on ratification of the United Nations Convention on the Law of the Sea 1982* and *the decree of 18 July 2003 on integrated water policy* (figure 12), which is the regional implementation of the European *Water Framework Directive*

SELECTION OF THE FLEMISH LEGAL AND POLICY INSTRUMENTS

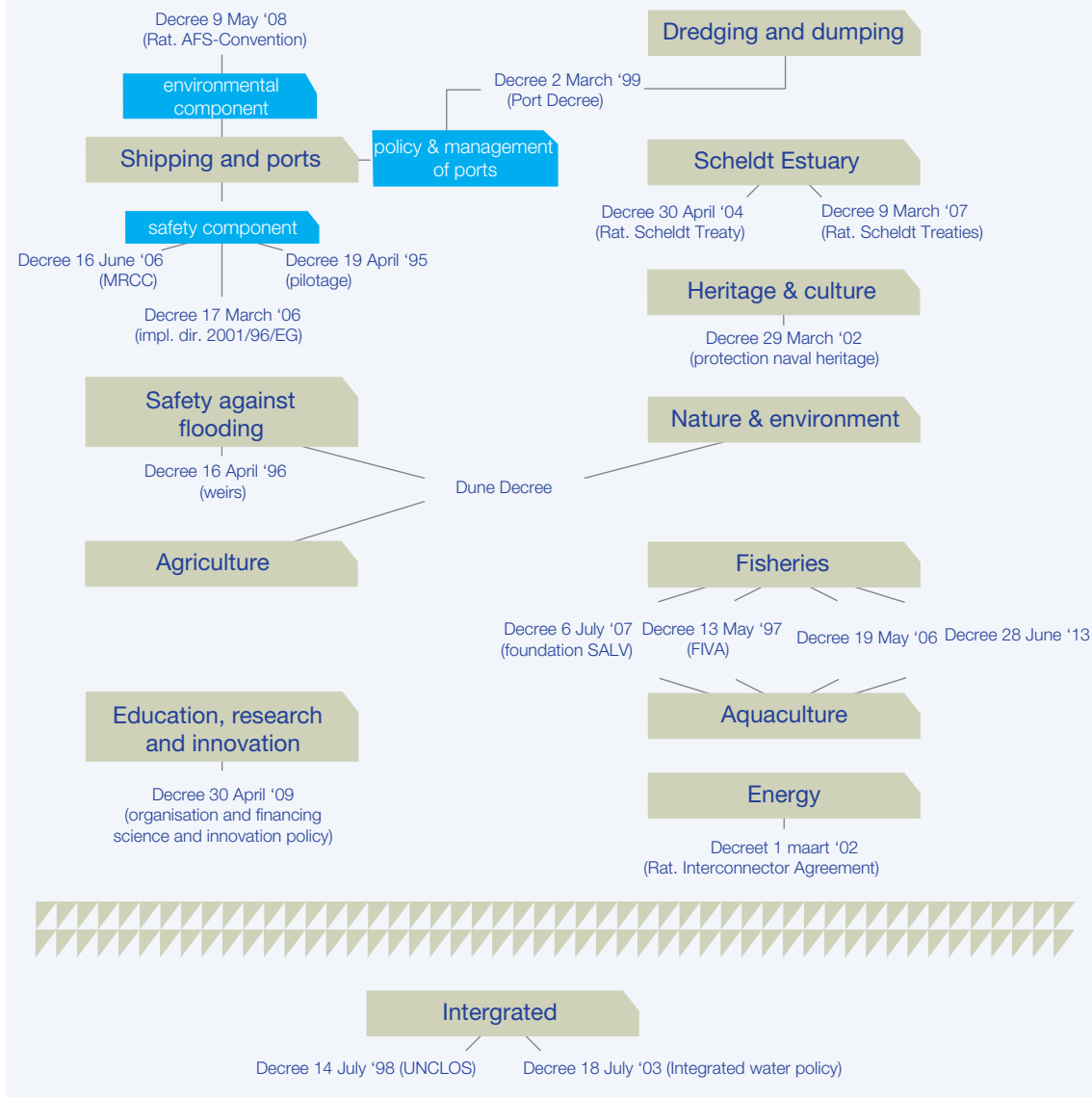


Figure 12. Selection of the Flemish legal and policy instruments. Abbreviations: A&F, Agriculture and Fisheries; AFS, Anti-Fouling Systems; FIVA, Flemish Fisheries and Aquaculture Financing Instrument; MRCC, Maritime Rescue and Coordination Centre; SALV, Strategic Advisory Council for Agriculture and Fisheries.

(WFD; 2000/60/EC). In accordance with the constitutional division of competences, the Regions are responsible for the implementation of the WFD regarding water policy (including drinking water policy), rural development, nature conservation, public works and transportation on their territory (on land). The coordination of the entire water policy within the Flemish Region lies with the Coordination Committee on Integrated Water policy (CIW). The secretariat and presidency of the CIW have been entrusted to the Flemish Environment Agency (VMM). The federal state is responsible for the implementation of the WFD at sea (for the geographical application of the WFD see **European policy and legal instruments – integrated maritime policy**), product policy (authorisations), protection against ionising radiation (including radio-active waste) and the economic aspects of drinking water provision (pricing) in the entire Belgian territory (*FPS Health, Food Chain Safety and Environment 2009*). The Belgian coastal waters belong to the International River Basin District of the Scheldt, governed by the three Regions, the federal government, France

and The Netherlands. The International Scheldt Commission is responsible for the international coordination (i.e. Scheldt Treaty), while the Coordination Committee for International Environmental Policy (CCIM), led by the federal state, coordinates on the national level (*cooperation agreement of 5 April 1995*).

Sectoral legislation

A decree with regard to **research and innovation** is the *decree of 30 April 2009 on the organisation and financing of science and innovation policies* (figure 12), which stipulates, among other things, the goals, tasks, governance and function of the agency for Innovation by Science and Technology (IWT) and the Fund for Scientific Research – Flanders (FWO – Flanders). The decree also describes the establishment, tasks, competences and composition of the strategic advisory board for science and innovation policy. Within the marine framework, the decree stipulates the functioning of the strategic research centres (*inter alia*, the Flemish Institute for Technological Research – VITO and the Flanders Marine Institute – VLIZ).

In the policy domain of **shipping and ports**, the *decree of 2 March 1999 regarding the policy and management of seaports* (*Port Decree*) constitutes the basis for a modern port policy with a global perspective with regard to maritime matters in Flanders (figure 12) (see also Chapter 2, theme **Maritime transport, shipping and ports**). Hereby, the *Port Decree* follows *six important principles* (Flemish Port Commission, FPC):

- Greater autonomy in management and exploitation for the local port authorities;
- Uniform operating conditions for all seaports;
- More possibilities for a flexible staff policy for port authorities;
- Mandatory legal personality for all port authorities;
- A clear and transparent relation between the Flemish Region and port authorities;
- Objectification of the financial policy for ports.

On the Flemish level, the decrees on shipping and ports are mainly implementations and ratifications of European directives or international treaties with regard to activities regulated by Flanders, for example: *the decree of 17 March 2006 regarding the implementation of Directive 2001/96/EG on establishing harmonised requirements and procedures for the safe loading and unloading of bulk carriers*, *the decree of 16 June 2006 regarding shipping guidance on maritime waterways and the organisation of the Maritime Rescue and Coordination Centre* (the *Shipping Guidance Decree*, an implementation of *Directive 2002/59/EC*), and *the decree of 9 May 2008 on the ratification of the international Convention on supervision on harmful anti-fouling systems of ships* (*decree on ratification of the AFS Convention*) (figure 12). The *AFS Convention* was also ratified on a federal level (see **Federal legislative framework**) because the federal state warrants its enforcement.

Because of the Flemish competence as to pilotage services, the organisation and scope of pilotage services have been established by the *decree of 9 April 1995 on the organisation and functioning of the pilotage services* (*Pilotage Decree*).

Prior to 13 July 2001 **sea fisheries** were regulated on a federal level, only the investment policy was already regionalised before by the *decree of 13 May 1997 (FIVA decree)* (figure 12). Notwithstanding the fact that sea fisheries are nowadays organised on a Flemish level, the legal basis of the policy is still often included into federal laws predating the regionalisation, such as the *law of 10 October 1978 on the establishment of the Belgian fishing area* and the *law of 19 August 1891 on sea fisheries in the territorial sea* (figure 11). The *decree of 28 June 2013* on agricultural and fisheries policies aims at the formation of a regional (Flemish) legal framework regarding the regional competences for sea fisheries and the abolition of the aforementioned federal legislation (figure 12).

Flanders is responsible for land use and **nature conservation** in its territory, and thus also for nature conservation in the **maritime dune area**, which is regulated by the *decree of 14 July 1993 on measures for the protection of coastal dunes* (*Dune Decree*) (figure 12). This decree consists of stipulations for the demarcation of protected dune areas and agricultural areas important for the dune areas (see also Chapter 2, theme **Nature and environment**). The decree also regulates a ban on building in the aforementioned areas, and stipulates that this ban is not applicable to, *inter alia*, coastal defence projects (see also Chapter 2, theme **Safety against flooding**).

2 Overview of existing mechanisms, authorities and platforms for the implementation of research results into marine/maritime policy choices and policy decisions

2.1 Mechanisms for the incorporation of science into policy

In several policy instruments on the international, European, federal or Flemish level, specific mechanisms are available for the implementation of scientific knowledge into the marine policy. It usually concerns the knowledge and research results of monitoring of the marine environment, an assessment of the impact of a user function on the (marine) environment or the scientific underpinning of thresholds that were imposed by policy. Furthermore, mechanisms such as public consultations ensure the incorporation of scientific knowledge into certain policy processes and instruments as well. The connection between scientific research on the one hand and the needs of marine policy on the other are increasingly fine-tuned, mostly on the level of research projects and certain research programmes.

On a European level, the alignment between marine/maritime science and policy occurs within the framework of initiatives such as the European *Integrated Maritime Policy (IMP)*, the *communication concerning a European strategy for marine and maritime research (COM (2008) 534)*, the *communication concerning Marine Knowledge 2020 (COM (2010) 461)*, the Framework Programmes and the marine observation and data infrastructures (see [Chapter 1](#)). Well-known examples of the incorporation of science into policy on a European level include:

- The *Common Fisheries Policy (CFP)*, in which detailed guidelines ([Data Collection Framework, DCF](#)) stipulate the scientific information EU Member States are obliged to collect in support of the policy (see [Chapter 2](#), theme **Fisheries**);
- In the *Habitats and Birds Directives*, scientifically based conservation objectives have to be established, against which the conservation status of habitats and species should be measured (see [Chapter 2](#), theme **Nature and environment**);
- In the *Water Framework Directive (WFD)* the good ecological status (GES) and the good chemical status (GCS) of surface waters (the coastal waters (1 and 12 nautical miles)) are determined on the basis of scientific research and should subsequently be monitored (see [Chapter 2](#), theme **Nature and environment**);
- The *Marine Strategy Framework Directive (MSFD)* aims to achieve a 'good environmental status' (GES) of the EU's marine waters as far as 200 nautical miles off the coast. In order to achieve the GES by 2020, scientifically underpinned environmental goals and indicators have been determined and a programme of measures is being developed. The incorporation of scientific research into the *MSFD* is discussed in detail in the **Case study – Marine Strategy Framework Directive**.

An important mechanism regarding the implementation of research results and knowledge into the policy is the environmental impact assessment (EIA), which lists the consequences of a particular decision for the environment. On a European level, the procedures that should be met by an EIA have been established in *Directive 85/337/EEC*. The *Strategic Environmental Assessment (SEA) Directive (Directive 2001/42/EC)* constitutes an addition to the aforesaid *EIA Directive* and obliges authorities to conduct an environmental assessment of certain plans and programmes which may have significant effects on the environment.

Table 5. Overview of the activities in the BNS subject to a permit procedure (cf. *RD of 9 September 2003*).

LAW OF 20 JANUARY 1999	
Activities subject to an EIA	Activities not subject to an EIA
Civil engineering	Commercial fisheries
Trenching and the raising of the seabed	Marine scientific research
The use of high-powered explosives and acoustic devices	Shipping
The abandonment or destruction of wrecks and sunken cargoes	Activities referred to in the <i>law of 13 June 1969</i>
Industrial activities	Non-profitable individual activities
Activities of publicity and commercial enterprises	Activities necessary for the exercise of the competence of the Flemish Region

FLOWCHART OF THE PROCEDURE FOR THE APPLICATION AND OPERATION OF ACTIVITIES IN THE BNS IN ACCORDANCE TO THE LAW OF 20 JANUARY 1999

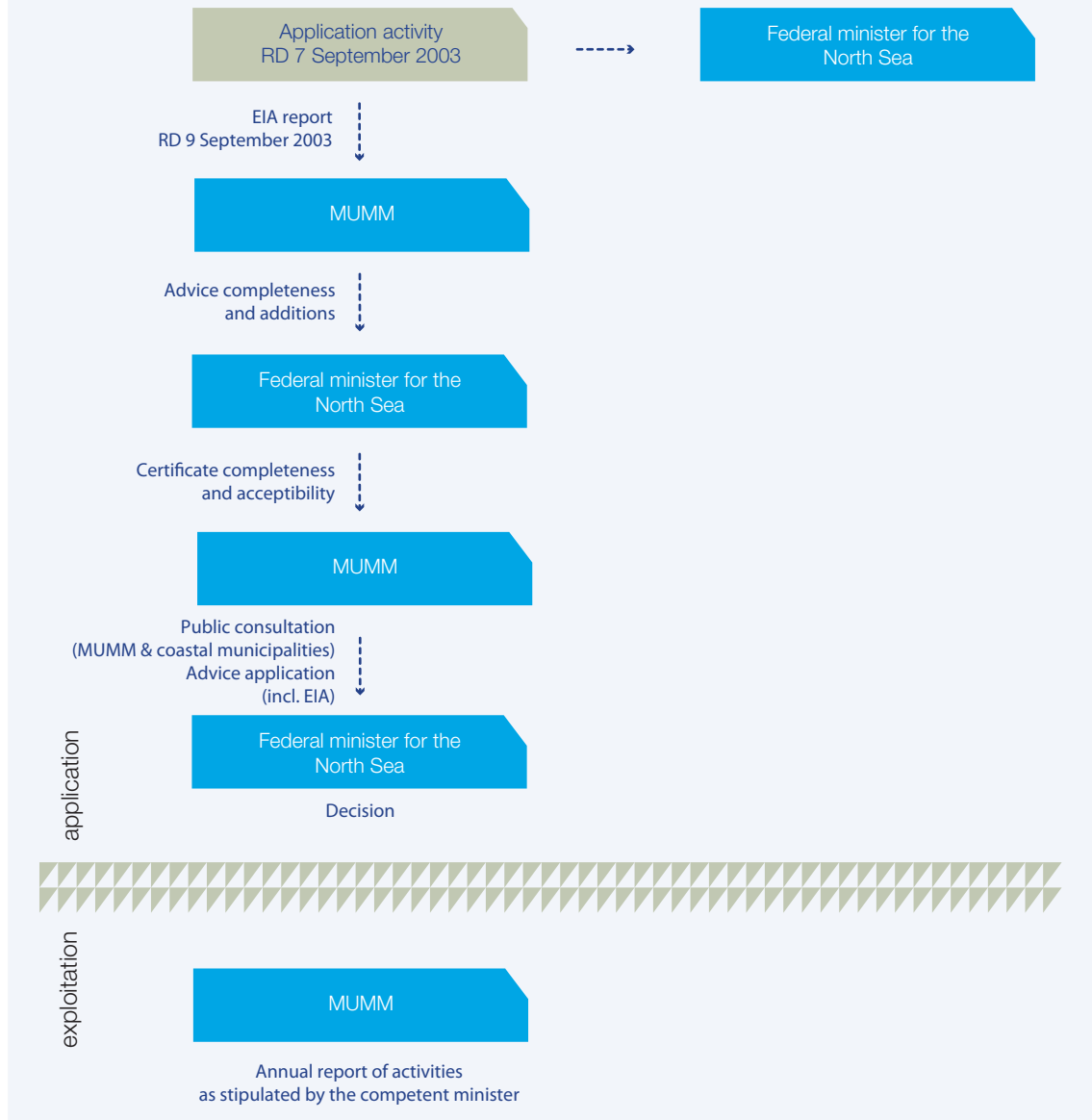


Figure 13. Flowchart of the procedure for the application and operation of activities in the BNS in accordance to the law of 20 January 1999.

The law of 20 January 1999 stipulates the activities in the Belgian part of the North Sea (BNS) for which a permit procedure is mandatory (RD of 7 September 2003), including an EIA as stipulated in the RD of 9 September 2003 (see figure 13, table 5). The EIA should include a section about the activities as such, a section about the effects of the activities on the marine environment and a non-technical summary of both previously mentioned sections. The Management Unit of the North Sea Mathematical Models and the Scheldt estuary (MUMM) verifies whether the EIA is complete and if additions are necessary. Subsequently, the MUMM gives advice about the acceptability of the proposed activity with regard to the marine environment. Based on this advice, the responsible authority takes the actual decision. The MD of 8 July 2005 and the MD of 3 June 2009 identify a number of activities that are subject to a simplified procedure and stipulate a model form for the EIA. Activities in the BNS that comply with the law of 13 June

1969, such as sand and gravel extraction, require an EIA as defined by the *RD of 1 September 2004* (see Chapter 2, theme **Sand and gravel extraction**).

Subsequent to the granting of permits or authorisations concerning a certain activity in the BNS, the *law of 20 January 1999* stipulates that these activities are subject to monitoring programmes and permanent environmental impact examinations (figure 13). If this examination reveals that new disadvantageous consequences for the marine environment occurred, the permits or authorisations for the activities can be suspended. The monitoring of the activities of the various user functions in the BNS, required by international, European, federal and/or Flemish legislation, is discussed in the relevant themes of **Chapter 2**.

2.2 Authorities and platforms for the incorporation of science into policy

In addition to mechanisms in policy instruments, several authorities (international, European, federal, Flemish, etc.) ensure that science is incorporated into the marine policy. Firstly, this concerns organisations involved in or consulted during the preparation and evaluation of the policy. Furthermore, certain authorities have a mandate to observe monitoring results, to report them and to include them in the policy cycle. Table 6 contains a non-exhaustive list of authorities with a specific mandate to conduct scientific research or disseminate scientific information in support of the policy. Obviously, this does not mean that no inflow of marine/maritime science into policy occurs in other competent administrations.

Table 6. A non-exhaustive list of authorities responsible for the incorporation of science into the marine policy.

LEVEL	AUTHORITY	EXPLANATION
International	International Council for the Exploration of the Sea (<i>ICES</i>)	<p>ICES is an intergovernmental organisation consisting of an international network of marine scientists who aim for a sustainable use of the oceans. ICES wants to increase the scientific knowledge with regard to the marine environment and its living resources and to use this knowledge to advise the competent authorities.</p> <p>The decision and policy-making body of ICES is the Council, with two delegates from each of the 20 Member States. The work of the Council is carried out by the Advisory Committee, the Science Committee and the Data and Information Group.</p> <p>ICES plays a significant role in the policy concerning fisheries (see Chapter 2, theme Fisheries).</p>
	Intergovernmental Oceanographic Commission (<i>IOC</i>) - UNESCO	The IOC is the UN body for ocean science, ocean observation, ocean data and information exchange, and services such as Tsunami warning systems. IOC promotes international cooperation and coordinates programmes in research, services and capacity building concerning oceans and coastal areas. This knowledge is applied to the management, sustainable development and protection of the marine environment and to the decision making processes of the States.
	Joint Research Centre (<i>JRC</i>)	<p>The JRC is the research centre of the European Commission (EC). The centre takes care of the scientific and technological support of the European policy.</p> <p>Specifically for the coast and sea, JRC focuses on research concerning renewable marine energy, climate changes, floods, fisheries, marine ecosystems, etc.</p>
European	European Environment Agency (<i>EEA</i>)	<p>The European Environment Agency (EEA) is an agency of the European Union with the task to provide sound, objective information about the environment. Their work is a major information source for everyone involved in developing, adopting, implementing and evaluating environmental policy, as well as for the general public.</p> <p>Specifically for coast and sea, EEA produces coastal and marine indicators, maps and information, and compiles these policy-relevant figures in the publication <i>The changing faces of Europe's coastal areas (2006)</i>¹⁰⁰²⁸¹. Furthermore, EEA coordinates Eionet, the European Environment Information and Observation Network that collects data about the environment (including the marine environment) in Europe and aims to develop a better environmental policy.</p>

LEVEL	AUTHORITY	EXPLANATION (continuation)
Federal	Royal Belgian Institute of Natural Sciences (<i>RBINS</i>)	<p>The Management Unit of the North Sea Mathematical Models and the Scheldt Estuary (MUMM) is part of the RBINS and has a threefold task: Modeling, Monitoring as well as the Management of the BNS.</p> <p>MUMM is responsible for the monitoring within the framework of specific policy instruments (e.g. <i>OSPAR</i> and the <i>MSFD</i>) and the monitoring of the impact of certain activities on the marine environment. MUMM is also involved in the EIA of activities in the BNS. Furthermore, MUMM represents Belgium in several intergovernmental conventions concerning the protection of the marine environment and determines the Belgian positions that have to be defended, as well as the adaptation of the decisions which were taken. This management is under the authority of the minister responsible for the environmental policy.</p>
Flemish	Research Institute for Nature and Forest (<i>INBO</i>)	<p>INBO is the Flemish research and knowledge centre for nature and its sustainable management and use. INBO conducts research and provides information to those who prepare or implement the policy, as well as to interested persons.</p> <p>Specifically for the coast and sea, INBO focuses on research about coastal and sea birds, fauna and flora in the coastal area, the development of an ecosystem vision for the Flemish coast, etc.</p>
	Institute for Agricultural and Fisheries Research (<i>ILVO</i>)	<p>ILVO conducts research aimed at economically, ecologically and socially sustainable agriculture and fisheries. Based on this research, ILVO accumulates fundamental and applied knowledge which is <i>inter alia</i> used for the improvement of policy instruments as a basis for sector development and agricultural policy for rural areas.</p> <p>Specifically for the coast and sea, ILVO conducts research regarding fisheries biology, fishing techniques, aquaculture, biological and chemical research concerning the BNS and product technology of fish products.</p>
	Flanders Hydraulics Research (<i>Watlab</i>)	<p>Watlab is a centre of expertise which carries out scientific research on the effects of water dynamics. The research is conducted in support of the Flemish Government but also supports private and international organisations.</p> <p>Specifically for the coast and sea, Watlab focuses on research concerning hydraulic structures, water management, nautical aspects, the Scheldt Estuary, coastal protection, maritime accesses, etc.</p>
	Flanders Marine Institute (<i>VLIZ</i>)	<p>VLIZ is the coordination and information platform for marine scientific research in Flanders. The institute is <i>inter alia</i> responsible for the dissemination of scientific information concerning the sea, coast and tidal systems to those responsible for policy, in a way that is useful for policy making and policy support regarding marine matters.</p> <p>VLIZ informs policy makers by means of products such as the Compendium for Coast and Sea, policy informing briefs and indicators for policy (<i>Maelfait et al. 2012</i>²²¹⁰¹⁶, <i>Indicatoren voor het Schelde-estuarium</i>²⁰⁶⁰⁸⁶, etc.).</p>
	Flanders Heritage Agency	<p>Flanders Heritage Agency identifies, investigates and protects valuable buildings, landscapes, archaeological sites and maritime heritage. Furthermore, the agency supports the management of immovable heritage and conducts research in view of policy and management.</p> <p>Specifically for the coast and sea, Flanders Heritage Agency focuses on maritime archaeology, late medieval fishing communities, maritime heritage, etc.</p>
	Flemish Institute for Technological Research (<i>VITO</i>)	<p>VITO is a leading European, independent research and advice centre which develops sustainable technologies in the field of energy, environment, materials and earth observation. The institute conducts objective research and disseminates studies and advice that allow industry and governments to develop their policy.</p> <p>Specifically for the coast and sea, VITO focuses on remote sensing in coastal areas and water quality measurements.</p>

LEVEL	AUTHORITY	EXPLANATION (continuation)
	The Flemish Environment Agency (<i>VMM</i>)	<p>The mission of VMM is to contribute to the realisation of the environmental policy objectives by reporting on the state of the environment and by preventing, limiting and reversing harmful impacts on water systems and pollution of the atmosphere, and to the realisation of the integrated water policy objectives. The VMM formulates policy proposals, participates in the international environmental policy and ensures the inflow of scientific information into the policy by means of the Flanders State of the Environment Report (MIRA).</p> <p>Specifically for the coast and sea, VMM focuses on the water quality and published MIRA theme Coast and Sea (<i>Goffin et al. 2007</i>¹¹⁴²²⁵).</p>
	Flemish Port Commission (<i>VHC</i>)	The Flemish Port Commission (VHC) is part of the Flemish Socio-Economic Council (<i>SERV</i> , advisory body). The VHC contributes to the preparation of port policy by means of advice and recommendations. Furthermore, VHC publishes information and statistics concerning the Flemish and European port policy and studies about port-related problems (see Chapter 2, theme <i>Maritime transport, shipping and ports</i>).

Several consultation platforms are involved in the marine and coastal policy in Belgium and also play a role in the incorporation of science into policy (table 7). These are often multilateral platforms mandated to provide advice, obtain (externally produced) scientific knowledge/insights and research results. Generally, one or more of the organisations listed above are involved in the consultation platforms. These platforms can be sector-specific or have an integrated approach (table 7).

Table 7. Non-exhaustive list of consultation platforms which play a role in the incorporation of marine/maritime science into the policy.

THEME	CONSULTATION PLATFORM	REPRESENTATION OF MARINE RESEARCH	EXPLANATION
Integrated	<i>Coast Guard</i>	PPS Science Policy (<i>MUMM</i> , part of <i>RBINS</i>)	<p>The coordination and consultation between the federal and Flemish authorities with competences related to the North Sea and the province of West Flanders (see <i>cooperation agreement of 8 July 2005</i>) occurs within the <i>Coast Guard</i>. The Coast Guard consists of a policy-making body, a consultation body and a secretariat. The policy-making body coordinates the cooperation between the different partners and advises the competent ministers (article 6 of the <i>cooperation agreement of 8 July 2005</i>). The consultation body of the Coast Guard investigates files and collects information for the policy-making body (article 12 of the <i>cooperation agreement of 8 July 2005</i>).</p>
Integrated	<i>Coordination Centre for Integrated Coastal Zone Management</i>	Flanders Marine Institute (<i>VLIZ</i>)	<p>The Coordination Centre for Integrated Coastal Zone Management is the point of contact for integrated and sustainable coastal zone management in Belgium. Major challenges consist of the (inter-administrative) alignment and (horizontal) integration of the various policies.</p> <p>The Coastal Compass (<i>Maelfait et al. 2012</i>²²¹⁰¹⁶), an initiative by the Coordination Centre for Integrated Coastal Zone Management, provides scientifically based policy-relevant information.</p>
Integrated	Federal Council for Sustainable Development (<i>FRDO</i>)	4 scientific advisors are part of the Council	<p>The Belgian Federal Council for Sustainable Development advises the Belgian federal authorities about the federal policy on sustainable development. Particular attention is paid to the implementation of international commitments of Belgium, such as <i>Agenda 21</i>, the <i>United Nations Framework Convention on Climate Change</i> and the <i>Convention on Biological Diversity</i>.</p> <p>The members of FRDO are representatives from various organisations: environmental organisations, development organisations, consumers' unions, trade unions, employers' federations, energy producers and the scientific world. Federal and regional government representatives and delegates from environmental and socio-economic councils are members without voting rights.</p>

THEME	CONSULTATION PLATFORM	REPRESENTATION OF MARINE RESEARCH	EXPLANATION (continuation)
Scheldt Estuary	The Flemish-Dutch Scheldt Commission (VNSC)	<i>Working Group Research and Monitoring</i>	VNSC was established to promote the cooperation between Flanders and the Netherlands in the field of the policy and management with regard to the Scheldt Estuary. One of the objectives of VNSC is the creation and support of common physical monitoring and joint scientific research. To this end, the Working Group Research & Monitoring was established within the framework of the VNSC. A major project is <i>ScheldeMonitor</i> , a knowledge and information system that disseminates the results of the common monitoring programme (MONEOS, <i>Meire & Maris (2008)</i> ¹²³³¹⁴) to the policy makers and scientific research. To assess the state and evolution of the estuary, an evaluation methodology was established in <i>Holzhauser et al. (2011)</i> ²¹³⁰³⁹ , which is used to evaluate the functioning of the Scheldt Estuary (<i>Depreiter et al. 2013</i> ²²⁸⁴¹⁰ , see Chapter 2, theme Scheldt Estuary).
Marine Spatial Planning	Advisory commission on marine spatial planning (<i>Royal Decree of 13 November 2012</i>)	PPS Science Policy (<i>MUMM</i> , part of <i>RBINS</i>)	This commission provides advice with arguments on the preliminary draft of the marine spatial plan to the competent minister.
Nature and environment	Milieu- en Natuurraad van Vlaanderen (<i>Minaraad</i>)	The Council has four independent experts on environment and environmental policy	The Minaraad is the strategic advisory council for the policy areas Environment, Nature and Energy. Representatives from society and independent experts consult on environmental policy. The advice and studies from these consultations are provided to the Flemish Government and the Flemish parliament.
Agriculture, Fisheries and Aquaculture	Strategic Advisory Council for Agriculture and Fisheries (<i>SALV</i>)	Platform for agricultural research	SALV advises the Flemish Government and the Flemish parliament on agriculture and fisheries in the broad sense of the word. The advice of the stakeholders represented in SALV, are part of a supported decision making process. The council takes into account all the ecological, economic, social and societal aspects.
Aquaculture	<i>Flemish Platform for Aquaculture</i>	<i>List of scientific partners</i>	In 2012, a Flemish Platform for Aquaculture was established to create sufficient support from policy, research and education, which is crucial to achieve more synergies within the research community and to stimulate sustainable aquaculture within the government (see Chapter 2, theme Aquaculture).
Sand and gravel extraction	Advisory commission to coordinate the administrations involved in the management of exploration and operations on the Belgian continental shelf and in the territorial sea (<i>Royal Decree of 12 August 2000</i>)	PPS Science Policy (<i>MUMM</i> , part of <i>RBINS</i>)	The commission has the following tasks: <ul style="list-style-type: none"> • Coordination of the investigations of the concession requests and formulating advice about these applications; • Follow-up of the various studies conducted on the effects of sand extraction on the continental shelf; • The research for the three-yearly report; • Recommendation of corrective measures if a negative impact would occur; • Formulation of policy advice relating to all aspects of sand extraction.
Safety against flooding	<i>Flanders Bays</i>	Working groups on the Coast, Harbours, Islands, Western Scheldt Estuary and Nature & Landscape Planning	Within the concept of Flanders Bays, which investigates the possibility of islands off our coast, 11 sub-projects are scientifically investigated to determine which of these concepts and sub-projects have potential to be further developed. Based on the research, the Flemish Government wants to develop a package of measures for the medium term (until 2050) in the so-called 'Masterplan Flanders Bays'.

3 Case study - Marine Strategy Framework Directive

The flow of knowledge and information in support of maritime policy in Belgium is based on established procedures (EIA, advisory boards, etc.) and targeted consultation of scientific expertise. The EU *Integrated Maritime Policy* (IMP; COM (2007) 575) sets guidelines for an integrated approach in which coordination and integration of existing scientific knowledge and information is embedded in the policy framework. A recent and striking example of this integration is the cooperation between the marine research network and the competent authorities in Belgium, in preparation of the *Marine Strategy Framework Directive* (MSFD; 2008/56/EC) for the Belgian marine waters.

3.1 Marine Strategy Framework Directive: context and objective

The *MSFD* aims for an effective protection of the marine environment in the European marine waters by 2020. This directive is the legal instrument in Europe for the protection of marine biodiversity, and is referred to as the environmental pillar of the *IMP*. The main objective of the *MSFD* is a 'good environmental status' or GES for all marine waters under the jurisdiction of the Member States up to 200 nautical miles from the coast by 2020. Within the EU policy context, GES means protecting marine species and habitats, halting further loss of biodiversity by human intervention, and ensuring that the various biological components of the ecosystem function in balance (Belgian State 2012²²⁰²³²). The *MSFD* is therefore complementary to existing directives for the preservation of the EU marine environment. The adoption of the *MSFD* on 17 June 2008 was the result of years of preparatory work (figure 14). After the mandatory transposition of this directive into the national legislation of the Member States (by 23 July 2010) the European Commission promulgated a set of criteria and methodological standards for the description of the GES in marine waters, as described in the Commission Decision of 1/09/2010 (2010/477/EU).

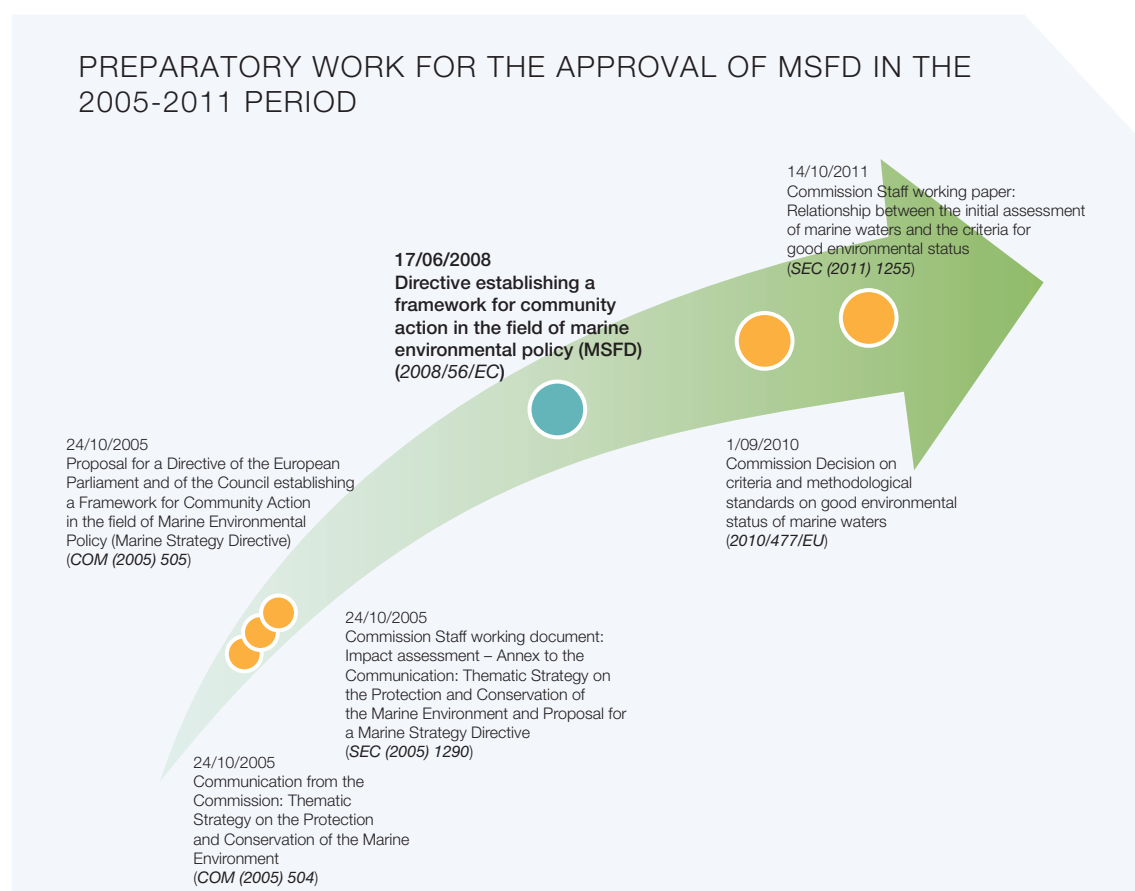


Figure 14. Preparatory work for the approval of *MSFD* in the 2005-2011 period.

Defining the GES and the environmental objectives of the *MSFD* is a national duty. The objectives of the *MSFD* have been elaborated for the four marine regions in European waters: the Baltic Sea, the North-East Atlantic, the Mediterranean Sea and the Black Sea. These regions have been demarcated on the basis of common geographical and environmental criteria. Alignment on the level of regional seas is necessary for a common evaluation and for the development of effective measures. The *MSFD* relies on existing coordination structures within the context of the *Regional Sea Conventions* for the coordination, implementation and monitoring of the objectives. For the North Sea, this is the *Convention for the protection of the marine environment of the North-East Atlantic* (*OSPAR* 1992; see *International treaties – regional conventions and agreements*), of which the EU is also a member. Article 6 of the *MSFD* also specifically refers to the cooperation with non-EU neighbouring countries which also have powers in these regional seas.

The Belgian part of the North Sea only covers a very small part of the North Sea and borders the national waters of 3 neighbouring countries. A strong international and cross-border cooperation in marine research is therefore a necessity for achieving the proposed environmental targets.

According to the requirements of the *MSFD*, Belgium and other EU Member States have committed themselves to performing the actions mentioned in table 8 by 2020.

Table 8. Timeframe for the preparatory phase (until 2015) and the implementation phase (from 2016 onwards) of *MSFD*.

TIME	ACTIONS
July 2012	Initial assessment for the Belgian marine waters pursuant Art. 8 (section 1a & 1b) of the <i>MSFD</i> (<i>Belgian State 2012</i> ²²⁰²³⁰). This evaluation also includes a socio-economic analysis of the use of the Belgian marine waters and of the costs associated with damage inflicted on the marine environment, pursuant to Art. 8 (section 1c) of the <i>MSFD</i> (<i>Belgian State 2012</i> ²²⁰²³⁰)
	Description of the GES and the establishment of environmental targets and associated indicators for Belgian marine waters pursuant to clauses in Art. 9 & 10 (<i>Belgian State 2012</i> ²²⁰²³⁰)
July 2014	Development of a monitoring programme to measure the evolution of the state of the environment
July 2015	Development of a programme of measures to achieve or maintain GES
July 2018 (2024, 2030, etc.)	Six-yearly revision of the past evaluation in view of the results of the monitoring programme
July 2020 (and beyond)	Achieving GES

Following the transposition of the *MSFD* into national legislation (*RD of 23 June 2010*), Belgium has performed an *initial assessment on the state of the marine environment* (2012) ²²⁰²³⁰, including a *socio-economic analysis of the use of the BNS* (2012) ²²⁰²³¹. *The description of the GES and the establishment of environmental targets* ²²⁰²³² in the BNS is as much as possible in line with the Commission Decision on the common criteria and methodological standards (*2010/477/EU*).

The GES and the environmental targets for the BNS have been defined on the basis of the eleven qualitative descriptors (D) of Annex I of the directive. The list in Annex I includes descriptors that refer to the state of the marine environment (biological diversity (D1), elements of marine food webs (D4), sea-floor integrity (D6) and the population of commercially exploited fish and shellfish (D3)), as well as descriptive elements that refer to the most important or relevant anthropogenic pressures (non-indigenous species (D2), the population of commercially exploited fish and shellfish (D3), eutrophication (D5), physical damage (D6 and D7), contaminants (D8 and D9), marine litter (D10) and the introduction of energy, including underwater noise (D11)) (*Belgian State 2012* ²²⁰²³²). Based on the description of the GES and environmental targets, MUMM (RBINS) is developing a monitoring programme by July 2014 allowing to measure the evolution of the state of the environment. Then, the Marine Environment Department (FPS Health, Food Chain Safety and Environment) is responsible for coordinating the development of a programme of measures by July 2015. After the first initial assessment, the environmental status is again measured in 2018 (figure 15). In each policy cycle of the *MSFD* (2018, 2024, etc.) evaluations will be performed for the revision of the definition of GES, the environmental targets and indicators, and the programme of measures (*DG Environment 2012* ²¹⁶⁷⁷⁹).

The GES and the environmental targets serve as a framework and objective criteria to substantiate the EIA procedures, the conditions for granting authorisations, the development of management plans, the definition of compensation and/or mitigation measures, and procedures in marine spatial planning in the BNS.

PREPARATORY PHASE (2012-2015) AND EXECUTIVE PHASE (FROM 2016) OF THE MSFD

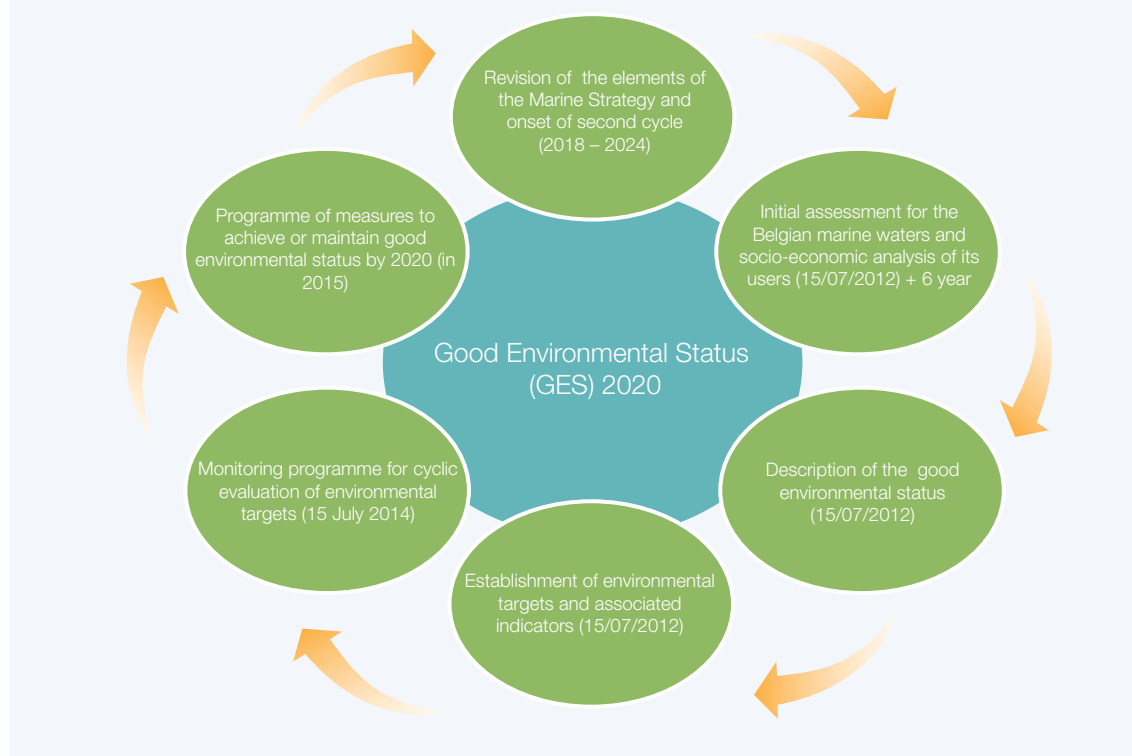


Figure 15. Preparatory phase (2012-2015) and executive phase (from 2016) of the MSFD.

3.2 Relation of the MSFD with other relevant legislation and instruments for the marine environment

The MSFD is complementary with existing regulations for the conservation of the marine environment in Belgium (see Chapter 2, theme **Nature and environment**); the most important ones are listed below:

- The Marine Protection Law ([MMM law](#)) aims to maintain the integrity, biodiversity and pristine nature of the marine environment through measures for protection and remediation of environmental damage and disruption. From 20 July 2012 onwards, this law also regulates the organisation and procedure for marine spatial planning and states which activities are subject to prior concession or authorisation granted by the competent minister. MSP is considered as a crucial instrument for achieving the environmental targets in the marine waters.
- The *Birds Directive* ([2009/147/EC](#)) (demarcation of three Special Protection Areas (SPAs), and the *Habitats Directive* ([1992/43/EEC](#)) (Special Area of Conservation (SAC) Flemish Banks) constitute a network of four [Natura 2000 network](#) areas in the BNS where a favourable conservation status must be achieved for the species and habitats defined in the annexes of the *Habitats Directive* (see Chapter 2, theme **Nature and environment**).
- The *Water Framework Directive* ([2000/60/EC](#)), which applies to coastal waters less than one nautical mile (1,852 metres) offshore, states that all European ‘natural’ surface waters should have at least a good ecological status (GES) and good chemical status (GCS) (up to 12 nautical miles) by 2015.
- The MSFD also has a direct impact on the revised *Common Fisheries Policy* (CFP, [Regulation 2371/2002](#); [COM \(2011\) 417](#)) by taking into account the environmental impacts of fisheries in line with the objectives of the MSFD.
- International Conventions and Treaties ([RAMSAR Convention](#), [OSPAR Convention](#), [IMO](#), etc.) and national legislation take measures to reduce the impact of land-based sources on the marine environment.

In those areas where specific regulations and conservation measures are in force, integration and coordination are necessary for the effective implementation of the MSFD objectives. MSP is a powerful tool in this regard.

3.3 The MSFD in practice

The [Marine Environment Department](#) (FPS Health, Food Chain Safety and Environment) is the competent authority for coordination and implementation of the *MSFD*. In the preparatory phase of the *MSFD*, this authority organised the consultation of stakeholders, policy makers, scientists and researchers (September and December 2011). For the coordination, in-depth consultation with other competent federal departments and the Regions was required. This was organised primarily in the context of the 'North Sea and Oceans' steering group of the Coordinating Committee for International Environmental Policy ([CCIM](#)) of DG Environment. The initial assessment and socio-economic analysis resulted from collaboration with competent government agencies, the private sector and other stakeholders ([Belgian State 2012](#) ²²⁸⁷⁰⁷). Subsequent to a public consultation (April – May 2012), the final results were submitted to the permanent representation to the EC in July 2012.

Policy makers and researchers collaborated intensively for the description of the GMT and the establishment of environmental targets and associated indicators of the BNS. The collaboration occurred in particular within the scope of the descriptors biological diversity (D1), elements of marine food webs (D4) and sea floor integrity (D6) during working meetings in January 2012, and was complemented by a targeted consultation for commercial fisheries (D3). By doing so, the current marine scientific knowledge and knowhow were included during policy preparation and policy support.

For each descriptor (table 9), the utility of the 29 underlying criteria and 56 indicators of the Commission Decision ([2010/477/EU](#)) was evaluated. In the first version (2012), the Belgian GES and environmental targets were determined at the level of the BNS, except for descriptor 3 (commercially exploited fish and shellfish) which is evaluated at the regional level. Due to the overlap and the strong relationship between descriptors D1, D4 and D6, it was decided to treat them together in this methodology

The conclusions of this consultation phase were *inter alia*:

- The current scientific knowledge and insights are often limited by a lack of data. Additional efforts should be made to collect data and to make them available to allow a more accurate assessment of the state of the marine environment. Those efforts would allow a higher measurement precision during the next management cycle for the socio-economic analysis and the assessment of costs associated with the degradation of the marine environment.
- The interaction between policy and science is needed for an effective and integrated approach in achieving GES and the environmental targets. This interaction is optimised by transparency and trust. Aspects that encourage this interaction include: transparency in government, procedures and communication, scientifically substantiated policy choices, responsibility in the scientific argumentation, and clear communication regarding uncertainties in the scientific information. The integrated approach imposed by the *MSFD* can lead to an optimisation of the interaction between policy areas that, until recently, evolved independently of each other (e.g. marine environmental policy). The research questions and knowledge gaps from the policy can initiate new or specific marine research by, for instance, being used as criteria for research funding from the Belgian Federal Science Policy Office (BELSPO).
- There is a need for a structured monitoring programme developed in view of the environmental targets, in which the existing programmes (including in view of European reporting requirements) must be spatially and temporally aligned.

The establishment of GES and environmental targets in this first management cycle is based on existing knowledge and occurs within the constraints imposed by the costs associated with systematic monitoring and evaluation. At fixed points in time, Belgium revises the appropriateness and effectiveness of how the GES, the environmental targets and indicators, and the programme of measures were determined. Therefore, Belgium will take into account new scientific knowledge, insights and infrastructure, and the possible introduction of new national and international norms and standards.

The next environmental status assessment is scheduled in 2018 and forms the basis for the review of the evaluation methodology. The collaboration between policy makers and researchers to attain these objectives includes interaction and dialogue. This 'science-policy interface' acts as a guiding factor for the identification of indicators, thresholds and knowledge gaps in view of the *MSFD* (table 9). The 'new' research resulting from this 'research-policy' dialogue often has a strong societal and applied value based on the results of fundamental research.

Table 9. Research in support of the *MSFD* (GEST, Environmental targets and indicators) for the BNS: a selection of the existent monitoring programmes, relevant data and information sources and knowledge gaps.

DESCRIPTOR	EXISTING MONITORING	DATA AND INFORMATION SOURCES	IDENTIFIED KNOWLEDGE GAPS FOR THE MSFD
1, 4. Biological diversity and elements of marine food webs	<p>Pelagic environment (WFD)</p> <p>Benthic environment (WFD, BEQI)</p> <p>Sea birds (OSPAR EcoQO, ESAS-INBO, EU-HR)</p> <p>Marine mammals (OSPAR EcoQO, ASCOBANS)</p>	<p>Benthos: seabed biota have been studied since 1970: e.g. <i>Cattrijse & Vincx 2001</i> ¹³³⁶⁹, <i>Degraer et al. 2003</i> ³³⁸⁵³, <i>Van Hoey et al. 2004</i> ⁵⁹⁸²⁹, <i>Degraer et al. 2006</i> ¹⁰²⁶⁰, <i>Degraer et al. 2010</i> ²²¹²³⁵, <i>TROPHOS project (TROPHOS project BELSPO)</i>, <i>WESTBANKS project (WESTBANKS project BELSPO)</i>, <i>Derous et al. 2007</i> ¹¹⁴³¹⁶, <i>(BWZee project, BELSPO)</i>, <i>Vanaverbeke & Vincx 2008</i> ¹²³²³⁶, <i>Braeckman et al. 2010</i> ¹⁴³⁵⁹⁰, <i>Belgian Register of Marine Species (BeRMS)</i>, <i>Vandepitte et al. 2010</i> ¹⁹⁵⁸⁸⁹, <i>Zintzen & Massin 2010</i> ¹⁹⁷⁸⁸³, <i>Braeckman 2011</i> ²⁰⁴⁶⁸⁵, <i>Degraer et al. 2012</i> ²¹⁸⁶⁷⁰</p> <p>Phytoplankton: <i>Rousseau et al. 2002</i> ³²⁹⁷⁰, <i>Daro et al. 2006</i> ¹²⁷⁷²⁷, <i>Denayer et al. 2010</i> ²⁰³¹²², <i>Lancelot et al. 2009</i> ²¹¹⁹⁴⁹, <i>Muyllaert et al. 2006</i> ⁹⁹⁰⁹²</p> <p>Pelagic: <i>De Blauwe 2003</i> ⁵⁵⁹⁸², <i>Van Hoey et al. 2004</i> ⁵⁹⁸²⁹, <i>De Backer et al. 2010</i> ²⁰⁵⁸⁸⁴, <i>Van Ginderdeuren et al. 2012a</i> ²¹⁵⁷⁸², <i>Van Ginderdeuren et al. 2012b</i> ²¹⁵⁷⁷⁹, <i>Van Ginderdeuren 2013</i> ²²⁶²⁶¹</p> <p>Sea birds: <i>Seys 2001</i> ²⁰⁶⁰¹, <i>Stienen & Kuijken 2003</i> ⁵⁷⁶²⁰, <i>Haelters et al. 2004</i> ⁶⁸⁴¹⁴, <i>Stienen et al. 2007</i> ¹¹¹⁹⁶⁶, <i>Degraer et al. 2010</i> ²²¹²³⁵, <i>Vanermen et al. 2012</i> ²¹⁸⁶⁸¹, <i>review in Goffin et al. 2007</i> ¹¹⁴²²⁵</p> <p>Marine mammals: <i>Degraer et al. 2010</i> ²²¹²³⁵, <i>Haelters et al. 2011</i> ²¹⁰⁰⁸⁸</p>	<p>Pelagic: no monitoring, insufficient information</p> <p>Angiosperms and algae: insufficient information</p>
6. Sea floor integrity	See also 1, 4	<p><i>Fonteyne 2000a</i> ⁹⁸⁸³⁶, <i>Fonteyne 2000b</i> ⁵⁵⁹⁸², <i>Lanckneus et al. 2001</i> ²⁴⁸⁴⁵ (<i>BUDGET project BELSPO</i>), <i>Le Bot et al. 2003</i> ⁴¹⁶⁰⁵ (<i>BELSPO</i>), <i>Van Hoey et al. 2004</i> ⁵⁹⁸²⁹, <i>Veraillie et al. 2006</i> ¹⁰⁷²³⁶, <i>Van Lancker et al. 2007</i> ¹²⁶³⁹⁰, <i>MAEBASSE project BELSPO</i>, <i>Houziaux et al. 2007</i> ¹²²⁸⁵⁹, <i>Houziaux et al. 2008</i> ¹⁴⁰⁷⁵⁶ (<i>Project BELSPO</i>), <i>Du Four & Van Lancker 2008</i> ²⁰³⁸⁶⁶, <i>Polet et al. 2008</i> ¹²⁷⁵⁵⁵, <i>Rabaut et al. 2008</i> ¹¹⁷⁴⁵², <i>Depestele et al. 2008</i> ¹²²⁹⁸⁷, <i>Veraillie et al. 2009</i> ¹³⁵⁶³³, <i>Degraer et al. 2009</i> ¹⁴³³⁶³, <i>Mathys 2009</i> ¹⁴¹⁸⁸⁵, <i>Mathys 2010</i> ¹⁴⁴⁶⁰¹, <i>Polet et al. 2010</i> ²⁰⁰⁴⁴⁴, <i>Polet & Depestele 2010</i> ²⁰⁴⁰⁶⁷, <i>Degrendelet et al. 2010</i> ²⁰⁵⁵⁵⁹, <i>Fettweis et al. 2011</i> ²⁰⁰⁵⁹⁵, <i>De Backer et al. 2011</i> ²⁰⁸⁶⁹⁰, <i>Lauwaert et al. 2011</i> ²¹⁰¹⁷⁹, <i>Roche et al. 2011</i> ²⁰⁸⁶⁸¹, <i>Vanaverbeke et al. 2011</i> ²¹⁴¹¹⁶, <i>Braeckman 2011</i> ²⁰⁴⁸⁸⁵, <i>Degraer et al. 2011</i> ²²⁵³⁵², <i>Houziaux et al. 2012</i> ²¹⁶⁷⁵⁴, <i>Depestele et al. 2012</i> ²¹⁴³⁰³ (<i>WAKO-II project BELSPO</i>), <i>Van Lancker et al. 2012</i> ²¹³⁶⁸⁴ (<i>QUEST-4D project BELSPO</i>), <i>Janssens et al. 2013</i> ²²⁷²⁷⁰, <i>MER voor Offshore Windturbineparken op zee (website MUMM)</i>: ²²⁶⁵⁵³, ²²⁷⁵⁰⁹, ²²⁷⁵¹⁰, ²²⁶⁵⁶⁴, ²²⁶⁵⁰⁶, <i>De Wachter & Volckaert 2005</i> ⁷⁸²⁸⁵, <i>GAUFRE project BELSPO</i>, <i>Van den Eynde et al. 2010</i> ¹⁹⁹⁷⁴³, <i>Verhaeghe et al. 2011</i> ²⁰⁶¹⁸⁶, <i>Degraer & Brabant 2009</i> ¹⁴²³⁹⁰, <i>Degraer et al. 2010</i> ¹⁹⁹¹⁹⁴, <i>Degraer et al. 2011</i> ²⁰⁷²⁵⁷</p>	Further research into environmental targets regarding the intensity of aggregate extraction and dredging, and soil disturbing fishing techniques
2. Non-indigenous species		<p><i>Invasive Species Environmental Impact Assessment (ISEIA) Branquart 2009</i> ²²⁵⁶⁰⁶, <i>Belgian report to the IROZ/IOC/IMO Working Group on Ballast and Other Ship Vectors (WGBOSV)</i> and the Working Group on Introduction and Transfers of Marine Organisms (WGTMO), <i>Review of non-indigenous species in the BNS Kerckhof et al. 2007</i> ¹¹⁴³⁸⁵ en de lijst van het 'VLIZ alien species consortium', <i>Vandepitte et al. 2012</i> ²¹⁷⁷³⁶, <i>Van Ginderdeuren et al. 2012</i> ²¹⁵⁷⁸²</p>	<p>Impact evaluation of invasive species on the marine environment in the BNS</p> <p>Expansion towards planktonic species and flora and fauna >1mm</p>

3. Population of commercially exploited fish and shellfish	ILVO Data collection programmes for the CFP (ILVO) ICES fish stock evaluation	ICES stock measurements (www.ices.dk), on species and areas <i>Operationeel Programma in uitvoering van het Nationaal Strategisch Plan voor de Belgische visserijsector 2007-2013</i> ¹⁸⁶¹³⁵ , <i>Polet et al. 2008</i> ¹²⁷⁵³⁵ , <i>Depestele et al. 2008</i> ¹²²⁶⁸⁷ , <i>Vandendriessche et al. 2008</i> ¹²⁶⁷³² , <i>Polet et al. 2010</i> ²⁰⁰⁴⁴⁴ , <i>Polet & Depestele 2010</i> ²⁰⁴⁰⁵⁷ , <i>Depestele et al. 2011</i> ²⁰⁴⁰³¹ , <i>Depestele et al. 2012</i> ²¹⁴³⁰³ (<i>WIAKO-II project BELSPO</i>), <i>Verschuere et al. 2012</i> ²²⁵³⁵⁵ . Historical references in <i>Lescauwae et al. 2013</i> ²²⁸⁶⁶¹ , <i>Gilson 1921</i> ²⁷²⁸⁶ , <i>Poll 1947</i> ⁵²⁵⁵	Further research into the establishment of environmental target MSY for mixed fisheries Further research on the establishment of MSY for species lacking data Extent and impact of recreational fisheries in the BNS
5. Eutrophication	OSPAR, WFD	OSPAR reporting on eutrophication, <i>Borgens en Gypens 2010</i> ²¹¹¹⁹⁰	Further research into adequate indicators
7. Alteration of hydrographical conditions	Flemish Banks Monitoring Network (Flemish Hydrography - Agency for Maritime and Coastal Services) Monitoring requirements for OSPAR and Water Framework Directive (WFD)	<i>Fettweis & Van den Eynde 2003</i> ⁴⁰⁷⁸⁷ , <i>De Moor 2006</i> ⁹⁹¹²³ , <i>Fettweis et al. 2007</i> ¹¹⁵⁴⁰¹ (<i>MOCHA project BELSPO</i>), <i>Ruddick & Lacroix 2006</i> ¹²⁷⁷²³ , <i>Fettweis et al. 2010</i> ²⁰³²³⁶ , <i>Van Lancker et al. 2012</i> ²¹⁸³¹⁸ (<i>QUEST4D project BELSPO</i>), <i>Baeye 2012</i> ²¹⁵¹²⁴ , website <i>Meetnet Vlaamse Banken</i> : hydro-meteo measurements (tides, waves, wind, etc.) in the BNS, <i>Website of Direction Natural Environment (RBINS)</i> : Operational models of hydro-meteo data, <i>Lacroix et al. 2004</i> ⁶⁶⁵²⁹ , <i>Gypens et al. 2011</i> ²¹¹⁴⁸⁰ , <i>AMORE (AMORE project BELSPO)</i> , <i>AMORE II (AMORE II project BELSPO)</i> en <i>AMORE III (AMORE III project fase 1 en fase 2 BELSPO project)</i> , <i>Van den Eynde et al. 2011</i> ²¹²⁴²¹	Further research into adequate indicators
8. Contaminants	OSPAR monitoring Monitoring for WFD (PCBs, PAHs, heavy metals, effects of TBT, DDT, HCB, PBDEs,...) Monitoring for Bonn Convention (MUMM)	Usage of existing thresholds from EU legislation OSPAR reports <i>Francken & Ruddick 2007</i> ¹³⁸⁹⁹⁵ and <i>Francken & Hafez 2009</i> ¹⁴²⁵⁴³ <i>Missiaen & Henriet 2010</i> ¹⁹⁹³⁵¹ , review in <i>Goffin et al. 2007</i> ¹¹⁴²²⁵ Review in <i>Goffin et al. 2007</i> ¹¹⁴²²⁵	Development of bio-indicators General toxicity tests (ILVO) are being developed Defining thresholds for acute toxicity
9. Contaminants in fish and seafood for human consumption	No new indicators, usage of existing levels and programmes		
10. Marine litter	OSPAR EcoQO for Northern Fulmars OSPAR Beach Litter Monitoring in marine environments (2010)	<i>OSPAR 2007</i> ²³⁸⁹⁵ , <i>OSPAR 2010</i> ¹⁹⁸⁸¹⁷ , <i>As-MADE project BELSPO</i> , <i>Van Franeker et al. 2011</i> ²⁰³²⁸⁹ , <i>Claessens et al. 2011</i> ²²⁵⁵⁰³ , <i>Claessens et al. 2013</i> ²²⁵⁵⁰⁶ , <i>Van Cauwenbergh et al. 2013</i> ²²⁶⁸⁴¹ , <i>Fishing for Litter, Waste-free Ocean</i> <i>Haelters et al. 2009</i> ¹⁴²⁹⁹⁵ , <i>Norro et al. 2010</i> ¹⁹⁸⁷⁴⁴ , <i>Norro et al. 2011</i> ²⁰⁷²⁷¹ , <i>Verhaeghe et al. 2011</i> ²⁰⁶¹⁸⁶ , <i>Haelters et al. 2012</i> ²¹⁶⁶⁸³ , <i>Norro et al. 2012</i> ²¹⁶⁶⁸⁴ , <i>Debusschere et al. 2013</i> ²²²⁸²⁹	Further research into the impact of microplastics on marine organisms and public health A need for long-term series
11. Introduction of energy, including underwater noise			Noise regulations for GES for the BNS Assignment of the locations for 2 independent measurement stations After the 2018 evaluation: development of a propagation model