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Nature and environment

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Citation:

Degraer, S., Vincx, M., Bonte, D., Stienen, E., Provoost, S., Adriaens, P., Van Ginderdeuren, K., Pirlet, H., 2013. Nature and environment. In: Lescrauwaet, A.K., Pirlet, H., Verleye, T., Mees, J., Herman, R. (Eds.), Compendium for Coast and Sea 2013: integrating knowledge on the socio-economic, environmental and institutional aspects of the Coast and Sea in Flanders and Belgium. Oostende, Belgium, p. 75-92.

1.1 Introduction

The North Sea is surrounded by Norway, Sweden, Denmark, Germany, The Netherlands, France and the United Kingdom, and has a surface of approximately 750,000 km² and a volume of 94,000 km³ ([website Direction Natural Environment](#), the Royal Belgian Institute of Natural Sciences (RBINS)). This maritime region belongs to a cold-temperate boreal biogeographical zone ([Dinter 2001](#)²⁴⁸³⁸). Except for the waters near the Norwegian coast, the North Sea is a relatively shallow sea, situated on the European continental shelf. The water of the North Sea circulates counterclockwise and consists of a mixture of water originating from several rivers and water deriving from the Atlantic Ocean to which the North Sea is connected in the North as well as in the South (through the Channel). The North Sea bottom consists mainly of sandy sediment habitats, housing a large population of flatfish ([OSPAR QSR 2010](#)¹⁹⁸⁸¹⁷). With a surface of 3,454 km², the Belgian part of the North Sea (BNS) covers a modest part of the Southern Bight of the North Sea ([Belpaeme et al. 2011](#)²⁰⁷³³³).

1.2 Characteristics of the marine and coastal environment

1.2.1 Sea

BATHYMETRY AND SUBSTRATE

The BNS is a shallow part of the North Sea with a seabed that gradually deepens in north-western direction up to a depth of 40 to 45 m (see figure 1). The relief of the seabed is characterised by the presence of a complex system of gullies and sandbanks up to 30 m high, 15 to 25 km long and 3 to 6 km wide. The orientation of the banks varies from parallel to the coast to a southwest-northeast orientation further offshore ([Mathys 2009](#)¹⁴¹⁶⁸⁵, [Mathys 2010](#)¹⁴⁴⁶⁰¹). The substrate of the seabed mainly consists of non-consolidated Quaternary sediments with a thickness that varies between a few meters in the gullies to 50 meters around the sandbanks. Underneath these Quaternary sediments,

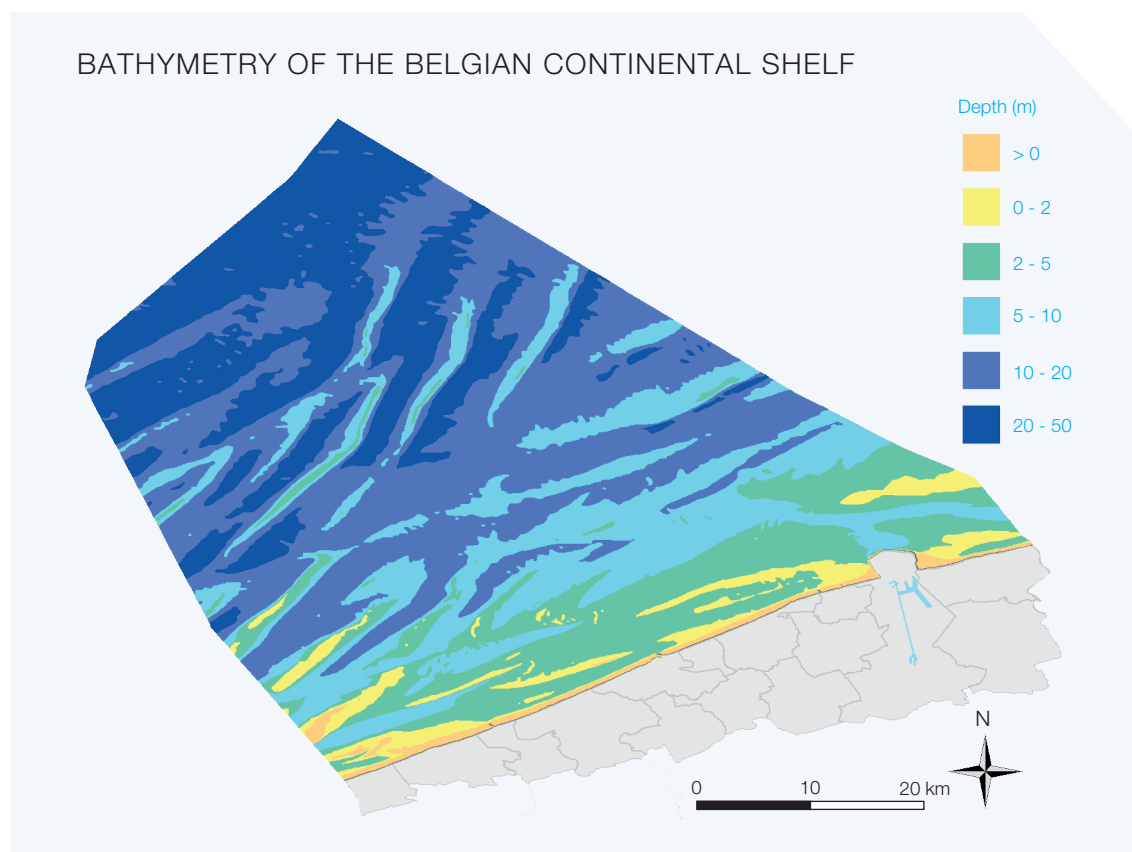


Figure 1. The bathymetry of the Belgian continental shelf (Source: Flemish agency for Maritime Services and Coast).

there is a layer of Tertiary clay that locally surfaces in the gullies ([Lanckeus et al. 2001](#)²⁴⁸⁴⁵ ([BUDGET project BELSPO](#)), [Le Bot et al. 2003](#)⁴¹⁶⁰⁵ (BELSPO), [Mathys 2009](#)¹⁴¹⁶⁸⁵, [Mathys 2010](#)¹⁴⁴⁶⁰¹). In general, the grain size of the sediment on the seabed increases from silty sediment near the coast over fine to coarse sandy sediment in deeper water ([Verfaillie et al. 2006](#)¹⁰⁷²³⁶, [Van Lancker et al. 2007](#)¹²⁶³⁵⁰ ([MAREBASSE project BELSPO](#))).

HYDRODYNAMICS AND SEDIMENT TRANSPORT

The currents in the BNS are dominated by semi-diurnal tides. The tidal amplitude varies between 3 m during neap tide and more than 4.5 m during spring tide, whereby the tidal difference decreases towards the northeast. The tidal currents can reach up to 1.2 m/s and are an important means of sediment transport, although tides caused by wind may also play an important role ([Fettweis & Van den Eynde 2003](#)⁴⁰⁷⁸⁷, [De Moor 2006](#)⁹⁹¹²³, [Van Lancker et al. 2012](#)²¹⁸³¹⁸ ([QUEST4D project BELSPO](#)), [Baeye 2012](#)²¹⁵¹²⁴). Along the Belgian coast, a high concentration of suspended sediment occurs resulting in turbidity maximums ([Fettweis & Van den Eynde 2003](#)⁴⁰⁷⁸⁷, [Fettweis et al. 2007](#)¹¹⁵⁴⁰¹ ([MOCHA project BELSPO](#)), [Baeye 2012](#)²¹⁵¹²⁴).

Data and information about the hydrographical and meteorological aspects (tides, currents, waves, wind, etc.) of the BNS can be consulted on the website [Flemish Banks Monitoring Network](#). Operational models of these hydro-meteo data are available on the [website of the Direction Natural Environment \(RBINS\)](#).

CHARACTERISTICS OF THE SEAWATER

The temperature of the seawater in the BNS varies seasonally between 5°C and 20°C ([Flemish Banks Monitoring Network](#)). The salinity of the seawater in the BNS is strongly influenced by the rivers Scheldt, Rhine, Seine and Meuse which reduce the salinity of the Atlantic water (salinity 35) entering via the Channel ([Lacroix et al. 2004](#)⁶⁶⁵²⁹). The carbon chemistry of the seawater undergoes a seasonal variation and affects the acidity of the water with a pH that fluctuates between 7.95 and 8.25 ([Gypens et al. 2011](#)²¹¹⁴⁸⁰). Information about the nutrients and oxygen level of the seawater was assembled *inter alia* in context of the [AMORE](#) ([AMORE project BELSPO](#)), [AMORE II](#) ([AMORE II project BELSPO](#)) and [AMORE III](#) ([AMORE III project phase 1](#) and [phase 2](#) BELSPO) projects and the monitoring obligations for OSPAR, the *Water Framework Directive* (WFD) and the *Marine Strategy Framework Directive* (MSFD) (see [Policy instruments](#)). The impact of climate change on the characteristics of the seawater in the BNS is discussed in [Van den Eynde et al. \(2011\)](#)²¹²⁴²¹, ([CLIMAR project BELSPO](#)) (see also theme [Safety against flooding](#)).

A LARGE DIVERSITY OF BENTHIC LIFE

The sandbanks of the BNS are characterised by a very rich benthic life that fulfills an important role in the marine food web. The benthic organisms (benthos) have been intensively studied since 1970 (e.g. [Cattrijsse & Vincx 2001](#)¹³³⁶⁹, [Degraer et al. 2006](#)¹⁰⁰²⁶⁰, [Degraer et al. 2010](#)²²¹²³⁵, [TROPHOS project](#) ([TROPHOS project BELSPO](#)), [WESTBANKS project](#) ([WESTBANKS project BELSPO](#))). The benthos constitutes an important source of nutrition for fish, prawns and crabs, and is actively involved in the decomposition and transport of organic material. The marine food web largely depends on suspended food particles. Once these particles reach the seabed, they are processed by benthos (by bacteria as well as by other small organisms (bivalves, polychaete worms, crustaceans, nematodes, etc.)) (e.g. [Braeckman et al. 2010](#)¹⁴³⁵⁹⁰, [Braeckman 2011](#)²⁰⁴⁶⁸⁵). A complete overview of the species lists is available on the Belgian Register of Marine Species ([BeRMS](#), [Vandepitte et al. 2010](#)¹⁹⁸⁹⁸⁹).

On the bottom of the North Sea large numbers of starfish, brittle stars, crabs, lobsters, demersal fish and squids can be observed that are mainly “crawling” (epibenthos) and feed on small animals (*inter alia* larvae of fish, prawns) that are swimming just above the seabed (hyperbenthos). Most species can be found between the sand grains, up to an average depth of 10 cm below the seabed. These are mainly bivalves, polychaete worms, small crustaceans (macrobenthos), nematodes and copepods (meiobenthos). The occurrence of these benthic organisms is not uniform and is related to the physical characteristics of the seabed. Up to 811 species of macrobenthos have been counted in sediment samples (surface of 0.1 m²), with a total of 150,000 organisms per square meter, in the ‘richer’ areas of the Western Coastal Banks, the Flemish Banks and the Sealand Banks. Each species prefers a certain type of sediment which is in turn determined by the current pattern.

The bottom of the BNS is characterised by (1) geogenic reefs (reefs whose topographical expression is the result of geological features such as the gravel beds of the *Hinderbanken* sandbanks) with a typical fauna that lives on top of the gravel beds (so-called epifauna with e.g. sponges, oysters, bryozoans, sea anemones), by (2) biogenic reefs (e.g. shaped by the worm *Lanice conchilega*) and by (3) soft substrates (ranging from silt to fine or coarse sand). In the soft mobile substrates of the subtidal sandbanks, four general types of macrobenthic communities are to be found: the *Macoma balthica* community, the *Abra alba* – *Mysella bidentata* community, the *Nephtys cirrosa* community and the *Ophelia limacina* – *Glycera lapidum* community. These communities are characterised by specific species, diversity and density and are found in a specific and well-defined environment (Degraer et al. 2003³³⁸⁶³, Van Hoey et al. 2004⁵⁹⁸²⁹). Recently, implanted artificial hard substrates have created new possibilities for epifauna. The effects of the structures on the surrounding soft substrates are monitored closely (e.g. Degraer et al. 2012²¹⁸⁶⁷⁰).

THE PELAGIC ECOSYSTEM

The pelagic ecosystem constitutes the largest habitat in the BNS. Unlike the benthic ecosystem, the pelagic ecosystem has been investigated or monitored very little. A PhD study on zooplankton and the diet of pelagic fish (Van Ginderdeuren 2013²²⁶²⁶¹) shows that Crustacea, and more specifically calanoid copepods (holoplankton), dominate the zooplankton in a community that mainly has a coastal nature but is occasionally influenced by the incoming Atlantic water. *Temora longicornis*, *Acartia clausi*, *Paracalanus parvus*, *Centropages typicus* and *C. hamatus* are the most common calanoids (Van Ginderdeuren et al. 2012a²¹⁵⁷⁸²). Also, meroplanktonic larvae (organisms that are planktonic in a certain stage of their life) of polychaetes, echinoderms, fish and barnacles are abundant.

Special attention goes to jellyfish, including the non-indigenous species *Mnemiopsis leidyi*, that has populated the entire Belgian coastal zone (Van Ginderdeuren et al. 2012b²¹⁵⁷⁷⁹). Zooplankton density reaches a maximum a few kilometers off the coast, in the transition zone from coastal to offshore waters. A minimum in the zooplankton density occurs offshore. This is in line with the results of studies on other ecosystem components (demersal fish, epibenthos and macrobenthos), indicating the existence of a zone which is rich in species a few kilometers off the coast of the BNS (Van Hoey et al. 2004⁵⁹⁸²⁹, De Backer et al. 2010²⁰⁵⁸⁸⁴). Phytoplankton is the most important food source of zooplankton. The dynamics of phytoplankton in the southern North Sea are complex, and changes in phytoplankton affect the dynamics of zooplankton. It is important to monitor the problems related to the annual seasonal changes in the phytoplankton composition (*Phaeocystis* blooms) caused by eutrophication and the potential impact of this phenomenon on zooplankton.

Research on pelagic fish has revealed that herring and sprat are common in the BNS, although in low numbers. It mainly concerns immature individuals (0-, 1-year class) in coastal waters. Adult herring can be observed in autumn when the fish are migrating to the spawning areas in the Channel. In summer, two other pelagic species appear, namely mackerel and horse mackerel. Horse mackerel propagates in the BNS and juveniles are abundant in the offshore pelagic fish community (Van Ginderdeuren et al. 2012a²¹⁵⁷⁸²).

Thorough knowledge about the spatial and temporal occurrence of zooplankton (food source for higher trophic levels), in relation to the presence of pelagic fish species and their food ecology (what kind of plankton do these fish eat, when and why), is necessary to assess the importance of zooplankton for the fish in the BNS.

THE IMPORTANCE OF THE BELGIAN PART OF THE NORTH SEA FOR BIRDS AND MARINE MAMMALS

The BNS is an important wintering and foraging area for seabirds (Seys 2001²⁰⁶⁰¹, Stienen & Kuijken 2003⁵⁷⁸²⁰, Haelters et al. 2004⁶⁸⁴¹⁴, Stienen et al. 2007¹¹¹⁹⁶⁶, Degraer et al. 2010²²¹²³⁵). During the winter months, internationally important numbers (i.e. more than 1% of the biogeographic population) of the grebe *Podiceps cristatus* and the great black-backed gull *Larus marinus* frequently reside here. Furthermore, important numbers of the red-throated loon *Gavia stellata* and the common scoter *Melanitta nigra* are often observed in the BNS and were both included in appendix 1 of the *Birds Directive* (see Policy instruments).

On the beach, the groins and piers along the coast, internationally significant numbers of the European herring gull *Larus argentatus* and the ruddy turnstone *Arenaria interpres* regularly rest (Adriaens & Ameeuw 2008¹⁸⁹⁵²³). In spring and summer, the coastal zone is an important foraging area for terns that mainly breed in the harbour of Zeebrugge. Three tern species exceed the 1%-limit, namely: the Sandwich tern *Sterna sandvicensis*, the common tern *Sterna hirundo* and the little tern *Sternula albifrons* (Degraer et al. 2010²²¹²³⁵).

Finally, the BNS functions as an important migration corridor which is used by more than a million seabirds. During the migration period, internationally significant numbers (> 1%) of the lesser black-backed gull *Larus fuscus*, the little gull *Hydrocoloeus minutus*, the sandwich tern and the common tern are often found ([Stienen et al. 2007](#)¹¹¹⁹⁶⁶).

The Belgian marine waters are important for two types of marine mammals that are discussed in appendix 2 of the *Habitats Directive* (see **Policy instruments**), namely harbour porpoise *Phocoena phocoena* and the harbour seal *Phoca vitulina*. In the period February – April, the numbers of the harbour porpoise in the BNS can rise to more than 1% of the estimated North Sea population ([Degraer et al. 2010](#)²²¹²³⁹).

BIOLOGICAL VALIDATION MAP OF THE BNS

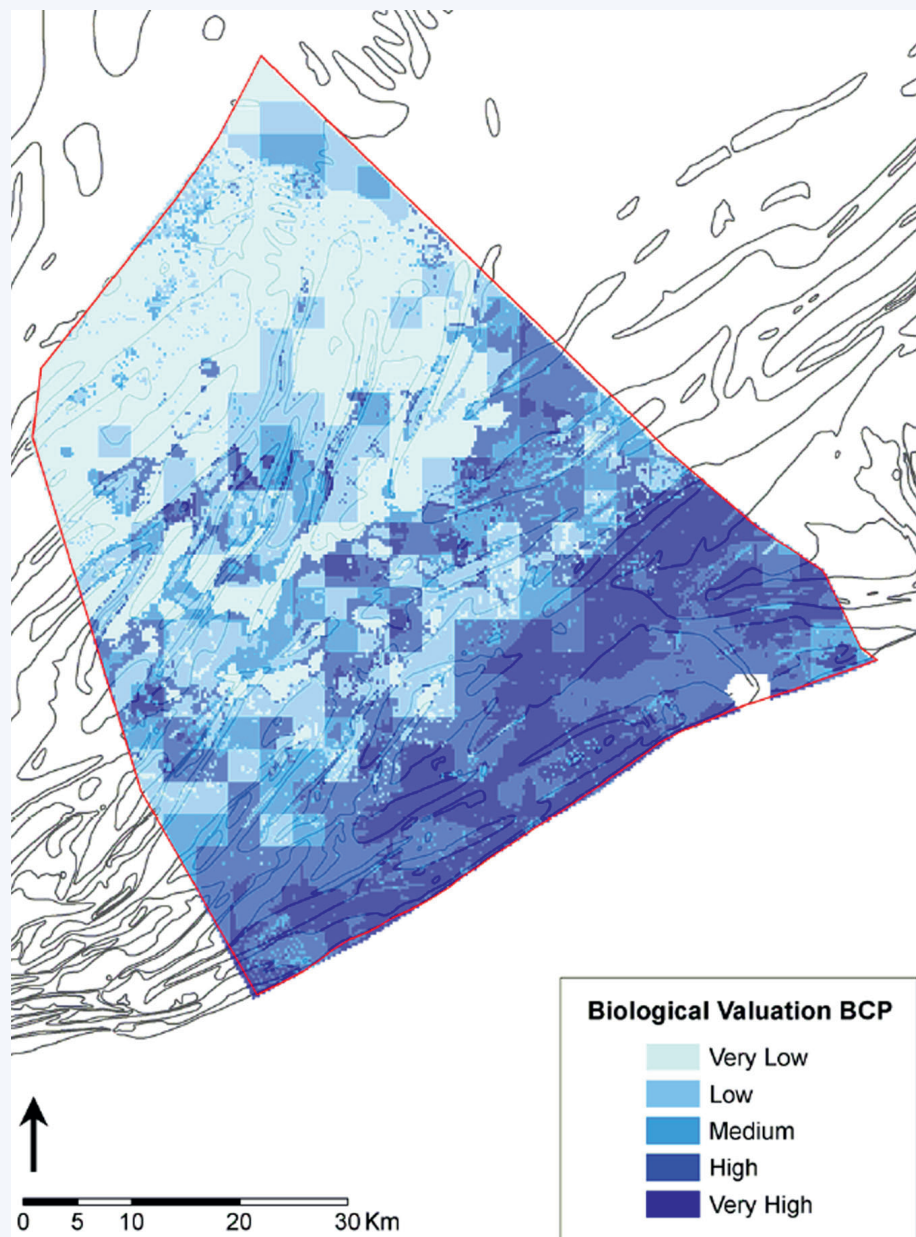


Figure 2. The biological validation map of the BNS, which combines the validation maps of the seabirds, macrobenthos, epibenthos and demersal fish ([Deraus et al. 2007](#)¹¹⁴³¹⁶, *BWzee project*, *BELSPO*).

1.2.2 The beach

Beaches are relatively narrow, elongated strips that follow the boundary between land and sea, part of which is alternately situated above and below the water due to changes in the water level. The beaches along the North Sea coast are generally characterised by a micro relief: low, elongated sand ridges separated by shallow trench-shaped depressions (*zwinnen*), as well as other smaller features such as *wallen* and *hoornen*. Waves and currents shape all sorts of ripple marks on the beach. The beach sand along the Belgian coast is characterised by medium to fine quartz sand with a lot of debris from shells. The coast is subject to a semi-diurnal tide with tidal currents almost parallel to the coast. An elaborated overview of the geomorphology, processes and dynamics along the Flemish beach is given in [De Moor \(2006\)](#)⁹⁹¹²³. The beach is a unique habitat where large numbers of organisms are present. In [Speybroeck et al. \(2005\)](#)⁷⁷¹⁶¹ and [Speybroeck et al. \(2008\)](#)¹²²⁹⁰⁵ an overview is given of the most important habitats, species and their interactions.

Near the land wash, on the dry beach and in the embryonic dunes vascular plants can be found that are generally short living and spread by the sea (the most common species are: European sea rocket *Cakile maritima*, prickly glasswort *Salsola kali* subsp. *kali*, and sea sandwort *Honckenia peploides*). These zones are also the habitat for several terrestrial arthropods (the most common species: the sand hopper *Talitrus saltator* and true flies *Diptera*). Microphytobenthos, especially diatoms, constitutes an important primary producer at the Belgian coast. The meio- and macrobenthos on the beach include specific communities such as the *Scolecopsis squamata*–*Eurydice pulchra* community. This beach fauna is an important food source for higher trophic levels of the marine environment, such as young fish (e.g. plaice *Pleuronectes platessa*) and brown shrimps *Crangon crangon*.

Nowadays, birds only breed in the quiet beach reserves of Heist and Lombardsijde (e.g. the little tern *Sternula albifrons*, the common ringed plover *Charadrius hiaticula* and the Kentish plover *Charadrius alexandrinus*). However, the beaches remain an important resting and foraging area for e.g. the sanderling (*Calidris alba*).

1.2.3 Dunes

SAND DYNAMICS, WATER, BIOTA

The dune area of our coast covers a surface of approximately 75 km². Pedologically, this zone is characterised by the presence of sand that has been deposited by the wind. These deposits date from the last ice age, but in general they are not older than a few hundred years. The oldest dunes at our coast are situated between Adinkerke and Ghyselde in the North of France. They originated supposedly 5,000 years ago ([De Ceunynck 1992](#)²¹⁶⁴²⁶, [Provoost & Hoffman 1996](#)⁴⁵⁸⁸). Currently, the formation of new dunes has largely stopped but one decade ago, significant eolian sand transport occurred in the Westhoek area and Ter Yde. At this moment, most of the coastal dynamics are limited to the beach ridge.

The age of the dunes determines the degree of decalcification of the sand which is an important ecological determinant ([Ampe 1999](#)²²¹³⁸⁹). Quantitatively, however, the ecological diversity is mainly determined by the soil moisture, which is in turn determined by the dune relief in combination with the hydrology. The complex of soil and vegetation developments and numerous biotic interactions lead to a further differentiation of ecotypes ([Provoost & Hoffman 1996](#)⁴⁵⁸⁸). In terms of the European *Habitats Directive* (see **Policy instruments**) it is possible to differentiate 14 more or less natural ecotypes ([Decleer 2007](#)¹¹⁴⁸⁹⁷).

Six of these ecotypes are intertidal, the others belong to the dunes:

- Embryonic shifting dunes;
- Shifting dunes along the shoreline with European marram grass *Ammophila arenaria* ('white dunes');
- Fixed dunes with herbaceous vegetation ('grey dunes');
- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*);
- Dunes with sea-buckthorn *Hippophae rhamnoides*;
- Dunes with creeping willow *Salix repens* ssp. *argentea* (*Salicion arenariae*);
- Wooded dunes of the Atlantic, continental and boreal region;
- Humid dune slacks.

In general, half of the species in Flanders can also be found at the coast. The ecological specificity of the dune ecosystem is mainly related to the geomorphological dynamics of the boundary between land and sea, the typical microclimate, the wet-dry gradient and calcareous and decalcified environments.

In the dunes, the typical coastal species can almost all be found in the embryonic shifting dunes, the white dunes and the grey dunes ([Provoost & Bonte 2004](#)⁶⁵⁵⁴⁸). In the context of the European *Habitat and Birds Directive* (see *Policy instruments*) the following species deserve special attention:

- Plant species in appendix II: creeping marshwort *Apium repens* and fen orchid *Liparis loeselii*;
- Bats in appendix IX: normal whiskered bat *Myotis mystacinus* and brown long-eared bat *Plecotus auritus*;
- Birds in appendix I: black-crowned night heron *Nycticorax nycticorax*, little egret *Egretta garzetta*, European honey buzzard *Pernis apivorus*, pied avocet *Recurvirostra avosetta*, Kentish plover *Charadrius alexandrinus*, common tern *Sterna hirundo*, little tern *Sternula albifrons*, European nightjar *Caprimulgus europaeus*, middle spotted woodpecker *Dendrocopos medius*, woodlark *Lullula arborea* and bluethroat *Luscinia svecica*;
- Amphibians: Northern crested newt *Triturus cristatus* (appendix II) and natterjack toad *Epidalea calamita* (appendix IV);
- Snails in appendix II: narrow-mouthed whorl snail *Vertigo angustior* and Desmoulin's whorl snail *Vertigo moulinsiana*.

The influence of man on the coastal ecosystem is substantial. Approximately half of the dune area has been urbanised in the last 150 years and the remaining areas have undergone drastic changes of the landscape ([Provoost & Hoffman 1996](#)⁴⁵⁸⁸).

1.2.4 Polders and polder complex

'The polders' is the name of a flat rural zone and ecoregion along the coast. This region is characterised by a flat and low-lying landscape with inversion relief, caused by repeated marine floods due to the increasing sea level after the ice ages ([Provoost & Hoffman 1996](#)⁴⁵⁸⁸, [Baeteman 2007](#)¹⁰⁹⁹⁴³). Since the early Middle Ages, the region has no longer been subjected to marine influences as a result of land reclamation. It is also the name of the Habitats Directive Area in the coastal zone which overlaps with the Birds Directive Area 'poldercomplex' (*Ministerial Decree of 17 July 2000*) (see *Policy instruments*).

These special protected areas are designated for 6 European protected habitat types and 21 European protected animal species ([Paelinckx et al. 2009](#)¹⁸⁶⁹⁶⁶). The habitat types are marshes, salt meadows, nutrient-rich herb communities, grasslands, fens and swamp forests. The species for which the Habitats Directive Area has been established are the pond bat *Myotis dasycneme* and the northern crested newt *Triturus cristatus*. For this last species only few recent observations are known.

The Birds Directive Area 'poldercomplex' has been established because the following European protected species breed in this area: Eurasian bittern *Botaurus stellaris*, little bittern *Ixobrychus minutus*, ruff *Philomachus pugnax*, short-eared owl *Asio flammea* and bluethroat *Luscinia svecica*. Also some non-breeding Birds Directive species are relevant for the poldercomplex: red-throated loon *Gavia stellata*, tundra swan *Cygnus bewickii*, whooper swan *Cygnus cygnus*, lesser white-fronted goose *Anser erythropus*, barnacle goose *Branta leucopsis*, red-breasted goose *Branta ruficollis*, Western marsh harrier *Circus aeruginosus*, hen harrier *Circus cyaneus*, merlin *Falco columbarius*, European golden plover *Pluvialis apricaria*, wood sandpiper *Tringa glareola* and common kingfisher *Alcedo atthis* ([Courtenis & Kuijken 2004](#)¹⁵⁷⁸¹¹). The 'poldercomplex' has also been established because during winter months significant numbers of geese stay in this area. The pink-footed goose and the greater white-fronted goose annually exceed the 1%-limit ([Wetlands International 2006 – Waterbird Population Estimates](#)).

1.3 Ecosystem goods and services

The Millennium Ecosystem Assessment ([MEA 2005](#)) describes ecosystem services as the benefits humans obtain from the ecosystem. They can be divided into goods, regulatory services, cultural services and supporting services. The concept of ecosystem services has been elaborated to also include the economic aspects of the ecosystem (*The Economics of Ecosystems and Biodiversity*, [TEEB](#)). The average economic value of the services the marine and coastal ecosystems deliver has been estimated by [Costanza et al. \(1997\)](#)⁶⁸¹⁵² to be 252 and 4,052 dollars per hectare per year respectively. The demarcation of marine protected areas in 20 to 30% of all seas would create 1 million jobs worldwide ([Balmford et al. 2004](#)²⁰⁰⁷⁹⁵). This equals an estimated yield of 294 billion euros (compared to a cost of up to 15 billion euros in protection measures) ([Seys 2006](#)¹⁰⁰²⁵⁰, [Slabbinck et al. 2008](#)¹²⁷⁵⁵¹).

The *BEES project* tries to map the ecosystem services in Belgium. [Jacobs et al. \(2010\)](#) published the first inventory of the ecosystem services (and potential ecosystem profits) of Flanders. Nature valuation studies are available on the

LNE website and in [Hutsebaut et al. \(2007\)](#)¹⁷⁸⁷⁶², whereas the calculation instrument 'Natuurwaardeverkenner' has been developed as a support for the quantification and economic estimation of the ecosystem services in a social cost-benefit analysis or other evaluations of (infrastructure) projects with an impact on nature (more information: [Lieken et al. 2009](#)²²⁵⁴³³, [Lieken et al. 2010](#)²²⁵⁴³⁷).

Only a few studies on this topic are available for the BNS at this moment. An overview of types of goods and services that are delivered by marine biodiversity can be found in [Beaumont et al. 2007](#)¹⁰⁸⁵²⁹ and in the context of the MSFD a socio-economic analysis of the users of the BNS (2012)²²⁰²³¹ has been elaborated.

1.4 The impact on the marine and coastal environment

The marine and coastal environment, described above, is the scene of various human activities that each have a specific impact on the environment. In a number of reports, an overview of the activities and the associated impact is provided: [Maes et al. \(2004\)](#)⁷⁰⁹³⁶ (MARE-DASM project BELSPO), [Maes et al. \(2005\)](#)⁷⁸²⁷⁹ (GAUFRE-BELSPO), [Goffin et al. \(2007\)](#)¹¹⁴²²⁵, [André et al. \(2010\)](#)²⁰⁰⁶¹³, [Initiële beoordeling van de staat van het mariene milieu \(2012\)](#)²²⁰²³⁰. Besides these integrated reports, numerous studies exist on the (specific) impact of a specific user function. These publications are discussed in the texts of the different user functions under the section 'impact'. In table 1, a list of the various theme texts of the Compendium for Coast and Sea is given, in which information sources on a specific impact can be found. This table does not provide an exhaustive overview of the impacts on the marine and coastal environment but serves as a readers' guide.

Table 1. Overview of which type of impact is discussed in the theme texts of the Compendium for Coast and Sea.

IMPACT	THEME TEXTS
Impact on air quality	Maritime transport, shipping and ports; Tourism and recreation; Fisheries; Agriculture; Sand and gravel extraction; Safety against flooding; Energy (incl. cables and pipelines)
Impact on the pelagic ecosystem (eutrophication, pollution, etc.)	Energy (incl. cables and pipelines); Agriculture; Tourism and recreation; Aquaculture; Maritime transport, shipping and ports; Military use; Dredging and dumping
Impact on fish stocks	Fisheries; Aquaculture; Tourism and recreation; Energy (incl. cables and pipelines)
Impact on seabirds and marine mammals	Energy (incl. cables and pipelines); Maritime transport, shipping and ports; Fisheries; Aquaculture; Military use
Impact on the seabed / habitats	Sand and gravel extraction; Dredging and dumping; Energy (incl. cables and pipelines); Military use; Safety against flooding; Fisheries; Aquaculture; Agriculture
Impact on hydrographical characteristics	Energy (incl. cables and pipelines); Maritime transport, shipping and ports; Military use; Safety against flooding; Aquaculture; Dredging and dumping; Sand and gravel extraction
Impact on spatial use (incl. Impact on nature area)	Social and economic environment; Tourism and recreation; Energy (incl. cables and pipelines); Fisheries; Aquaculture; Agriculture; Safety against flooding; Sand and gravel extraction; Maritime transport, shipping and ports
Impact on beaches and dunes	Tourism and recreation; Safety against flooding
Impact on groundwater	Tourism and recreation; Agriculture; Safety against flooding

1.5 Protection of the marine environment

1.5.1 Policy context: administrations and organisations

The environmental policy concerning the coast and sea is directed by several international, European and regional organisations. The International Maritime Organization (IMO) of the United Nations (UN) is a specialised agency responsible for the safety and security of shipping and the prevention of marine pollution caused by ships. The United

Nations Environment Programme ([UNEP](#)) aims to coordinate the development of the environmental policy on a global and regional level by bringing the environment to the attention of the governments and international community and by signaling new points of interest.

On the European level, the Environment Directorate-General ([DG Environment](#)) of the European Commission (EC) aims to protect, maintain and reinforce the European environment. The Directorate-General for Maritime Affairs and Fisheries ([DG MARE](#)) of the EC is competent for two policy domains: the Common Fisheries Policy ([CFP](#)) (see theme **Fisheries**) and the Integrated Maritime Policy ([IMP](#)). The *IMP* intends to provide an integrated answer to the current challenges of the European Seas: marine pollution, environmental protection, coastal development, job creation, etc. The European Environment Agency ([EEA](#)) of the European Union provides reliable and objective information about the environment to everyone, involved or interested in environmental policy. In the [OSPAR commission](#), 15 countries from Western Europe (including Belgium) work together to protect the marine environment of the Northeast Atlantic Ocean.

In Belgium, the [Marine Environment Department](#) of the FPS Public Health, Safety of the Food Chain and Environment is competent for the environmental policy of the BNS. The department also presides the Advisory Commission for Marine Spatial Planning (*Royal Decree of 13 November 2012*). The scientific and technical support for the marine environmental policy is provided by the Management Unit of the North Sea Mathematical Models ([MUMM](#)) of the Royal Institute of Natural Sciences ([RBINS](#)). With regard to sand and gravel extraction, the [Continental Shelf Service](#) of the FPS Economy, SMEs, Self-Employed and Energy is the competent authority. The [policy document \(2013\)](#)²²⁶⁴⁵⁵ of the minister of Economics, Consumers and North Sea stipulates the current North Sea policy.

All aspects of the environmental policy on the coast (landward from the baseline) are an exclusive competence of Flanders ([Dienst Communicatie en Informatie van het Departement LNE 2010](#)²⁰⁸²⁸⁷). The environmental policy to be executed by the Flemish Region as well as by the provinces and municipalities in matters of regional interest is outlined in the environmental policy plan ([Vlaamse Regering 2011](#)²⁰⁸²⁸⁸, [Dienst Communicatie en Informatie van het Departement LNE 2010](#)²⁰⁸²⁸⁷). The Environment, Nature and Energy department ([LNE](#)) plays a key part in the environmental administration. The department is responsible for planning and evaluating the environmental policy in compliance with economic and social demands and for the coordination of all environmental actors as well as the implementation and enforcement of the environmental legislation in Flanders. Other important players within the LNE department are the Agency for Nature and Forest ([ANB](#)), the Research Institute for Nature and Forest ([INBO](#)), the Flemish Agency for Energy ([VEA](#)), the Public Waste Agency of Flanders ([OVAM](#)), the Flemish Environment Agency ([VMM](#)), the Flemish Land Agency ([VLM](#)) and the Flemish Regulator of the Electricity and Gas market ([VREG](#)) ([website LNE 2011](#)).

The [Province of West Flanders](#) fulfils an intermediary function between the regions and municipalities and has competences with regard to the [environment](#) as it is responsible for the coordination of an integrated water policy and the management of the provincial domains and green axes.

The municipal environmental services are competent for the treatment of complaints concerning the environment and nature, nature preservation, monitoring and advice about environmental permits, waste management, environmental policy planning, development of a sustainable policy and awareness raising on the themes of nature, environment and sustainability amongst the citizens and other target groups ([website LNE](#)).

1.5.2 Policy instruments

The intense activities in the sea and the coastal zone have led to an elaborated package of legislations and regulations with the aim of mitigating, reducing or avoiding the impact of certain user functions on the environment. These mostly sectoral legislations and regulations are discussed in the theme texts of the relevant user functions in the topics ‘**Policy context**’ and ‘**Sustainable use**’. A selection of these nature and environment related legislations and regulations are given in **Chapter 3** of the Compendium. Besides, a selection of the most relevant nature and environment related policy instruments for the BNS and the coastal zone is given below.

RAMSAR CONVENTION

The [Ramsar Convention](#) (Ramsar, Iran, 1971) is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources ([Goffin et](#)

[al. 2007](#)¹¹⁴²²⁵). The convention attempts to achieve the protection of sustainable use of wetlands of international importance (incl. marine waters of which the water depth during ebb tide is less than 6 meters) by means of local and national measures and international cooperation.

OSPAR CONVENTION

The [OSPAR Convention](#) constitutes an overarching legal framework for the protection of the marine environment of the Northeast Atlantic Ocean. The OSPAR convention replaces the Convention of Oslo (1972) and the Convention of Paris (1974). The convention contains general regulations on the protection of the marine environment from specific sources of pollution, such as pollution from land by disposal or combustion and by offshore activities. Furthermore, agreements on the evaluation of the quality of the marine environment ([OSPAR QSR 2010](#)¹⁹⁸⁸¹⁷) and the protection and preservation of the ecosystems and biological diversity are part of the OSPAR Convention ([Goffin et al. 2007](#)¹¹⁴²²⁵).

THE MARINE STRATEGY FRAMEWORK DIRECTIVE

The European *Marine Strategy Framework Directive* (MSFD) (*Directive 2008/56/EG*) is the environmental pillar of the *Integrated Maritime Policy* (IMP) (*COM (2007) 575*) of the European Union (EU). The MSFD intends to achieve the Good Environmental Status (GES) of the European marine waters by 2020 as well as the protection of the resources on which economic and social activities depend. The GES is described in article 9 of this directive based upon 11 descriptors (see table 2). The Member States need to define indicators and associated target values for each of these descriptors ([DG Leefmilieu 2012](#)²¹⁶⁷⁷⁹). The EU supports the Member States by developing methodologies for these indicators and by giving scientific advice per descriptor (see table 2). Based on these scientific advices, a decision (*2010/477/EU*) has been published which further elaborates the criteria and methodological standards for the implementation of the MSFD and the determination of the GES in marine waters.

In the context of the implementation of the MSFD in the BNS (*Royal Decree of 23 June 2010 - Marine Strategy*), Belgium drafted an initial assessment of the state of the marine waters (*initiële beoordeling van de staat van het mariene milieu (2012)*²²⁰²³⁰), including a socio-economic analysis of the users of the BNS (*socio-economische analyse van de gebruikers van het BNZ (2012)*²²⁰²³¹). Furthermore, a document with the description of the GES and the environmental targets for the BNS was published (*Omschrijving van de Goede Milieutoestand & vaststelling van Milieudoelen*²²⁰²³²) (more information: [website Marine Environment Department](#)). Based on this document, MUMM is developing a monitoring programme (July 2014) that enables the measurement of the evolution and condition of the environment. The Marine Environment Department will subsequently coordinate the development of a programme of measures by July 2015. Every six years (2018, 2024, etc.), a revision should be performed based on the results of the monitoring programme and the programme of measures ([DG Leefmilieu 2012](#)²¹⁶⁷⁷⁹).

WATER FRAMEWORK DIRECTIVE

The European *Water Framework Directive* (WFD) (*Directive 2000/60/EG*) stipulates that all European 'natural' surface waters should achieve a good ecological (GES) and good chemical status (GCS) by 2015. For 'heavily modified' or 'artificial' water bodies¹, the ecological targets are adapted and 'good ecological potential' (GEP) is used. The deadline (2015) to achieve these objectives can be extended (under certain conditions) up to a maximum of two adjustments of the river basin management plan (2021/2027). With regard to the GES, the WFD applies to 1 nautical mile seaward from the low tide mark and up to 12 nautical miles seaward from the low tide mark for the GCS ([Coördinatiecommissie Integraal Waterbeleid 2010](#)¹³¹⁹¹², [FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu 2009](#)¹⁹⁶¹⁴⁰).

The GES needs to be described by 5 biological quality elements: phytoplankton, aquatic flora, benthic invertebrate fauna and fish fauna (in transitional waters). The thresholds between the two most important ecological status classes (very good/good and good/average) are documented in a decision. If the target value between the good and average status is not achieved, measures to improve the environmental status need to be taken. The thresholds for polluting chemical substances are stipulated in *directive 2008/105/EC*.

¹ Artificial water bodies have been created by humans in places where no natural water body was present. A heavily modified water body is a natural water body that has changed significantly due to human activity.

Table 2. An overview of the 11 descriptors, and the associated technical reports, of the MSFD.

1	Biological diversity	<i>Cochrane et al. (2010)</i> ²⁰²⁴⁸⁴
2	Non-indigenous species	<i>Olenin et al. (2010)</i> ²⁰²⁴⁸⁵
3	Commercially exploited fish and shellfish	<i>Piet et al. (2010)</i> ²⁰²⁴⁸²
4	Food webs	<i>Rogers et al. (2010)</i> ²⁰²⁴⁸⁸
5	Eutrophication	<i>Ferreira et al. (2010)</i> ¹⁹⁹⁵⁵⁰
6	Seafloor integrity	<i>Rice et al. (2010)</i> ²⁰²⁴⁹⁰
7	Hydrographical features	
8	Contaminants and pollution effects	<i>Law et al. (2010)</i> ²⁰²⁴⁹²
9	Contaminants in fish and other seafood	<i>Swartenbroux et al. (2010)</i> ¹⁹⁹⁵⁵³
10	Marine litter	<i>Galgani et al. (2010)</i> ¹⁹⁹⁵⁵⁵
11	Underwater noise and other forms of energy	<i>Tasker et al. (2010)</i> ²⁰²⁴⁹³

To achieve the objectives of the WFD, the Member States need to develop river basin management plans every six years. The first plans were drafted in 2009. The next version of the management plans is due by the end of 2015 (more information: *tijdsschema en werkschema tweede generatie stroomgebiedbeheerplannen 2012* ²²⁶⁴⁶¹). All surface waters of the coastal zone belong to the international River Basin District of the Scheldt: in accordance with the competences of the Flemish and federal government, the river basin management plans are divided into a river basin management plan for the Scheldt (*Coördinatiecommissie Integraal Waterbeleid 2010* ¹³¹⁹¹²) and a river basin management plan for the Belgian coastal waters (*FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu 2009* ¹⁹⁶¹⁴⁰).

Coordination between the competent authorities of the River Basin District (The Netherlands, France, the three regions and the federal government of Belgium) takes place in the International Scheldt Commission (*ISC*) and at the Belgian level in the Coordination Committee for International Environmental Policy (*CCIEP*).

The implementation of the WFD is guaranteed by the *Royal Decree of 23 June 2010* for the federal legislation and by the *Decree of 18 July 2003* for the Flemish legislation.

HABITATS DIRECTIVE

The European *Habitats Directive* (*Directive 92/43/EEC*) aims to maintain and repair the threatened European natural habitats and wild fauna and flora. The Member States need to designate special protection areas (Habitats Directive Areas) for some habitats and species of European importance, listed in the annexes I and II of the directive. These Habitats Directive Areas constitute together with the Bird Directive Areas, the European Ecological *Natura 2000 Network*.

The aim is to achieve a favourable conservation status for the habitats listed in annex I and for the species in annex II and IV of this directive. The conservation status is determined by means of scientifically underpinned conservation objectives.

According to the *Habitats Directive* (art. 17), the Member States are obligated to report every six years to the EC about the conservation status of the habitat types and species as well as about the results of the conducted policy. The next reporting in the framework of the *Habitats Directive* is the period 2007-2012. The conservation objectives of the marine Natura 2000 areas are not yet determined (*Raeymaekers 2011* ²⁰⁸⁷³⁴). A proposal for the objectives for the protected species and habitats of the BNS has been elaborated by *Degraer et al. (2010)* ²²¹²³⁵. For the landward side, the conservation status of the species and habitats of European importance was reported for the first time in Belgium in 2007 (*Dumortier et al. 2007* ¹²³¹³²).

BIRDS DIRECTIVE

The European *Birds Directive* (Directive 2009/1147/EG) aims at the protection of all wild bird species. Special protection measures have been taken for the habitats of the bird species from annex I and all species that occur in certain areas in internationally significant numbers as breeding bird, migratory bird or winter bird. Each Member State needs to designate special protection areas ('Bird Directive Areas') that are part of the European Ecological *Natura 2000 Network*. According to the *Birds Directive* (art. 12), the Member States are obligated to report every six years about the conservation status of the species and the results of the conducted policy to the EC. The next reporting in the framework of the *Birds Directive* covers the period 2008-2012. An official report directed towards Europe about the status of these bird species compared to the conservation objectives, has not yet been published. In *Paelinckx et al. (2009)*¹⁸⁶⁹⁶⁶ and *Degraer et al. (2010)*²²¹²³⁵, the conservation of the bird species of the *Birds Directive* at the level of Flanders and the North Sea has already been described in support of the determination of the conservation objectives.

The implementation of the *Habitats* and *Birds Directives* in the federal legislation has been provided by several decrees of the *law of 20 January 1999*: e.g. the *Royal Decree of 21 December 2001*, the *Royal Decree of 14 October 2005* and the *Royal Decree of 5 March 2006*.

MARINE ENVIRONMENT LAW

The *Marine Environment law* (*law of 20 January 1999*) intends to maintain the nature, the biodiversity and the integral character of the marine environment by means of protection measures (*inter alia* the demarcation of marine protected areas) and by means of measures to repair environmental damage. In addition to the prohibition of some activities, this law has introduced objective liability in case of damage and environmental disturbance (*Goffin et al. 2007*¹¹⁴²²⁵). Since 20 July 2012, this law has also outlined the organisation and procedure of the marine spatial plan. Furthermore, the law stipulates which activities are subject to a permit or authorisation of the competent minister and associated environmental impact assessment.

DECREE OF THE DUNES - FLEMISH ECOLOGICAL NETWORK - SPATIAL IMPLEMENTATION PLANS

Besides the already mentioned *Ramsar Convention* and the *Habitats* and *Birds Directives*, other policy instruments for the protection of nature areas in the coastal zone are of importance. At the Flemish level, the *Decree of 21 October 1997* on nature preservation and the natural environment provides direction to the overall objectives of the nature policy and the elaboration of policy instruments with regard to species as well as certain areas. The spatial basis of these instruments is constituted by the regional spatial plans of the seventies. In the context of the Decree of the Dunes (Chapter 9 *law of 12 July 1973*) additional areas were protected, either as 'protected dune area' or as 'agricultural area important for the dune area' (*Provoost 1999*¹²⁷¹³³).

The Flemish Ecological Network (*FEN*) comprises current valuable nature in Flanders, supplemented with areas with a high nature potential or nature corridor. In these areas, nature is additionally protected and users and owners receive extra instruments and opportunities to help building a nature- and human-friendly environment. For the FEN-areas, nature policy plans (*natuurrichtplannen* (*NRP*)) have been elaborated in which measures suited to the area have been agreed upon, in addition to general protection regulations (e.g. *NRP Duinen van de Middenkust tussen Oostende en Blankenberge 2007*¹²¹⁷⁵⁸).

Finally, space for nature development is provided by spatial planning through the demarcation of natural structure in the spatial structural plans (*Ruimtelijk Structuurplan Vlaanderen*²¹⁴⁷⁷⁴, *Provinciaal Ruimtelijk Structuurplan West-Vlaanderen*⁵⁷⁸³¹), subsequently implemented as spatial implementation plans (formerly: regional spatial plans).

1.5.3 Protected areas

Belgium has several statutes for the protection of nature areas in the coastal and marine zone: Wetlands or Ramsar areas, Natura 2000 areas, Flemish and Recognised Nature Reserves, Forest Reserves, areas of the Decree of the Dunes, Protected Landscapes and the Flemish Ecological Network (FEN) (see **Policy instruments**). It often occurs that 2 or more of the mentioned regulations overlap each other. More than 1,200 km² or about 36% of the BNS has been designated as a marine protected area (see table 3).

Table 3. An overview of the protected areas, their surface, status and associated legislation (Source: [Raeymaekers 2011](#) 208734).

PROTECTED AREAS IN THE BNS			
Protected area	Surface	Status	Legislation
Special Protection Area SBZ-1 (Birds Directive)	110.01 km ²	<ul style="list-style-type: none"> Policy plan available (<i>Beleidsplan</i> ¹⁹⁶¹³³) Conservation objectives to be determined (scientific advice: <i>Degraer et al. 2010</i> ²²¹²³⁵) Management plan to be determined 	Royal Decree of 14 October 2005 - speciale beschermingszones en speciale zones voor natuurbehoud
Special Protection Area SBZ-2 (Birds Directive)	144.80 km ²	<ul style="list-style-type: none"> Policy plan available (<i>Beleidsplan</i> ¹⁹⁶¹³³) Conservation objectives to be determined (scientific advice: <i>Degraer et al. 2010</i> ²²¹²³⁵) Management plan to be determined 	
Special Protection Area SBZ-3 (Birds Directive)	57.71 km ²	<ul style="list-style-type: none"> Policy plan available (<i>Beleidsplan</i> ¹⁹⁶¹³³) Conservation objectives to be determined (scientific advice: <i>Degraer et al. 2010</i> ²²¹²³⁵) Management plan to be determined 	
Special Protection Area H1 Tapegeer-Stroombank (Habitats Directive)	181.00 km ²	<ul style="list-style-type: none"> Policy plan available (<i>Beleidsplan</i> ¹⁹⁶¹³³) Conservation objectives to be determined (scientific advice: <i>Degraer et al. 2010</i> ²²¹²³⁵) Management plan to be determined 	Royal Decree of 16 October 2012
Special Protection Area H2 Vlakte van de Raan (Habitats Directive)	19.17 km ²	<ul style="list-style-type: none"> Designation as Habitats Directive Area annulled Definitive designation as Natura 2000 zone 	
Special Protection Area 'Flemish Banks' (Habitats Directive)	1,099.939 km ²	<ul style="list-style-type: none"> Expansion of the area 'Trapegeer-Stroombank' Study of demarcation of the area: <i>Degraer et al. (2009)</i> ¹⁴³³⁶³ Registered at the EC as "Site of Community Importance" 	
Marine Reserve	6.76 km ²	<ul style="list-style-type: none"> Policy plan available (<i>Beleidsplan</i> ¹⁹⁶¹³³) 	Royal Decree of 5 March 2006
Ramsar site Western Coastal Banks	19 km ² (<i>list Ramsar areas</i>)		

The draft of the Marine Spatial Plan (*Ontwerp van koninklijk besluit tot vaststelling van het marien ruimtelijk plan (2013)* ²²⁷⁵²⁷), as proposed by the Minister in charge of the North Sea, further elaborates on the protection of the environment. Certain restrictions are imposed on seabed-disturbing activities in sensitive zones of the Habitats Directive Area 'Flemish Banks' such as sand and gravel extraction (see theme **Sand and gravel extraction**), recreational and commercial fisheries (see theme **Fisheries**). In addition, the draft of the marine spatial plan also mentions opportunities for the multiple use of space with a view to nature protection or development (more information: *actieplan Zeehond*).

Approximately 22% of the surface of the coastal communities is protected by some kind of nature preservation. This share is higher compared to the hinterland (\pm 16%) and Flanders (\pm 14%) (*Maelfait et al. 2012* ²²¹⁰¹⁶).

The remaining ecologically valuable dune areas, with a total surface of approximately 2,830 ha are almost entirely protected. Only 5% of these domains do not belong to green areas of the regional spatial plan or to 'higher' protection statutes (protected dune area, nature protocol for military domains or nature reserves). It mainly concerns inner-

MAP OF THE PROTECTED AREAS IN THE BNS

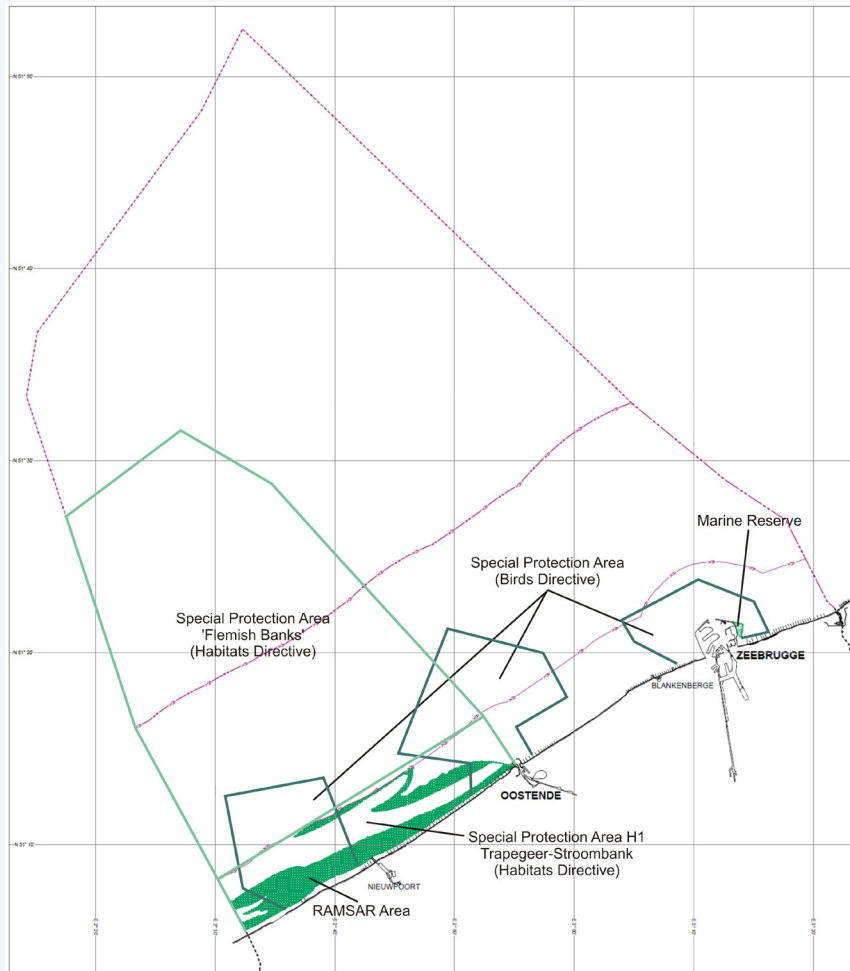


Figure 3. A map of the protected areas in the BNS (Source: [Continental Plat & Vlaamse Hydrografie 2013](#)).

dune areas and areas at the edge of the dunes, e.g. at Cabour (old dunes of Adinkerke), Sandeshoved and Oude Hazegraspolder at Knokke. However, these areas have been marked as special protection areas and belong to the 'agricultural area important for the dune area' of the Decree of the Dunes (Chapter 9 law of 12 July 1973) ([Dumortier et al. 2003](#)³⁶⁵⁰⁸).

These statutes only provide spatial protection, but do not guarantee that the present nature values are preserved. This usually requires active nature management ([Maelfait et al. 2012](#)²²¹⁰¹⁶). The Decree of 21 October 1997 is a suitable legal framework that provides the designation of nature reserves and the drafting of management plans.

FLOWCHART OF THE PROCEDURE FOR THE POLICY PLANS OF THE MARINE PROTECTED AREAS AND THE REQUEST FOR ACTIVITIES IN THESE ZONES

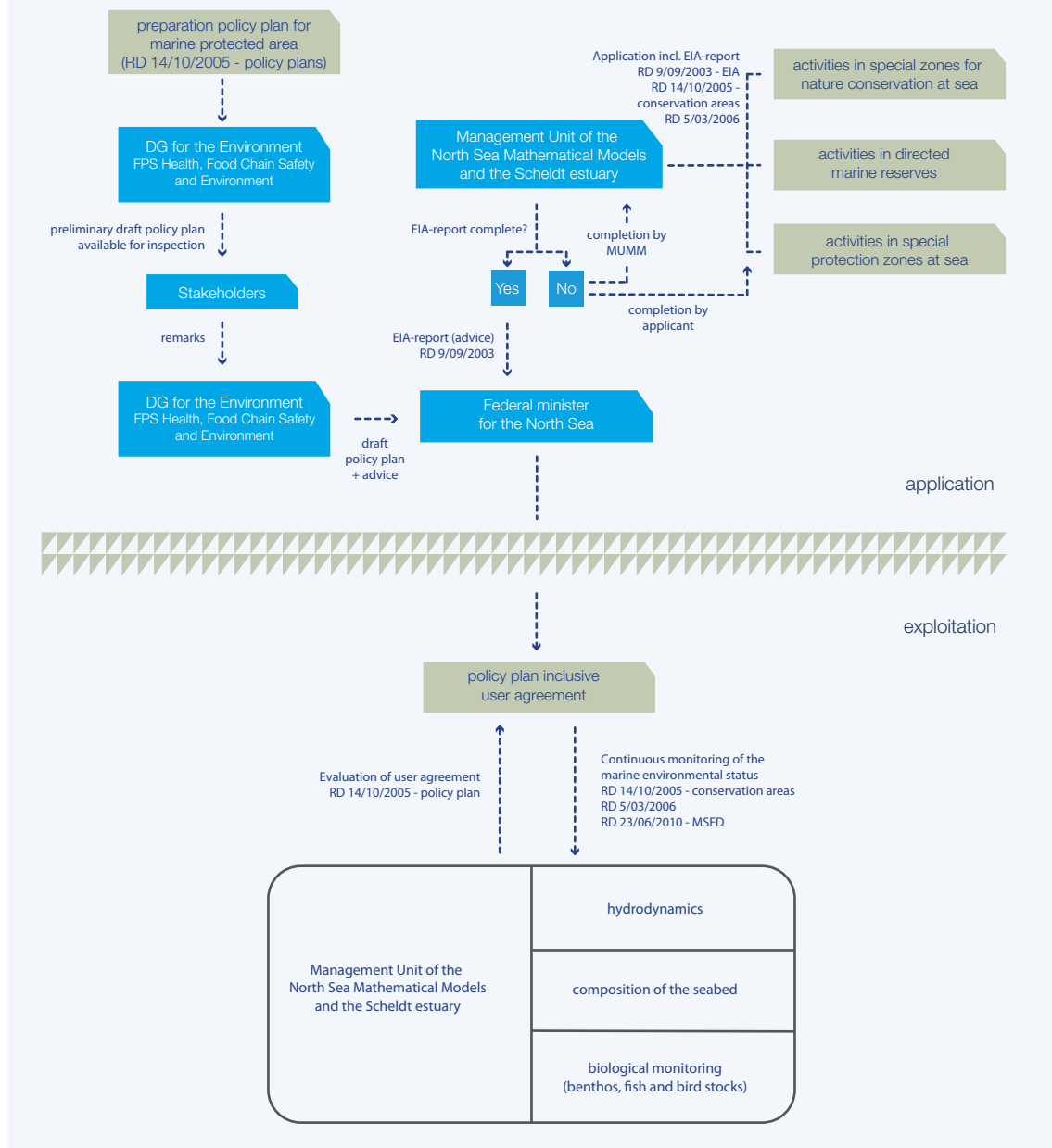


Figure 4. Flowchart of the procedure for the policy plans of the marine protected areas and the request for activities in these zones (*law of 20 January 1999*). The prohibited activities in the different types of protected areas are listed in the *Royal Decree of 14 October 2005* and the *Royal Decree of 5 March 2006*.

PROTECTED AREAS AND NATURE AREAS IN THE COASTAL ZONE

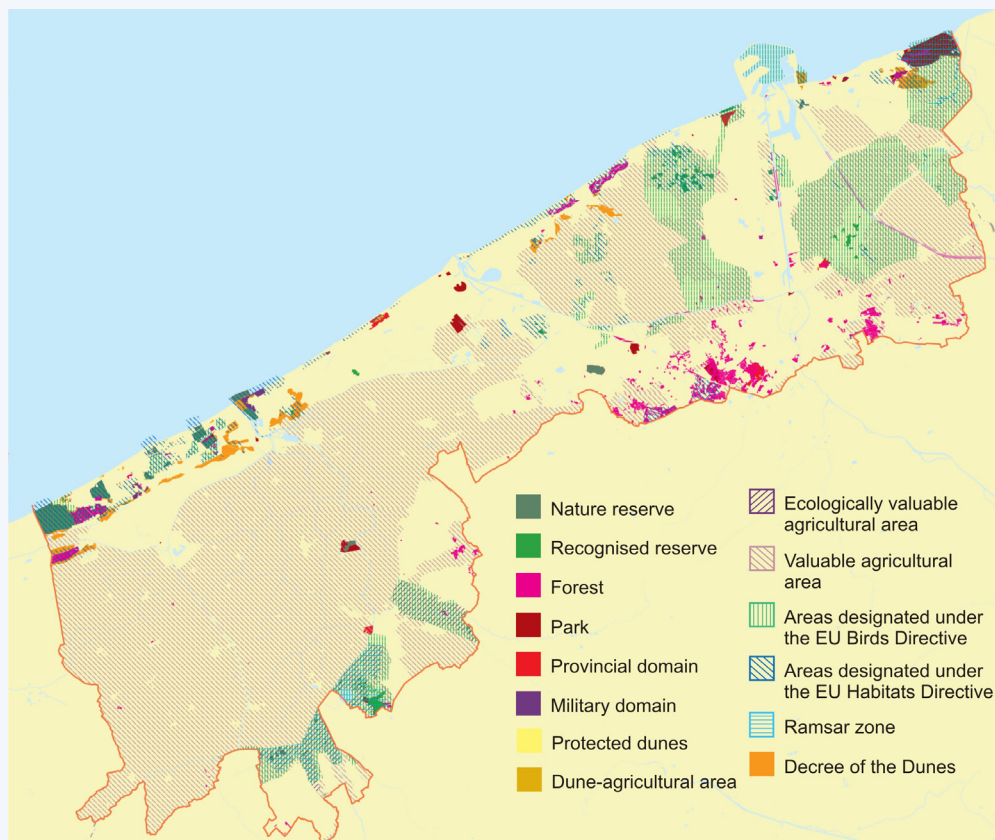


Figure 5. Protected areas and nature areas in the coastal zone (Source: *Coastal Atlas*).

SPATIAL PROTECTION OF DUNES AND BEACHES

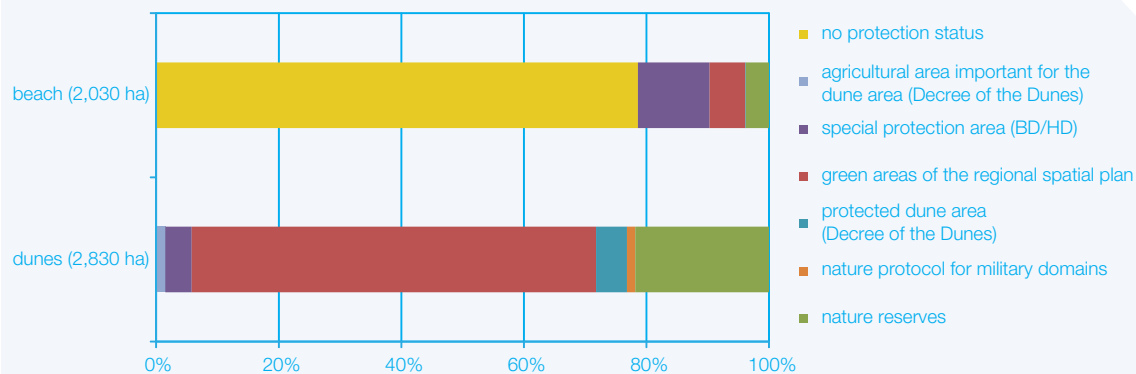


Figure 6. Spatial protection of the ecologically valuable dune ecotypes and beaches according to the different statutes for nature preservation (*Dumortier et al. 2003*³⁶⁵⁰⁸).

Legislation reference list

Table with international agreements, conventions, etc.

INTERNATIONAL AGREEMENTS, CONVENTIONS, ...			
Abbreviations (if available)	Title	Year of conclusion	Year of entering into force
<i>Ramsar Convention</i>	Convention on Wetlands of International Importance especially as Waterfowl Habitat	1971	1975
<i>OSPAR Convention</i>	Convention for the protection of the Marine Environment of the North-East Atlantic	1992	1998

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

EUROPEAN LEGISLATION			
Abbreviations (if available)	Title	Year	Number
Directives			
Habitats Directive	Directive on the conservation of natural habitats and of wild fauna and flora	1992	43
Water Framework Directive	Directive establishing a framework for Community action in the field of water policy	2000	60
Marine Strategy Framework Directive	Directive establishing a framework for Community action in the field of marine environmental policy (Marine Strategy Framework Directive)	2008	56
	Directive on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council	2008	105
Birds Directive	Directive on the conservation of wild birds	2009	147
Other (Decisions, Communications, White Papers, etc.)			
Integrated Maritime Policy	Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - An Integrated Maritime Policy for the European Union	2007	575
	Commission Decision of 1 September 2010 on criteria and methodological standards on good environmental status of marine waters	2010	477

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

BELGIAN AND FLEMISH LEGISLATION	
Date	Title
Laws	
Wet van 12 juli 1973	Wet op het natuurbehoud: Vlaamse Gewest
Wet van 20 januari 1999	Wet ter bescherming van het mariene milieu en ter organisatie van de mariene ruimtelijke planning in de zeegebieden onder de rechtsbevoegdheid van België
Royal Decrees	
KB van 21 december 2001	Koninklijk besluit betreffende de soortenbescherming in de zeegebieden onder de rechtsbevoegdheid van België
KB van 14 oktober 2005 – speciale beschermingszones en speciale zones voor natuurbehoud	Koninklijk besluit tot instelling van speciale beschermingszones en speciale zones voor natuurbehoud in de zeegebieden onder de rechtsbevoegdheid van België
KB van 14 oktober 2005 – gebruikersovereenkomsten en beleidsplannen	Koninklijk besluit betreffende de voorwaarden, sluiting, uitvoering en beëindiging van gebruikersovereenkomsten en het opstellen van beleidsplannen voor de beschermde mariene gebieden in de zeegebieden onder de rechtsbevoegdheid van België.
KB van 5 maart 2006	Koninklijk besluit tot instelling van een gericht marien reservaat in de zeegebieden onder de rechtsbevoegdheid van België en tot wijziging van het koninklijk besluit van 14 oktober 2005 tot instelling van speciale beschermingszones en speciale zones voor natuurbehoud in de zeegebieden onder de rechtsbevoegdheid van België
KB van 23 juni 2010 – oppervlaktewatertoestand	Koninklijk besluit betreffende de vaststelling van een kader voor het bereiken van een goede oppervlaktewatertoestand
KB van 23 juni 2010 – mariene strategie	Koninklijk besluit betreffende de mariene strategie voor de Belgische zeegebieden
KB van 16 oktober 2012	Koninklijk besluit van 16 oktober 2012 tot wijziging van het koninklijk besluit van 14 oktober 2005 tot instelling van speciale beschermingszones en speciale zones voor natuurbehoud in de zeegebieden onder de rechtsbevoegdheid van België.
KB van 13 november 2012	Koninklijk besluit betreffende de instelling van een raadgevende commissie en de procedure tot aanneming van een marien ruimtelijk plan in de Belgische zeegebieden
Decrees	
Decreet van 14 juli 1993	Decreet houdende maatregelen tot bescherming van kustduinen
Decreet van 21 oktober 1997	Decreet betreffende het natuurbehoud en het natuurlijk milieu
Decreet van 18 juli 2003	Decreet betreffende het integraal waterbeleid
Other	
Besluit van de Vlaamse regering van 17 juli 2000	Besluit van de Vlaamse regering tot wijziging van het besluit van de Vlaamse regering van 17 oktober 1988 tot aanwijzing van speciale beschermingszones in de zin van artikel 4 van de richtlijn 79/409/EEG van de Raad van de Europese Gemeenschappen van 2 april 1979 inzake het behoud van de vogelstand betreffende de speciale beschermingszone «3.2. Poldercomplex»
Besluit van de Vlaamse regering van 24 mei 2002	Besluit van de Vlaamse regering tot vaststelling van de gebieden die in uitvoering van artikel 4, lid 1, van Richtlijn 92/43/EEG van de Raad van de Europese Gemeenschappen van 21 mei 1992 inzake de instandhouding van de natuurlijke habitats en de wilde flora en fauna aan de Europese Commissie zijn voorgesteld als speciale beschermingszones