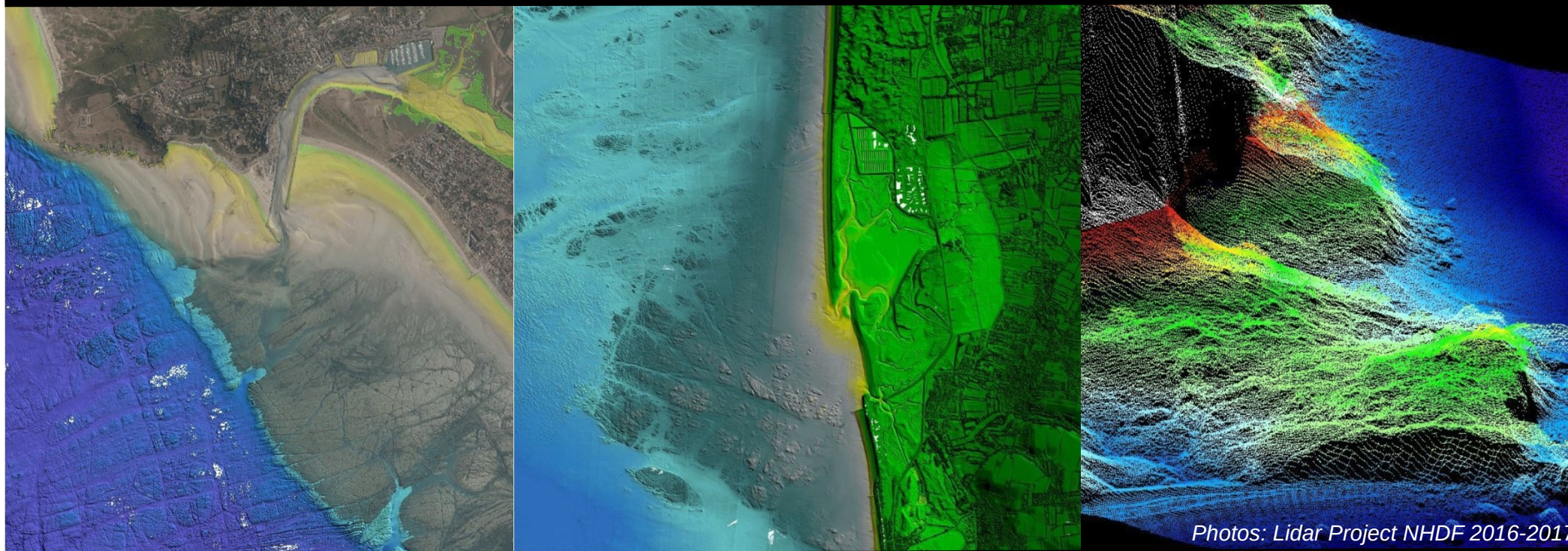


Sea basin strategy document Eastern Channel - North Sea

Summary version



Photos: Lidar Project NHDF 2016-2017

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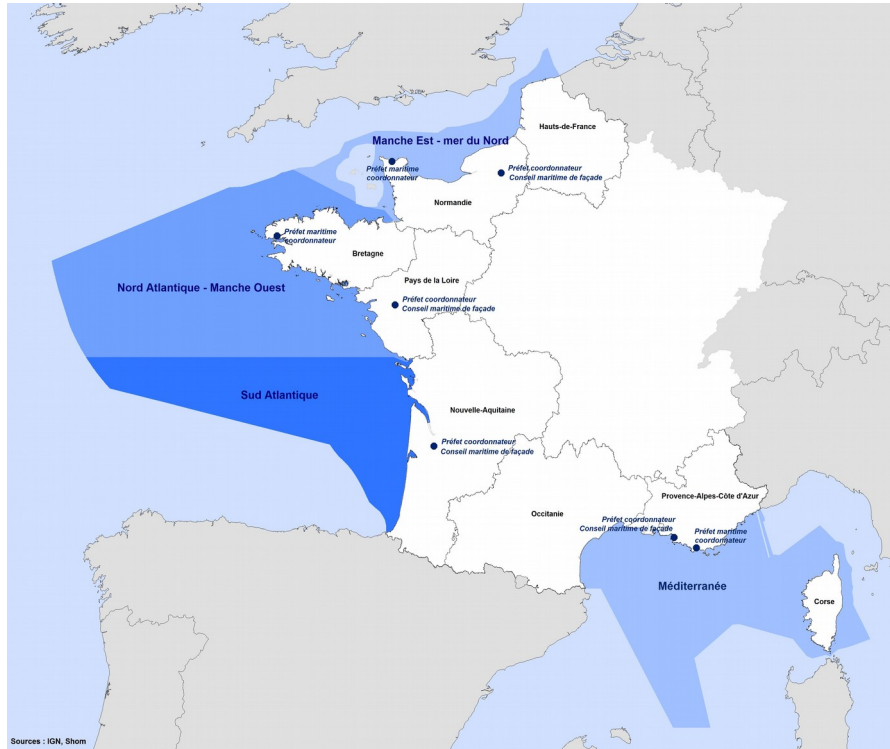
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INTRODUCTION



The coastlines of mainland France

France's maritime and coastal spaces combine outstanding natural heritage with significant socio-economic development potential. France has earned a worldwide reputation for the excellence of its oceanographic research; some of its industrial sectors such as shipbuilding, freight transport and recreational boating are cutting edge. Its flag is considered a sign of quality, technical expertise and reliability of vessels and crews and the French navy is present on all seas. Changes or initiatives are launched in historic or emerging sectors. The nation's competence in the management of marine protected areas is widely recognised throughout the world.

The sea and coastline accommodate many different uses. They are also subject to numerous sources of pressure, as a result of urbanisation, concrete sprawl, climate change, land-generated pollution and the impact of activities. To ensure that the sea and coastlines continue to foster exchange, wealth, sharing, knowledge and culture, since the early 2000s France has pursued a multi-pronged maritime policy that reconciles preservation of the marine environment - the nation's shared national heritage - with economic development of maritime and coastal activities, while promoting integrated management of the land and sea.

The national and European framework of the Sea basin strategy document

In February 2017, France published a **National Strategy for the Sea and Coast** (stratégie nationale pour la mer et le littoral, SNML), setting out its long-term goals in this area. This document forms the baseline for environmental protection, optimisation of marine resources and the integrated, consensus-based management of activities relating to the sea and coast. The role of the **National Council for the Sea and Coastal Areas** (conseil national de la mer et des littoraux), made up of elected officials and representatives of civil society, is to develop, implement, monitor and assess this strategy.

The National Strategy for the Sea and Coastal Areas (SNML) sets out 4 long-term objectives: achieving the essential **ecological transition**; developing a sustainable **blue economy**; restoring the **good environmental status** and upholding France's **influence** as a maritime nation.

It establishes a framework for action via 4 strategic axes: building on **knowledge and innovation**; developing sustainable, **resilient maritime and coastal spaces**; supporting and promoting **initiatives** and clearing obstacles; promoting a **French vision** within the European Union and in international negotiations and promoting national interests.

For each coastline in metropolitan France, a planning document – the **Sea basin strategy document** (called Maritime Basin Strategy Document in overseas departments) - should refine and supplement the general axes established by the national strategy, reflecting the economic, social and ecological challenges specific to each coastline.

France has chosen to develop South Atlantic maritime and coastal strategy Documents to meet the obligation to implement **two European framework directives**:

- EU Directive 2008/56/EC of 17 June 2008, known as the **Marine Strategy Framework Directive**, which aims to achieve or maintain good marine environmental status by 2020.
- EU Directive 2014/89/EU of 23 July 2014 establishing a **Framework for Maritime Spatial Planning**, which calls upon Member States to coordinate their activities at sea.

The Sea basin Eastern Channel – North Sea scale

The Sea basin strategy document addresses the **development of activities**, and the control or **reduction of pressures** caused by human activity on marine and coastal environments. For the first time, a set of maps has been produced that provide an overview of the issues and define preferential locations for activities and areas for conservation of the marine and coastal environment. The aim is to coordinate activities and **prevent conflicts** resulting from the diversification and densification of uses of the sea and coast. Combined development of human activities must not be allowed to compromise the objective of achieving or maintaining good environmental status.

In view of the **interactions between land and sea**, solutions cannot only be sea-based. Watersheds and land areas have an effect on maritime and coastal areas through issues such as water quality, land use, urban expansion, tourist and agricultural installations, activities at sea, etc. A key challenge is reconciling watershed and coastal management, the policies of regional authorities, the Water Development and Management Plans (SDAGE, implementation of the Water Framework Directive), Sustainable Development and Territorial Equality Regional Plans (SRADDET), Territorial Coherence Plans (SCOT) and local urban plans (or intercommunal plans where applicable).

Co-authored by the State, representatives of maritime and coastal activities and environmental organisations, the Coastline Strategy addresses issues of particular relevance to the Eastern Channel - North Sea, while ensuring coherence with the strategies developed for the North Atlantic - West Channel and the draft marine spatial plan for Belgian sea areas.

INTRODUCTION

The **enforceability** of the Sea basin strategy document is as follows:

- **at sea**, the plans, programmes, schemes and projects for works, structures and developments should be **compatible** or made compatible with the objectives and provisions of the Sea basin strategy document. Compatibility implies not departing from the basic axes, in this case the strategic objectives and designated uses map, while allowing some flexibility in terms of specifying their application.
- If they are **on land**, but with an influence at sea, they shall **take into consideration** the objectives and provisions of the Sea basin strategy document; specifically, they are subject to the compatibility requirement, with concessions possible where justified.

When dealing with **conflicts of use**, this document helps stakeholders and authorities to identify **conciliatory solutions** depending on the area in which they are located, but rarely provides a clear verdict in favour of a particular solution, as such choices must also be informed by local analysis. The document provides guidance for growth activities, helping to determine areas in which their development will be appreciated (without granting them any form of exclusivity).

Elaboration of the Sea basin strategy document

Sea basin strategy document is prepared by the **State**. At national level, it is overseen by the Minister for an Ecological and Solidary Transition. At local level, the Prefect of the Normandy region and the Maritime Prefect of the Channel and the North Sea are responsible for its preparation, in their capacity as coordinating prefects.

These two prefects are supported by a **consulting body**, the **Sea basin council**, which is a forum for dialogue between stakeholders with interests at sea, on the coast and on land. **The wider public** was also invited to contribute, via a preliminary consultation process supervised by the French National Commission for Public Debate.

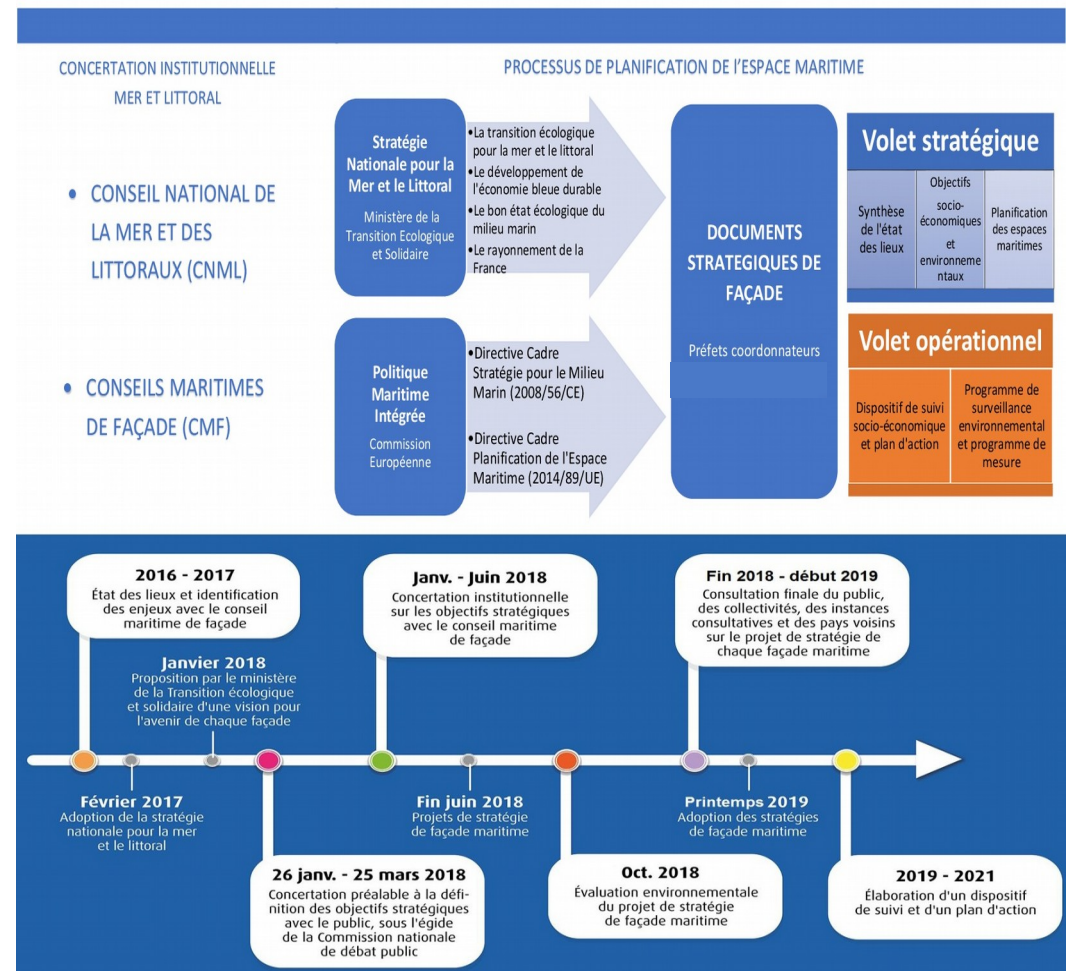
The Sea basin strategy document is organised into four parts, each intended to be enriched and amended in the light of improvements in available knowledge, and updated in subsequent six-yearly reviews of the document:

- the **current situation, challenges** and a **vision for the coastline** for 2030 (Part 1)
- Defining economic, social and environmental **strategic objectives**, together with related performance indicators. These objectives are accompanied by a "designated uses map" that, for each maritime space, defines the areas consistent with the challenges and general objectives assigned to them (Part 2)
- the **evaluation procedure** for assessing the implementation of the strategy document (Part 3)
- the **action plan** (Part 4)

This document forms parts 1 and 2 of the overall Eastern Channel – North Sea maritime and coastal strategy Document. Parts 3 and 4 are to be produced at a later date, no later than 2020 and 2021.

The Eastern Channel – North Sea maritime and coastal strategy consists of a main summary document, with details set out in the supporting appendices:

- scientific and technical analyses for the initial evaluation;
- components of the strategic objectives and planning.



INTRODUCTORY PRESENTATION OF THE COASTLINE



Photo: Municipality of Etretat (Seine-Maritime) Source: CEREMA

Physical and administrative characteristics

The East Channel-North Sea sea basin has **1022 km of coastline**, from the Belgian border to the Normano-Breton Gulf. This is approximately **15% of the coastline around mainland France**. The coastline spans the regions Hauts-de-France and Normandy, encompassing 7 departments and 252 municipalities subject to the 2018 Coastlines Act. The geographical extent of the coastline is **defined by regulation**; the regional borders correspond to the terrestrial boundaries, while the maritime borders with Belgium and the United Kingdom, as well as the jurisdictional limits of the Maritime Prefecture, correspond to the offshore boundaries. As well as being notable for its length, the coast is also characterised by its restricted maritime space and shallow depths.

The coastlines of Hauts-de-France and Normandy have a concentration of **industrial port activities** and cultural and recreational activities respectively. The regions are also known for **fishing and shellfish production**. The coast has several UNESCO World Heritage Sites (Mont-Saint-Michel, Bay of Somme, Le Havre) and significant vestiges of military history.

The typology of the coastline is very diverse, ranging from polders and wide expanses of sandy beaches and dunes, to headlands with chalk cliffs and rocky coastlines. The coast is highly vulnerable to accretion and erosion, due to the climate, currents and coastal geomorphology, as well as anthropic development. Fed by two main river basins (Artois-Picardy and Seine-Normandy), the coastline also has **many rivers and estuaries** (the Seine Estuary is the third largest estuary in France), which formed bays on contact with the marine environment. In addition to being of ecological interest, this environment supports the development of trade and agriculture through the rivers and canals.

The coastline is comprised of **two large geological regions**: the American Massif and the Paris Basin. The sea is shallow and has a maximum depth of one hundred metres. This environment reinforces the importance of **tides** and the tidal range, as they determine the distribution of sediments (fine and coarse) and the nature of ecosystems. Ocean currents generally move from the Atlantic towards the North Sea. Although sheltered by the coast, heavy swells can effect the coastal area. **The region has a temperate oceanic climate**. There are 1750 hours of sunshine per year. The topography of the land gives rise to **significant differences in the wind**, which is stronger on the coast and headlands than inland. Sea surface temperatures vary from west to east from 8 to 11°C in winter and from 14 to 17°C in summer.

Chemical and biological aspect

The **chemical characteristics of the marine environment** are closely linked to its physical conditions, and affected by the biological activity of organisms that inhabit it, as well as by human activities. Acidification of the marine environment, which is the reduction in the pH of sea water, is related to water salinity and temperature and also to the respiration and decomposition of living organisms. Similarly, the concentration of dissolved oxygen and availability of nutrients and minerals depends on the many processes that are of fundamental importance to marine organisms. Also noteworthy is the vital role of **chlorophyll**, a pigment essential for the process of primary production. In addition to these natural substances, hazardous chemical compounds can be found in the sea, resulting from human activity or the confined geomorphology of certain areas. Seas and oceans also **absorb significant quantities of CO₂, reducing their pH levels and increasing acidity (30% rise since the industrial revolution)**, which may disrupt the development of marine life. The Channel-North Sea sub-region is no exception. It does, however, benefit from a high input of nutrients and carbon from the rivers. Biological activity and the coast-open sea gradient are also factors giving rise to spatial and temporal changes in surface water pH. Nevertheless, monitoring of the levels of dissolved oxygen and nutrients does not indicate significant trends for the coastline.

The Eastern Channel-North Sea coastal area comprises **three large soft bottom (gravel, sand, mud) biocoenoses**, inhabited by molluscs and crustaceans, as well as **six hard bottom biocoenoses**, predominantly algal. Along the intertidal zone there are **three distinct habitats** (banks, seagrass and reefs) and **seven gregarious species habitats**. For all species, the fine coastal sediments, the bays, estuaries and salt marshes are key nursery areas, while the coarse sediments offshore are more often suitable for spawning grounds. As a transition zone for fish species, in the Channel-North Sea marine sub-region there are **over 100 demersal species, of which 30 are frequently abundant**. It is an area of **rich marine habitats, a favourable environment for the replenishment of a number of species**. The structure and composition of these marine populations have remained largely unchanged over the last two decades, despite the region being a **major European migration route** for many species of fish, birds and mammals.

The presence of **large pelagics** and **small pelagics** in the coastal area varies depending on their reproductive cycles and migration. There is a significant presence of **marine mammals** in the Channel-North Sea (and beyond), with nine cetacean and two seal species. All species of **sea turtles** are protected, but they are rarely found in these seas, mainly because the conditions are too cold. The Eastern Channel also has a **concentration of seabirds**, with **eighteen species of birds** regularly nesting and breeding along the coast. Among these, eight are considered endangered, vulnerable or near threatened. Finally, **93 introduced species** have been identified in the region.



Photo: Municipality of Merlimont (Pas-de-Calais). Source: CEREMA

INTRODUCTORY PRESENTATION OF THE COASTLINE

Demographic and residential dynamics

French maritime municipalities are **highly attractive** (approximate population density 305 inhabitants/km² in 2018¹ compared to 285 inhabitants/km² in 2010²), in contrast to inland municipalities. Since 1962, the mainland coastal population has increased by 41%. This demographic trend influences changes in land use; **in 2012 18.7% of the land of coastal municipalities along the coast was artificial**. Moreover, the climatic and geographic conditions of coastal areas make them more suitable for open environments, but the development of the agricultural and forestry sectors remains low.

The Eastern Channel-North Sea coastal area is **densely populated, a consequence of the limited amount of occupiable land** : in 2018 a population of 1,013,475 lived in an area of 3317 km². This has increased only moderately since 1962 (positive natural change); it is characterised by a more youthful population. The **coastal population is stagnating**, a consequence of extremely low immigration, which points to high expectations with regard to economic development of the region.

The **territory is marked by contrasts**, with large maritime agglomerations such as Dunkirk and Le Havre, but also coastal municipalities with fewer than 500 inhabitants (a higher figure than in other mainland coastal regions). The hinterland is less densely populated and despite an ageing population, the coastal region has the most youthful population of all mainland coastal regions. **As a consequence, land use is heterogeneous**. Land artificialisation is principally due to urban development, driven by housing trends and the creation of ports and industrial areas. Large numbers of second homes are a distinctive feature of coastal areas in comparison with the rest of mainland France, indicating significant tourist accommodation capacity.

The Eastern Channel-North Sea sea basin is characterised by **highly anthropogenic land use, predominantly urban and agricultural**, and little space for natural areas. This urbanisation comprises mainly **housing and industrial port facilities**. The coastal area is following the trend prevalent across the entire mainland coastline for increasing the extent of man-made landscapes, although there are disparities between departments. It is, however, characterised by **arable land (33%) and pastures (24%)**, with **wetlands only accounting for 4% of land area**. Economic yield is thus sustained, but often at the expense of natural spaces.

Although less significant than in other coastal areas, housing construction is increasing steadily. This construction is mainly **multi-family housing (40% of the total between 1990 and 2003) and second homes (23.1% of housing in 2009)**.

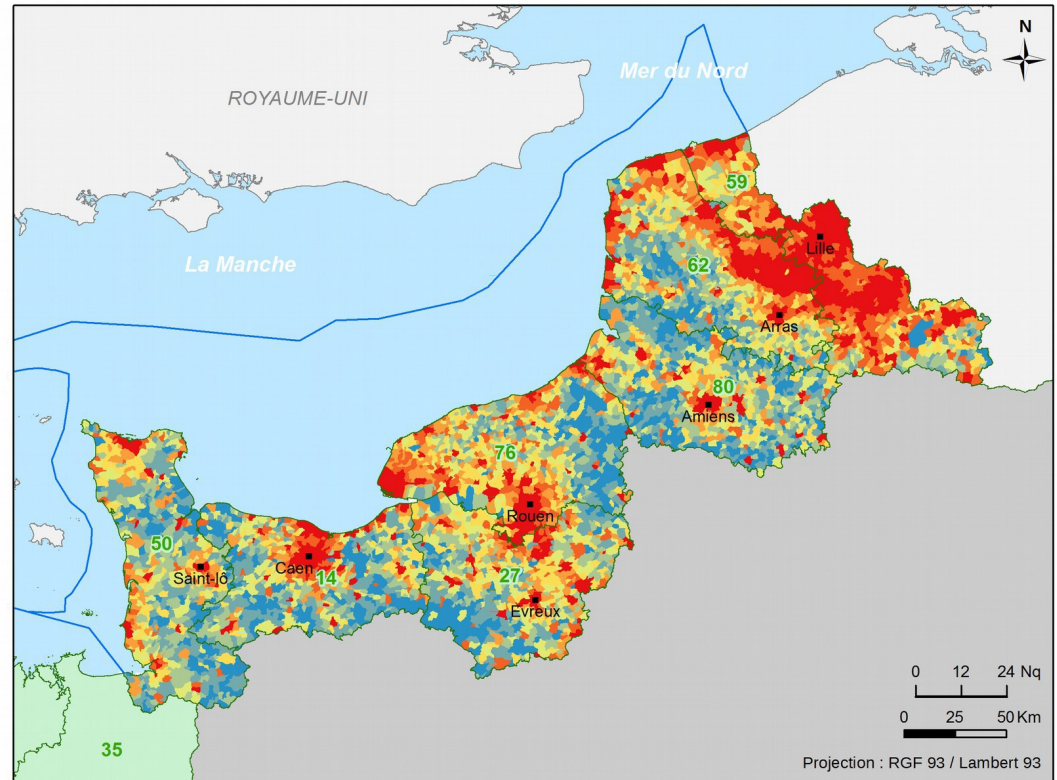
Apart from residential property, there was significant **construction of industrial buildings and warehouses**, with a peak of activity between 2000 and 2012. As a result, there is **growing pressure on land** for construction (**average price 65.3€/m² in 2012**), but this is still the lowest in mainland France. This pressure is particularly high in urban and industrial coastal municipalities.

Finally, the unemployment rate in the coastal area stood at 15.3% in 2006. For the whole coastal region, as in coastal municipalities, the **service sector** is the biggest employer, followed by commerce and industry.

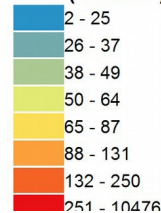
References:

1. CEREMA estimations, July 2018
2. INSEE population census 2010

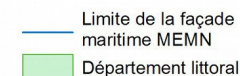
Population density in the coastal departments of the Eastern Channel-North Sea coastal area, 2010



Densité de population 2010 (hab/km²)



Limites administratives



Sources : DIRM MEMN
INSEE : RP2010

Copyrights : © BDTopo (IGN), EEA

Réalisation : Cerema / DTer NC

Date : 12/2015

MARITIME AND COASTAL ACTIVITIES - PORTS AND TRANSPORT

France is the world's second largest exporter of agricultural products and the fourth largest exporter of goods (measured in tonnes), and maritime transport is an important economic sector. Maritime transport covers shipping and commercial maritime ports, including the transport of **goods** (liquid and dry bulk, oil products, containerised and non-containerised goods) and **passengers** (ferries and cruise ships).

The major ports in the coastal region (Dunkirk, Calais, Le Havre and Rouen) are drivers of strong economic activity, generating direct, indirect and induced employment. These ports alone account for over 96% of total port activity in the coastal region and they play a key role in maritime transport in Europe and around the world. And **55.4% of mainland goods transport and 60% of national ferry passenger transport is concentrated in the Eastern Channel-North Sea coastal area**. The region also has 2 TSS (Casquets and Pas de Calais), reflecting the importance of maritime traffic (20% of global traffic passes through waters off the coast of the area). To keep their diversified transport activities economically competitive, the ports of Le Havre, Rouen and Paris grouped together to form the Economic Interest Group (EIG) **Haropa**, to give coherence to freight transport in the Seine artery. The **Ports of Normandy Authorities (PNA)**, which groups the ports of Cherbourg and Caen-Ouistreham, accommodate a large volume of ferry passengers and have a partnership with Haropa. The port of Cherbourg specialises in marine renewable energy.

The maritime and river ports of the Hauts de France region similarly joined together in January 2017 under the banner of the **NordLink Ports** association. The membership comprises: GPM Dunkirk, the ports of Calais, Boulogne (through the Société d'exploitation des Ports du Déroit), Le Tréport, the river ports of Lille, Valenciennes, Béthune, the Oise, and the Delta 3 hub (multimodal platform in Dourges). The association aims to develop freight transport and also supply the Paris Basin.

In addition, the coastal area also boasts a "dry" port, which facilitates cross-Channel travel for over 20 million passengers a year via the Channel Tunnel, accounting for 47% of passenger traffic between France and the United Kingdom.

Maritime transport is a major contributor to the **30% of waste that is marine based (container loss included)** (UNEP 2005). Pressure related to noise is considered quite high in the waters of the Eastern Channel-North Sea coastal area (Marine Environment Action Plan, Eastern Channel-North Sea - PAMM, MMN 2012).

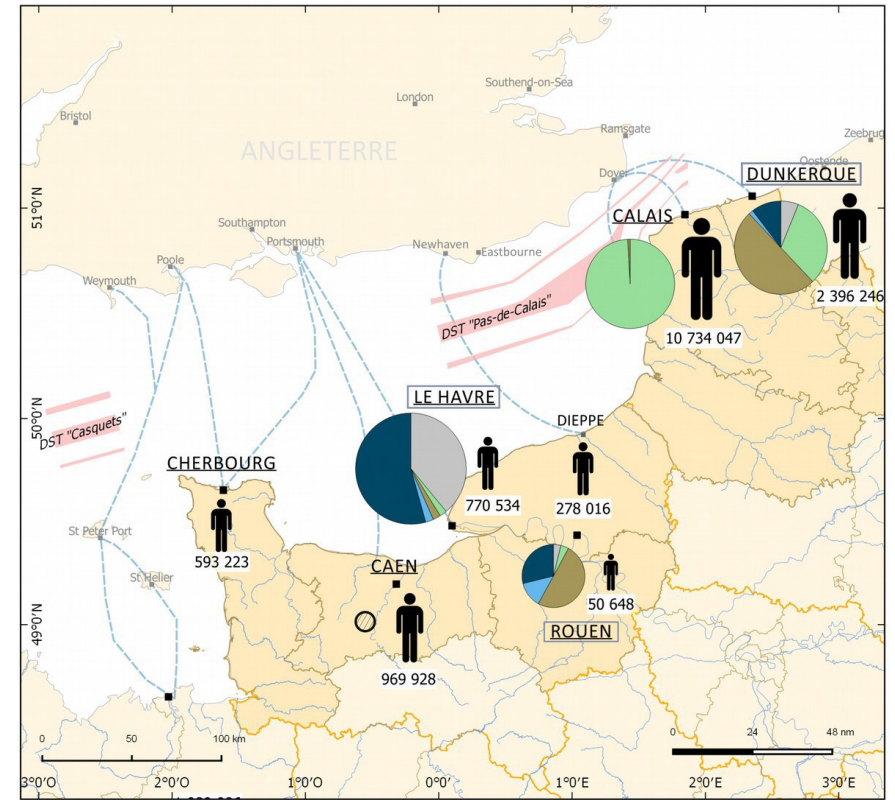
In the midst of major economic and social issues, the maritime transport and port sector faces the challenge of adapting to new economic and tourism circumstances dominated by **Brexit**, as well as developments in maritime transport. Connections with the hinterland - a port's catchment area - are vital to a port's operation, and they are set to improve through the **development of bulk transport networks** (modernisation of the Serqueux-Gisors rail link, new Seine-Nord Europe canal project). Finally, the focus on the impact of port and transport activities on the quality of the marine environment will help to ensure marinas remain attractive.

National rankings of the main ports in the Eastern Channel-North Sea coastal area.

Sources: Soes/SDES; Haropa-Le Havre Port, 2015; GPM Dunkirk, 2015, Soes, 2015; ONML, 2014

Le Havre	2 nd for goods traffic; 1 st for containers
Rouen	6 th for freight traffic; 1 st grain port
Dunkirk	3 rd for goods traffic
Calais	1 st for passenger transport; 4 th for freight transport

Appendix no. 1: Detailed description of activities



Légende

Transport de personnes et de fret

■ Ports concernés

Fret (en millions de tonnes)



Passagers

■ Nombre de passagers par port

Informations supplémentaires

■ ROUEN Grands ports maritimes

■ Dispositif de séparation du trafic

--- Liaisons ferry (d'après DCSMM cycle 1)

■ Principales villes côtières européennes

--- Principaux fleuves français

--- Limites départements français

--- Limites de la sous-région marine Manche - Mer du Nord

■ Départements littoraux

Note : Le détail du trafic de fret n'est pas disponible pour le port de Caen

Sources des données : DIGITM / 2014 ; CEREMA

Fond de carte : SHOM, IGN, SANDRE, AFB
Système de coordonnées : WGS 84 / Pseudo Mercator

Date de réalisation : 22/1/2018

MARITIME AND COASTAL ACTIVITIES - MARITIME PUBLIC WORKS

Maritime public works involve all **activities on and under the sea, dredging, construction and renovation** (ports, dikes, docks etc.) and **flood protection works**. These works aim to protect populations and maritime installations from marine submersion and also to meet the requirements of the maritime transport and fishing sectors and leisure activities, by guaranteeing continued sea access and adapting infrastructure. They are essential for exploiting marine and river resources and play a major socio-economic and environmental role.

Dredging to **maintain shipping channels** in the three “Grands Ports Maritimes” (GPM) of Dunkirk, Le Havre and Rouen alone accounts for over 68% of the total volume dredged in 2015 in the Eastern Channel-North Sea coastal area ¹. It is a significant expense for ports and requires skilled workers. Dredging is also carried out to **improve maritime access** – mainly for merchant ships – and for **port renovation**.

In comparison with other coastal areas, active companies in the regions with a coastline in the Eastern Channel-North Sea coastal area carry out **between 25% and 35% of the turnover of maritime and river public works in mainland France**. Of the 34 million m³ sediments dredged in mainland France in 2015 during works to dredge basins and shipping channels, 50% came from the Eastern Channel-North Sea coastal area.

Most dredged sediment (93.4% of the dry material in 2015) is disposed of in the sea and is therefore not deposited on land or used for beach nourishment². In 2015, the Eastern Channel-North Sea coastal area had **19 sea disposal sites** and the volumes dredged and disposed of are mostly composed of mud and sand.

Dredging and disposal at sea of the sediments create significant pressures and impacts on the marine environment. International, European and national level regulation is in place to ensure controlled and environmentally responsible management of these activities. In France, the interpretation of international conventions and standards means only dredging sediments handled on land are considered waste.

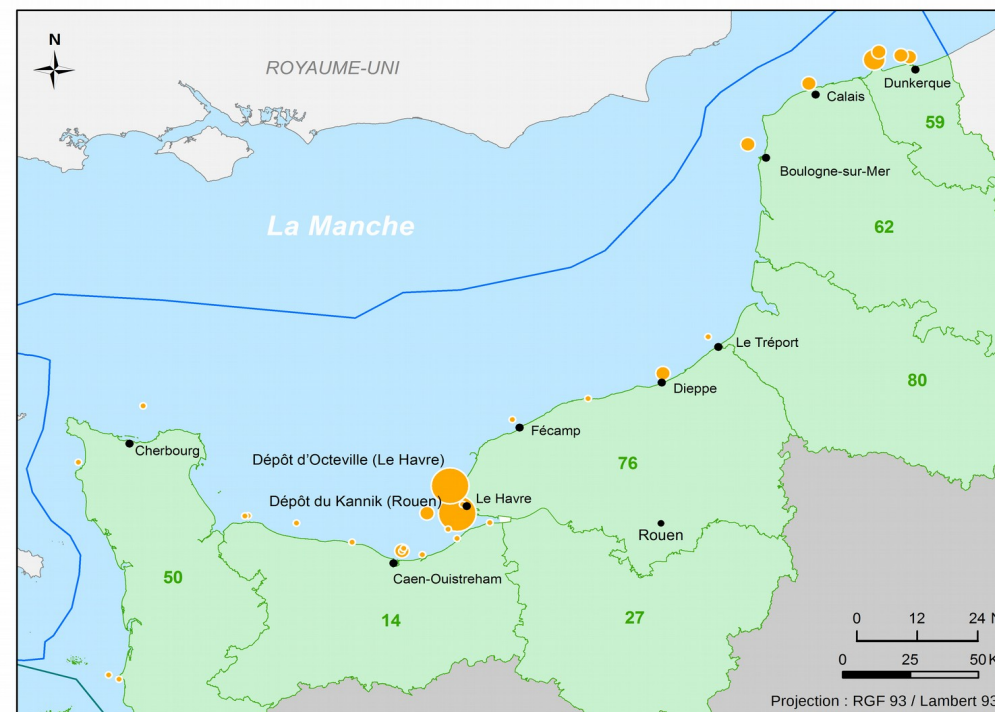
The stakeholders participating in the 2009 Grenelle of the Sea reached a consensus on the need for better coordination of dredging operations and management of sediments, leading to the proposal for the development of **territory based guidance schemes for dredging and management of sediments (SOTOD)**. In 2016, the Sea basin council for the Eastern Channel-North Sea sea basin expressed the need to set up SOTODs in all ports (they are already in place in the ports of Rouen and Dunkirk), in order to inform all relevant stakeholders, to plan coherent operations with the coastal area and, as far as possible, to harmonise administrative procedures to standardise best practice.

References: 1 and 2. CEREMA, Technical Division for Water Sea and Waterways, 2015, Annual survey of DDTM and GPM

Recent port investment projects of the E. Channel – N. Sea coastal area

Haropa EIG	Calais	Dunkirk
Upgrading, increasing capacity, diversification of activities, intermodality	Calais Project 2015, doubling port capacity	Redevelopment of the Cross Channel terminal, improving sea access, logistical platform and extension of the container terminal
2015	2015-2021	2014-2018

Sites d'immersion de sédiments dragués sur la façade maritime Manche Est - mer du Nord



Quantité de Matière Sèche (QMS) immergée par site (en millions de tonnes) entre 2005 et 2014

- 0 - 1
- 1 - 5
- 5 - 10
- 10 - 30
- 30 - 57

● Principaux ports

Limites administratives

- Limite de la façade maritime MEMN
- Département littoral

Sources : DIRM MEMN
DTec EMF

Copyrights : © BDTopo (IGN), EEA

Réalisation : Cerema / DTer NC

Date : 01/2017

NB: The Machu disposal site replaced the Kannik disposal site in 2017

Appendix no. 1: Detailed description of activities

MARITIME AND COASTAL ACTIVITIES - MARITIME FINANCIAL SERVICES

Maritime financial services include **maritime banking services** and **maritime insurance**. Maritime banking services primarily involve the **financing of port facilities and transport vessels**, and the **financing of offshore energy exploration and production projects** (oil, gas and marine renewable energy). Maritime insurance concerns direct business and reinsurance in France and overseas, grouped into four categories: **insurance of goods** transported by sea, river or overland; **hull insurance** for maritime and river vessels, fishing and recreational boats; **offshore energy insurance** (container terminals, ports, offshore platforms and underwater pipelines); and **third party liability insurance**.

A number of banks operating in France are active in the maritime transport and offshore energy markets, but French insurers are all but absent from the offshore energy insurance markets. Since 2012, the international context has been marked by a number of factors affecting maritime financial services: the **fall of freight rates** due to transport overcapacity, and **increased competition** in the insurance market, which contributed to lower premiums and a move towards consolidation affecting insurance and brokerage. In 2014, French companies formed the 7th largest market in the world.

There are many risk areas in the Eastern Channel-North Sea coastal area, justifying the importance of efficient maritime insurance for transport and offshore energy operators. Navigational risks are demonstrated by the presence of two **Traffic Separation Schemes (TSS)** off the coast of Cherbourg and in the Pas-de-Calais, but also by operations of the Regional Operational Centres for Monitoring and Rescue (CROSS) on merchant ships and fishing vessels, which are relatively higher than in other mainland coastal areas.

Pressures on the marine environment from maritime insurance activities are indirect, and carried out by marine users as a result of financial incentives, whether or not there is the risk of environmental damage.

Marine environment regulation from the **International Maritime Organisation (IMO)** is becoming increasingly restrictive for maritime transport, with the transposition of IMO rules into EU law, which refer extensively to the **polluter pays principle** and to the **concept of environmental liability**. The introduction of the concept of **environmental damage** into the French Civil Code (2016) facilitates the judicial process for recognition of such damage and may contribute to grounds for operators' environmental liability, and insurers have to adapt to this. New issues have arisen from computerisation of the supply chain and **cyber risk** is becoming increasingly important for insurers of vessel hulls and transported goods, as well as for port operators. The trend for opening new sea lanes in the Arctic, if it continues to gain momentum, will also have implications for insurance policies.

Finally, short and medium-term challenges for the maritime insurance sector revolve around whether increased competition will be followed by mergers and acquisitions in the insurance and brokerage market, or whether it will be discouraged by low premiums.

References: Griz-Nez CROSS (Eastern Channel-North Sea) and Jobourg CROSS (Central Channel-Cotentin)

Appendix no. 1: Detailed description of activities

Summary of risks in the Eastern Channel-North Sea coastal area in 2014

Only medium to permanent occurrences are shown, the number of events in these categories and documented in 2014 for the coastline are included.

Dangerosité	Occurrence	MMDN 2014	Survenance
Aléas Météo-Océanique			
Conditions de mer dangereuses (bulletin météo spécial => 7 Beaufort)	Permanente	120	/
Température de l'eau de mer favorisant les risques d'hypothermie rapide (<10°C)	mi-février à mi-mars	38 jours	/
Visibilité limitée (brouillard)	Permanente	17 à 35 jours	/
Traffic commercial			
Avarie	Permanente	176	/
Pertes de cargaison	Forte	4	/
Sinistre à bord	Forte	2	/
Collision	Forte	4	/
Echouement	Forte	5	/
Transport de cargaisons dangereuses			
Deversements hydrocarbures	Forte	7	M&N
Obstructions			
Épaves	Forte	3	/
Navire en difficulté (perturbation du trafic)	Forte	5	/
Lignes de mouillage ou câbles	Forte	5	/
Pertes de cargaison	Forte	4	/
Engins explosifs - entrave à la navigation	Permanente	8	/
Élice engagée (appareils de pêche)	Permanente	49	/
Installations offshore (extrapolation)			
Phase de construction	Moyenne	/	Sheringham Shoal 2012
Installations terrestres			
Deversement hydrocarbure (terre → mer)	Moyenne	1	/

MARITIME AND COASTAL ACTIVITIES - SHIPBUILDING AND NAUTICAL INDUSTRIES

The shipbuilding and smaller boat construction sector is divided into sub-sectors, separated by their products and markets. It comprises **civil shipbuilding** (commercial, fishing and service vessels), **construction and repair of military vessels**, repair of civil vessels, **construction and repair of recreational vessels**, and **shipbreaking** (vessel dismantling and recycling).

Upstream of shipbuilding is the **naval equipment** sector, comprising the manufacture and supply of vessel equipment (propulsion, on-board cargo handling, pumps, ventilation, paint, etc.) and the service provision sector (ventilation installation, cabin areas, etc.).

French shipyards are dynamic and specialise in defence vessels, passenger ships, offshore service vessels, fishing boats and port service vessels¹. The French shipbuilding and repair sector directly employs around **42,000 people** and is ranked **2nd in Europe** in the global civil and military market², is the **world's 4th largest** producer of motorboats, and is **world leader** in the sailing and board-riding sports markets.

In the Eastern Channel-North Sea sea basin, **shipping and marine industries account for 8% of industrial facilities in the region**. Of the **2600 businesses**, 69% are military, fishing and commercial shipbuilding, 8% are recreational vessel construction and 23% ship repair and maintenance. The majority of these businesses are located in the ports of Cherbourg-en-Cotentin, Port-en-Bessin, Caen, Le Havre, Fécamp, Dunkirk, Abbeville and Boulogne-sur-Mer.

Since the early 2000s, many new regulations have been adopted, aimed at limiting the sector's adverse impacts on the environment (for example the ban on tributyltin (TBT) in ship paints). To support the sector, the State has introduced 2 measures to strength coherence: the sector strategic committee and Project Ocean 21, intended to promote cooperation between the sector's major firms and equipment manufacturers. The sector's future is also considered, with serious research into innovative solutions for environmentally friendly ship production and operation. This is demonstrated in the calls for "Ships of the Future" projects, which will fund research into hybrid technologies. In this context, the Boulogne-sur-Mer shipyards have converted a fishing vessel to test a hybrid engine.

In Normandy, the marine industry comes together under the banner of the **Normandy Marine Sector (F2N)** association, which has developed 5-year strategic plans organised around 4 major objectives: promote the development of port areas; promote collaborative innovation; support members' growth in key and emerging markets; stimulate synergies between stakeholders.

For the shipbuilding sector, the major challenges are establishing real coherence in order to gain market share and continue to stay ahead of international competition and maintaining skilled jobs in the coastal area's maritime territories. In order to achieve this, research and development are essential, in addition to expanding activities into new markets such as marine renewable energy.

References: 1. Kalaydjian R. and Girard S., *French Maritime Economic Data* Ifremer, June 2017

Appendix no. 1: Detailed description of activities

Employment in the ship and boat building-repair sector, 2014

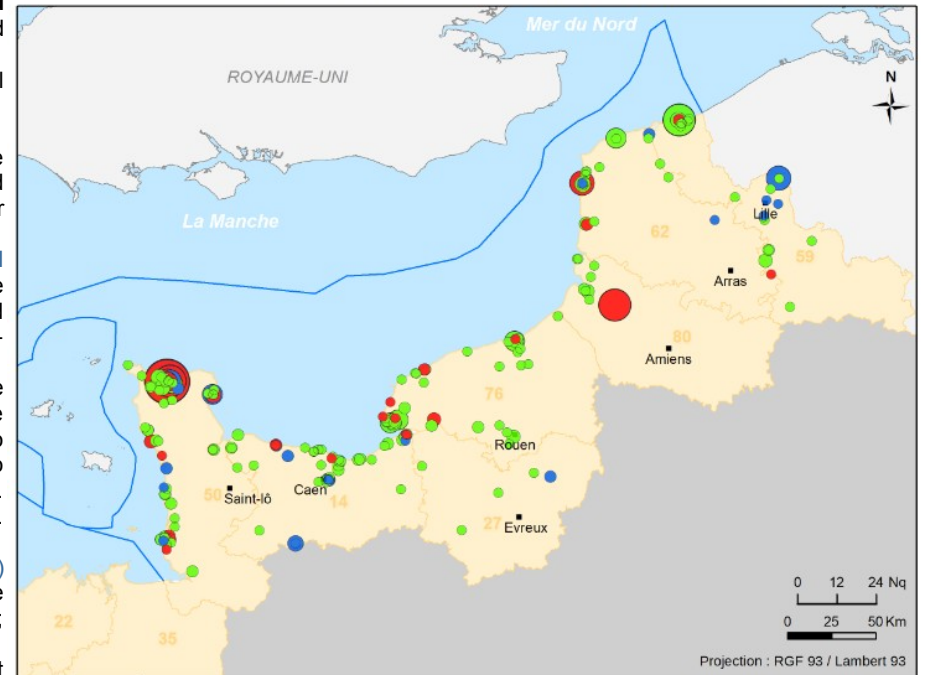
Establishments located in the coastal departments of the E. Channel-N. Sea coastal area.

Source: INSEE CLAP 2014, 30.11Z, 30.12Z and 33.15Z.

Indicator: number of FTE in 2014, data rounded up to the nearest 100.

Coastal departments	Employment (FTE) Civil and military shipbuilding (30.11Z)	Employment (FTE) Ship repair and maintenance (33.15Z)	Employment (FTE) Recreational boat construction (30.12Z)	Total employment (FTE)
Manche	1700	100	100	1900
Nord	0	200	100	300
Pas-de-Calais	100	100	0	200
Seine-Maritime	100	100	0	200
Somme	<50	<50	0	<100
Calvados	<50	<50	<50	<150
Total E. Channel-N. Sea	<2000	<600	<250	<2850

Établissements de la filière nautique sur la façade maritime Manche Est - mer du Nord



Établissements de construction et de réparation

Hiérarchisation des établissements par classe d'effectifs

- sans salarié
- de 1 à 5 salariés
- de 6 à 9 salariés
- de 10 à 19 salariés
- de 20 à 49 salariés
- de 50 à 99 salariés
- de 100 à 499 salariés
- de 1000 à 1999 salariés

Établissements (par type d'activité)

- 3011Z, Construction de navires et de structures flottantes
- 3012Z, Construction de bateaux de plaisance
- 3315Z, Réparation et maintenance navale

Limites administratives

- Limite de la façade maritime MEMN
- Département littoral

Sources : SIRENE (INSEE)
BDTopo (IGN)
EEA

Réalisation : Cerema Normandie-Centre



Date : juin 2018

MARITIME AND COASTAL ACTIVITIES - SUBMARINE CABLES

Cable-related activities include the **manufacture, installation and maintenance** of undersea cables for carrying **communications** or **electric power**. Only a small number of companies operate in the sector.

Installation and maintenance operations are carried out using **cable ships**; as of 1 January 2017 the French fleet accounts for **10¹** of the fifty cable ships across the globe. The manufacture of telecommunications cables has declined since 2011, while the manufacture of power cables and installation and maintenance operations have been growing steadily since the mid-2000s².

Cables can be placed on the sea bed, attached with anchors, clamps, riprap or sleeves, or they can be buried in a trench using a remotely operated, line-guided, vehicles. With the increase in the number of decommissioned undersea cables (in particular telecommunications cables), it is highly likely that removal operations, for which little information is available, will play an increasingly significant role in the sector.

The Eastern Channel-North Sea coastal area has the **largest electrical transmission capacity of all the coastal areas**, due to its proximity to the United Kingdom. It **also has a high density of cables, which are mainly telecommunications cables between the British Isles and the continental mainland**.

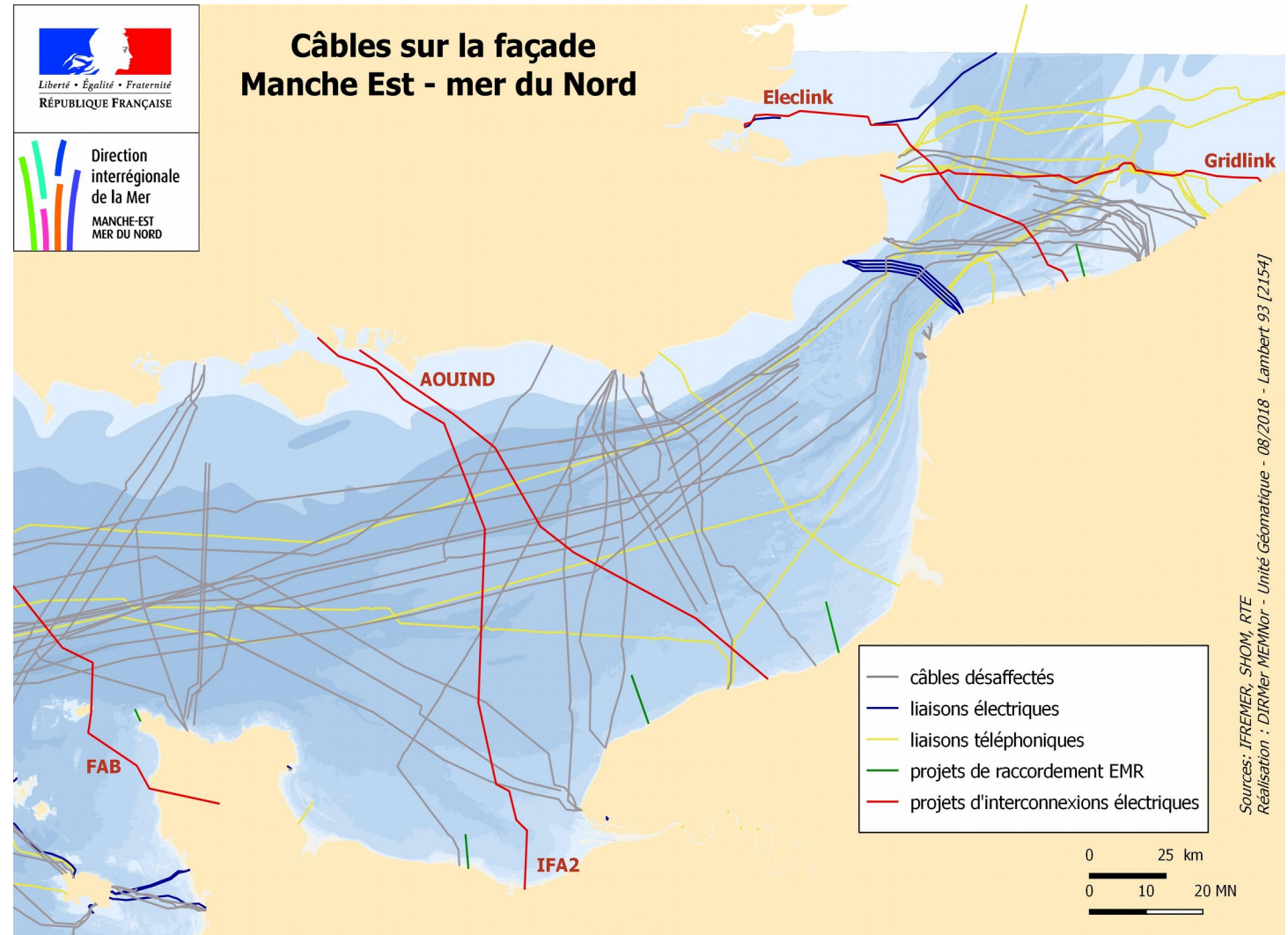
In the coming years, cable laying activities will mainly focus on electricity cables, including connections for marine renewable energy installations and electricity interconnections. Concerning the latter category, there has been a multiplication of projects, initiated both by institutional and private actors, with 5.8 GW of new sea capacity in development in the Eastern Channel-North Sea coastal area.

Pressure on the marine environment from cable activity is mainly caused by sea bed preparation and burying during cable laying. Once the cable was installed, little environmental impact has been observed, but environmental monitoring of ongoing projects and instrumentation of future sea sites will help improve knowledge.

References:

1. Armateurs de France, 2017
2. Cluster-maritime.fr

Appendix no. 1: Detailed description of activities



MARITIME AND COASTAL ACTIVITIES - EXTRACTION OF MARINE MATERIAL

The Eastern Channel-North Sea coastal area has 7 extraction sites. In 2014, marine aggregate extraction in the Eastern Channel-North Sea coastal area accounted for 27% of national production and had a turnover of approximately 14 million euros.

The development of marine aggregate exploitation forms part of the policy of resource complementarity encouraged by the National Strategy for the Sustainable Development of Aggregates produced by the Ministry responsible for the Environment. It aimed at offsetting the predicted depletion of onshore deposits mined in quarries, which face increasing environmental and social pressure, while maintaining logistical coherence (waterways and shorter distances on land), and ensuring impact control.

Indeed, marine aggregates have the same geological characteristics as alluvial land aggregates and serve as the perfect complement, in particular in coastal areas where it accounts for 20 to 60% of the needs.

In France, aggregate extraction is mainly used for construction materials and in agriculture. There is a high demand for beach nourishment material: nationally, with between 2 and 3 million tonnes being required each year.

The Eastern Channel-North Sea coastal area has 6 authorised marine aggregate extraction concessions and 1 concession pending, for a total maximum annual volume of 10,345,000 m³.

While marine aggregates have been extracted for over 50 years, the authorisation of new sites is more recent (2012-2014) and the sector is becoming more structured, with the creation of new port reception facilities. In 2014, the volume extracted amounted to 828,998 m³, approximately 27% of the year's total national production. Activity is closely related to the economic vitality of the construction industry.

The prospects of exhausted land deposits in the Seine Valley, the needs of the Greater Paris region and INSEE forecasts that indicate an increase in the population living along the coast, all point to an anticipated increase in aggregate extraction in the concessions in the coastal area.

The exploited resources come from paleovalleys in the Channel, with deposits estimated at 149 billion m³.

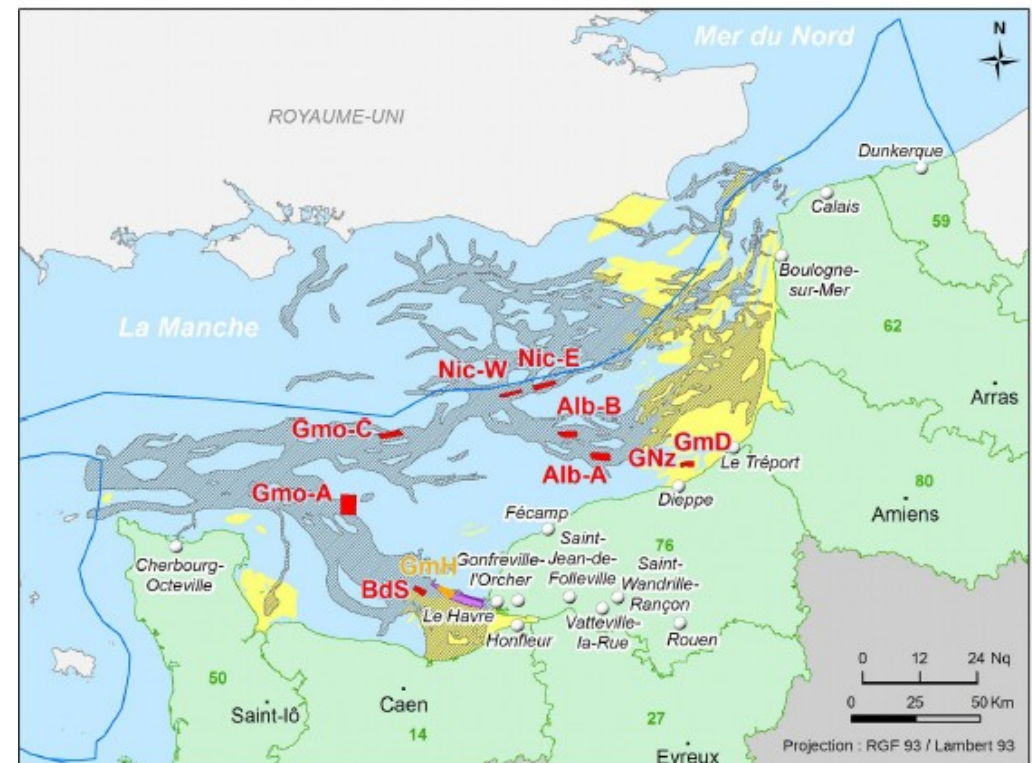
Siliceous materials extracted in Normandy and Hauts-de-France are mainly used for the manufacture of ready-mixed concrete. For some areas in the Seine-Maritime department, marine aggregates are the main contributor to meeting total demand for aggregates (as high as 82% for the Le Havre-Fécamp area). Marine aggregates can also be used for beach nourishment, a low impact method of coastline management, and one which is increasing in the Eastern Channel-North Sea coastline.

In the coastal area, the sector has a workforce of 110 and generates around 230 indirect positions. All aggregate extraction is carried out by 13 mining vessels, using 14 ports for discharging.

The Baie de Seine was the site for experimental mining led by GIS SIEGMA, the aim of which was to measure the environmental impact of full-scale marine aggregate extraction (seabed morphology, benthic and fish compartments, the fish-benthos trophic web, thesis on the study of turbid plumes caused by extraction), as well as the impact on fishing.

The main potential pressures from marine aggregate extraction concern morpho-bathymetric changes to the seabed and removal of benthos. Evaluation of the studies shows that the effects of extraction are localised, time limited and reversible.

Concessions en Manche est - Mer du Nord



Limites administratives		Ressource en granulats marins		Exploitation des granulats	
— Limite de la façade MEMN		sables, graviers, galets		Les sites d'extraction	
■ Département littoral		■ sables		■ Exploitation autorisée	
				■ Permis Exclusif de Recherche	
				■ Concession en cours d'instruction	
				○ Port de déchargement	

Id	Nom du site d'extraction	Stade de la concession
Alb-A	Côte d'Albâtre - zone A	Extraction
Alb-B	Côte d'Albâtre - zone B	Extraction
BdS	Baie de Seine	Extraction
GmD	Granulats marins de Dieppe (ex Graves de mer)	Extraction
GmH	Granulats marins Havrais	Permis Exclusif de Recherche
GmH	Granulats marins Havrais	En cours d'instruction
Gmo-A	Manche Orientale - zone A	Extraction
Gmo-C	Manche Orientale - zone C	Extraction
GNz	Gris Nez	Extraction
Nic-W	Saint-Nicolas (Ouest)	Extraction
Nic-E	Saint-Nicolas (Est)	Extraction

Sources :	DIRM MEMN UNPG Ifremer (sextant.ifremer.fr)
Copyrights :	© GEOFLA (IGN), EEA
Réalisation :	Cerema / DTER NC
Date :	05/2016

References:

1. UNPG

Appendix no. 1: Detailed description of activities

MARITIME AND COASTAL ACTIVITIES - ELECTRICITY PRODUCTION

While generation units interacting with the coastal waters of the Eastern Channel-North Sea coastal area are primarily **nuclear (15 reactors)** in the coastal area at the end of their service life, momentum for the development of new facilities mainly concerns marine renewable **energy (MRE)**. The coastal area is mainly focusing on wind energy and marine current projects. In addition, six power plants currently use the marine environment as a cooling source.

In relation to offshore **wind projects**, **4 wind farms** with a total capacity of almost **1.95 GW** are under development, with the first scheduled to come on line in **2022**. The **marine current** power sector is still at an earlier stage, testing reliability of the technology through 2 projects, including a **pilot farm with a capacity of 14 MW in Raz Blanchard** for potential commercial development in the future.

The expected main pressures on the marine environment from these installations are **noise generation and vibration** during the construction and operational phases, and the **introduction into the environment of chemicals** used to protect MRE structures.

Production d'électricité en Hauts-de-France et Normandie en 2016
Sources : RTE; DREAL Normandie (SECLAD/BCAE)

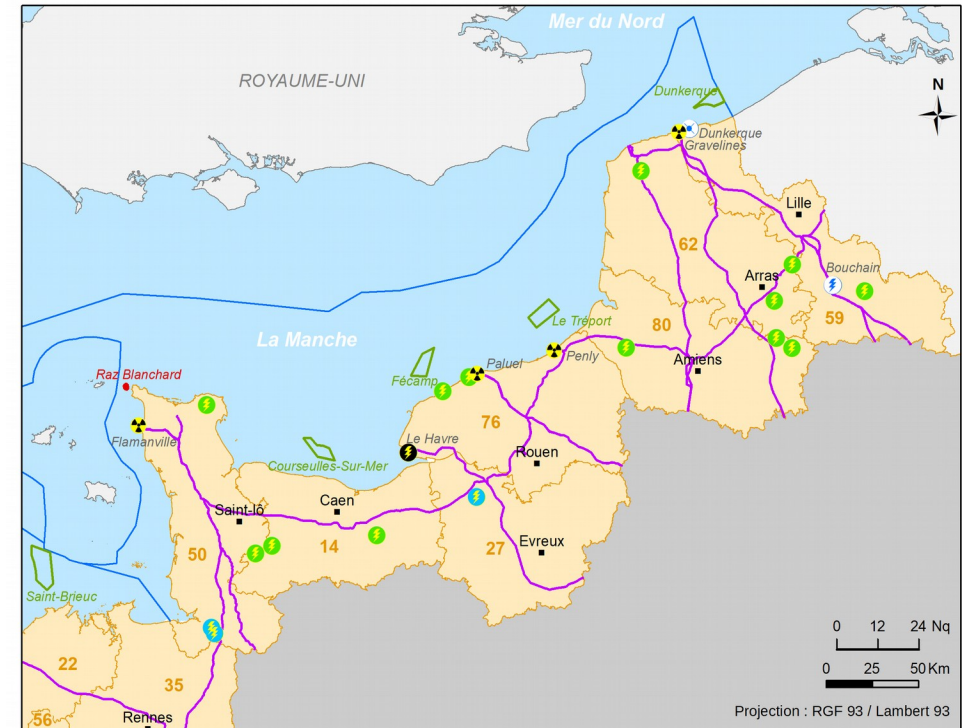
Production électrique en TWh	Régions de la Façade Maritime	France Métropolitaine	Part des régions de la façade dans la production française
Production électrique totale	109,8	531,3	20,70%
Production d'électricité d'origine renouvelable	7,9	101,4	7,70%
Production d'électricité d'origine nucléaire	88,5	384	23,10%
Production d'électricité d'origine fossile	13,5	45,9	29,30%

Production d'électricité attendue des projets d'éolien en mer à l'horizon 2030
Sources : RTE; DREAL Normandie (SECLAD/BCAE)

Projet éolien en Mer	Production en TWh	soit % du mix électrique des régions de la façade	Augmentation de la production d'électricité d'origine renouvelable des régions de la façade
Fécamp + Courseulles-sur-mer	3,3	3,0%	42,3%
Ajout de Dieppe-Le Tréport	5,1	4,6%	64,4%
Ajout de Dunkerque ⁽¹⁾	6,8	6,2%	86,8%

⁽¹⁾ Puissance estimée à 500MW et facteur de charge de 40%

Production d'énergie sur la façade maritime Manche Est - mer du Nord



Projets d'énergies marines renouvelables

- Eolien posé: site attribué ou en projet
- Ferme pilote hydroélectrique

Sites de production opérés par EDF à terre

- Centrale nucléaire
- Parc éolien
- Centrale Cycle combiné Gaz
- Centrale thermique Charbon
- Barrage
- Terminal méthanier

Principales lignes de transport d'électricité

- Ligne très haute tension (400kV)

Limites administratives

- Limite de la façade maritime MEMN
- Département littoral

Sources : DIRM MEMN
MTEs Cerema
EDF 2018
© BDTopo (IGN)
EEA
Réalisation : Cerema Normandie - Centre
Date : 06/2018

Appendix no. 1: Detailed description of activities

MARITIME AND COASTAL ACTIVITIES - OFFSHORE OIL AND GAS SERVICES

Offshore oil and gas services comprise the supply of oil and gas services and equipment for **exploration** and **production**, **refining** and **petrochemicals**. Works and equipment for the transport of hydrocarbons (pipe laying, construction of LNG carriers and gas terminals, etc.) are also part of the sector, whereas the distribution, use and transport of hydrocarbons are not.

The French oil and gas service sector is mainly international (over **90% of the sector's revenues** are generated **abroad**), and most domestic activity is land-based (Paris and Aquitaine basins). The French offshore sector is the world's **second largest exporter of offshore extraction support services**, and accounts for over a quarter of the value of marine economic production¹.

Since the fall in oil prices in 2014, there has been a global downward trend in exploration-production investment, offshore drilling and offshore construction. With little regulation at international and community levels, the sector nevertheless generates heavy pressure on the marine environment, in particular noise pollution which may change the behaviour of some species, vibrations harmful to habitats and the risk of introducing toxic chemicals.

In the Eastern Channel-North Sea coastal area, the only oil and gas exploration activity took place between 1976 and 1996, with two exploratory drills (off the Baie de Seine), which did not result in an application for resource exploitation. The **FRANPIPE gas pipeline**, which carries gas from the North Sea to the gas terminal in the port of Dunkirk, has an annual capacity of around **18 billion cubic metres**, and covers a substantial part of the French annual gas consumption.

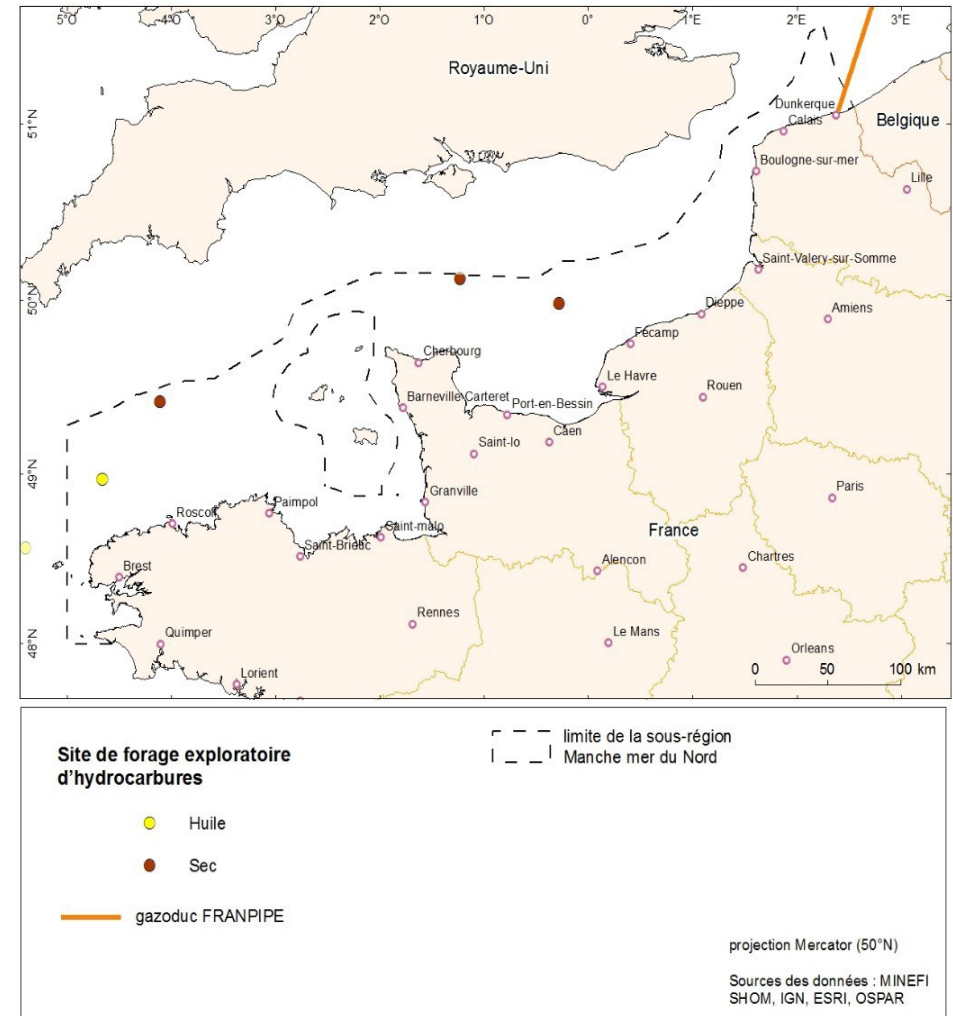
The **Law no. 2017-1838 of 19 December 2017** ends research and extraction of hydrocarbons in mainland France from 2040. It prohibits all new research permits ; permits already issued may be concluded and extended in the context of legally acquired conditions, but not after 2040. In 2040, only permits granted before the new Law are valid; the goal is to progressively phase out exploitation in order to become carbon neutral by 2050.

References:

1. cluster-maritime.fr

Appendix no. 1: Detailed description of activities

Hydrocarbon exploration sites in the Eastern Channel-North Sea (2011)



MARITIME AND COASTAL ACTIVITIES - COMMERCIAL AND RECREATIONAL FISHING

In 2015, the mainland fishing fleet comprised **4500 vessels** and **9700 seafarers (FTE)**. Fleet activity generates almost 1 billion euros in revenue and approximately 500 million euros gross value added. These figures are very similar to 2009 estimates, even though the mainland fishing fleet lost 4% of its vessels and 10% of seafarers since 2007. Seafood gathering is carried out all along the coast of the area, both by professionals and for recreation.

• An important coastal area for domestic fisheries:

In 2014, the Eastern Channel-North Sea sea basin had **780 vessels** (564 under 12 m and 216 over 12m) and **2233 fishermen**. The coastline area accounts for 18% of fishing vessels in mainland France and a quarter of its fishermen. In 2014, 138,000 tonnes of catches were landed, with a turnover of 238 million euros (24% of national turnover). 35% of this turnover is generated by vessels from Hauts-de-France and 65% by vessels from Normandy. Between 2004 and 2014, the coastline area's fishing fleet decreased, with sharper falls in the former regions of Nord Pas-de-Calais (-26%) and Lower Normandy (-18%).

• A diverse fleet distributed across the Eastern Channel-North Sea:

In order of significance (by number of vessels), the coastal area's most frequent trades are **bottom trawling, scallop dredging, net fishing, shellfish and whelk pots**. More recently, there has been the development of **bottom seine** fishing. The diversity of gear is reflected in the **wide variety of fish caught**. Five species account for over half of the turnover (scallops, sole, whelks, cod and mackerel). More recently, squid has become an important species for the trawler and seine fleets.

The region's main ports are **Granville, Port-en-Bessin, St Vaast La Hougue, Dieppe-Le Tréport, Boulogne-sur-Mer** (in 2016 France's leading fishing port by volume) and **Dunkirk**. While several vessels are equipped for deep-sea fishing (e.g. le Boulonnais vessels of the company EURONOR), the majority are inshore and small-scale vessels. The average vessel has 3 crew members, is 12 m in length and has an engine power of 153 kW.

• A fleet facing new challenges:

1. **The aging of the fleet** (average vessel age 24 years in 2014) is both a national and regional issue. The ban on public subsidies for vessel construction since 2004 means that companies have to make private funding arrangements for fleet renewal.

2. Marine fishing activities need to take into consideration the **sustainable management** of stocks. The Common Fisheries Policy (CFP) has thus set the goal of reaching an exploitation rate of stocks consistent with achieving Maximum Sustainable Yield (MSY) by 2020 at the latest. Concerns about the state of some stocks have led to the allocation of Total Allowable Catches (TACs) and quotas, or measures to limit catches (e.g. on sea bass in the northern zone in 2017 and 2018). A discard ban for non-target species and juveniles, and the obligation to land all catches results in serious constraints for the sector.

3. The **reduction of physical pressures** by the fleet on the marine environment and habitats is another challenge, particularly the implementation of the Marine Natura 2000 Network in the Eastern Channel-North Sea coastal area.

4. Competition for space at sea and **reconciling different uses** (with marine renewable energy for example) requires consideration of working practices and use of marine and coastal areas.

5. As the Eastern Channel-North Sea coastal area borders the **EEZ and territorial waters of the United Kingdom**, fishing vessels depend heavily on access to these waters; defending this access after Brexit is crucial for fishermen.

6. Belgian, Dutch, British and German vessels have access to the 6-12 mile zone to fish certain species. These so-called historic fishing rights are provided for in appendix I of EU regulation no. 1380/2013. The large presence of Dutch and Belgian vessels authorised to fish from the Belgian border to the Vire estuary warrants particular emphasis. In order for any framework for fishing activities in the Eastern Channel-North Sea Basin to be effective, this international dimension, as well as the number of fishing vessels from other countries operating in the zone, need to be taken into account.

• Commercial seafood gathering

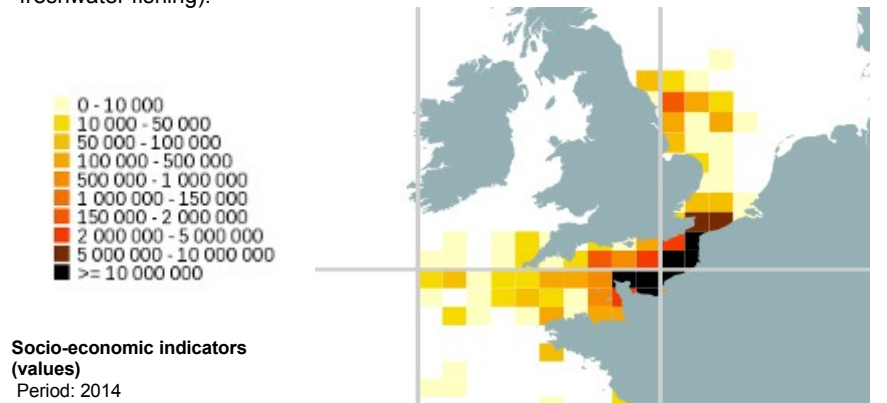
Commercial seafood gathering takes place the length of the area's coastline, in sandy as well as muddy and rocky environments. In 2012, production was 749 tonnes, 13.5% of national production, with cockles and mussels the main species gathered. 436 national permits were issued in the coastal area in 2018 (source: Ministry of Agriculture, DPMA). Mass mortality events caused by the vibrio bacteria are a major challenge for the fishery.

• Recreational fishing

Recreational sea fishing can be carried out on foot, on board a boat, or undersea, using different techniques and gear (seafood gathering, line, longline, net, trap, underwater speargun, etc.).

Seafood gathering is the most popular type of recreational fishing in the Eastern Channel-North Sea coastal area. Recreational coastal fishers spend an estimated 247 million euros, representing an added value of around 86 million euros.

Recreational fishing is difficult to evaluate and information is not easy to come by, due to the large number of enthusiasts, who are often mobile, diverse and dispersed, and also because there are no requirement for a licence (unlike for freshwater fishing).



Socio-economic indicators (values)

Period: 2014

Value: val

Unit: euros

Tool: ecov

Data: 03/08/2017

Generation date: 18/09/2017

Zones: North Sea-Eastern Channel

Vessel size: 0 m-10 m, 10 m-12 m, 12 m-18 m, 18 m-24 m

Revenue distribution (€) generated by vessels operating exclusively or mainly in waters bordering the Eastern Channel-North Sea coastal area by origin

Source: Ifremer - UEM, SIH based on DPMA data, Capacity Report 2016

MARITIME AND COASTAL ACTIVITIES - AQUACULTURE

Marine aquaculture is a heavily regulated sector that involves the farming of marine animals and plants. In France, the main aquaculture activities are **shellfish farming**, including oyster and mussel production, and fish farming. On a smaller scale, it also includes the farming of seaweeds (micro and macroalgae), known as algaculture.

In the Eastern Channel-North Sea coastal area, **marine fish farming** revenues were estimated at **16 million euros in 2013**, while the number of jobs was put at **104 FTE**. In the Eastern Channel-North Sea, fish farming production concentrates mainly on **rearing sea bream and sea bass** (Hauts-de-France) and **salmon** (Normandy). Sales of shellfish for human consumption in the area reached 24,200 tonnes in 2013, with a value of 70 millions euros.

For the **Eastern Channel-North Sea coastal area**, shellfish farming is the main activity, with a turnover of almost 128 million euros (11% of French shellfish farming company revenues) and employing 1416 people (FTE) in 2103 (17% of **shellfish farming jobs in France in 2013**, full time equivalent). Activity is mostly located in Normandy and on the East and West coasts of Cotentin. Unlike in other areas, shellfish farming does not appear to have been affected by the oyster mortality crisis.

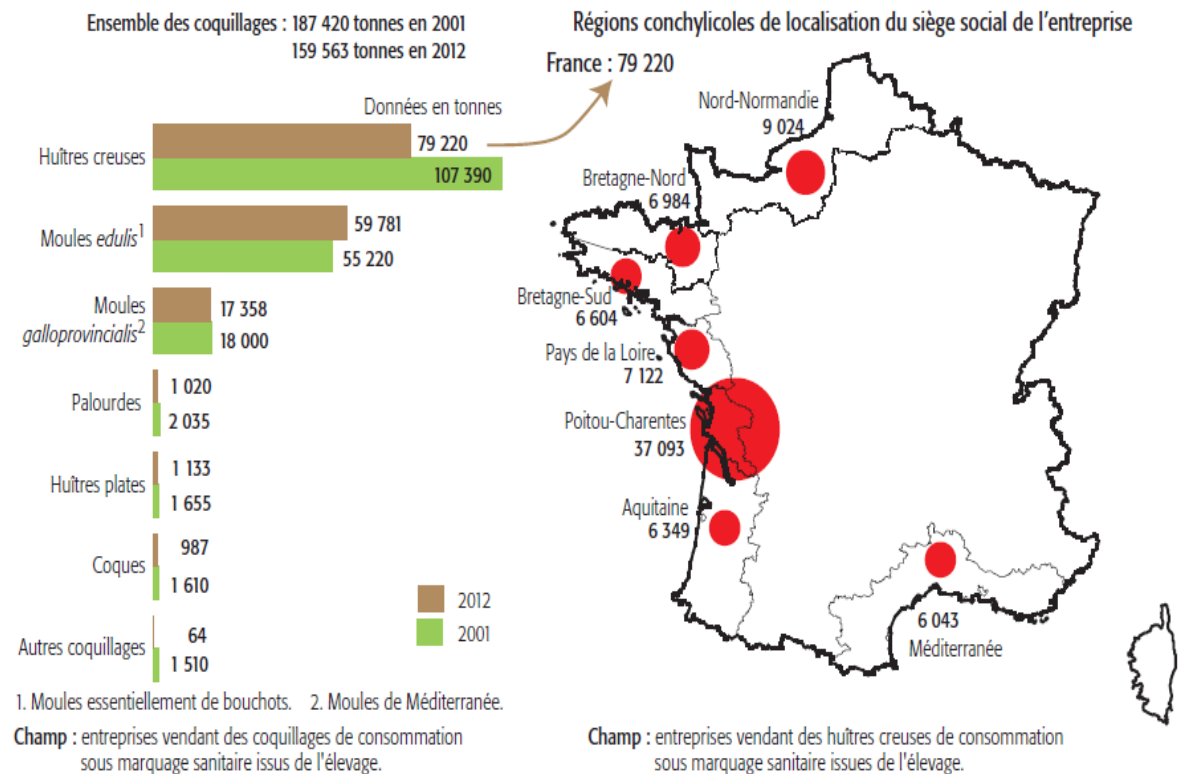
Between 2009 and 2013, the number of businesses remained stable and employment in the sector increased (+6%). Shellfish farming turnover in the Eastern Channel-North Sea coastal area, which reached 118 million euros in 2013, represented 16% of national turnover.

Marine aquaculture is very sensitive to marine environment degradation, whether caused by **chronic** organic, microbiological, chemical **pollution** or by **accidental** contamination. It is therefore very dependent on the **trophic state** and health of coastal waters. This quality is determined to a large extent by inflows from watersheds and can therefore be affected by many different factors. Recovering or maintaining the good status of water bodies is a major challenge for the sector. In addition to environmental quality, **increased shellfish mortality** also weakens business activity. To address this problem, more sustainable production practices have been adopted, together with the introduction of research programmes and monitoring networks, to get a better understanding and, if possible, reduce these mortality events.

Appendix no. 1: Detailed description of activities

Finally, aquaculture can also have an impact on the environment. Waste management (recycling and recovery), maintaining the public maritime domain and rehabilitation of the environment after operations have ended are also important sustainable development challenges. Achieving effective **sustainable integrated management of aquaculture** will help galvanise the sector by making it more attractive, and more generally improve the sector's image with the general public.

The aquaculture industry mainly operates on the foreshore and is faced with increasing demand and **strong competition for this limited and highly coveted space**. It is in this context that spatial planning emerged as a challenge for consolidation and potential development of the sector, in agreement with other users of the French coast.



MARITIME AND COASTAL ACTIVITIES - PROCESSING AND DISTRIBUTION OF SEAFOOD PRODUCTS

Processing and distribution of seafood products is a huge sector that is difficult to fully grasp, due to the complex structure of the downstream (supply) part of the sector.

The majority of processed products are sold in supermarkets and hypermarkets, but distribution channels also include direct sales (to consumers, wholesalers, processors, restaurateurs and exports), sales in fish markets (where produce is landed and where wholesale companies and outlets buy supplies), and raw material procurement (of which a large proportion is imported), processing and packaging. These activities involve many stakeholders, from fishermen to distributors, from transporters to consumers, and are in part regulated by Community law.

The **wholesale sector** is the main purchaser of fresh fishery products, two thirds of which are sold in fish markets. These companies carry out **first stage processing** operations (cleaning, emptying, deheading, filleting, preparation and packaging) and supply wholesale and retail outlets, as well as major retailers. The number of wholesale companies has been decreasing steadily over the past 20 years, while business volume has been growing (increase in turnover and employment in the sector).¹ The Eastern Channel-North Sea coastal accounts for 28% of jobs and 25% of turnover in the wholesale sector. Average turnover per business is 9 million euros, marginally below the national average.

The **seafood processing** industry comprises businesses whose main activity is to develop consumer goods for human consumption from fish, molluscs, crustaceans, cephalopods, using processes such as smoking, canning or the preparation of delicatessen products or prepared meals. Industry turnover is stable, while business volume is growing.² In 2014, the national structure of the seafood processing industry, with 302 companies employing 15,374 full-time equivalent workers, was stable compared with 2009, while business volume is growing, with a turnover of over 4.2 billion euros, against only 3.6 billion euros in 2009. The Eastern Channel-North Sea coastal area accounts for just over a fifth of the seafood processing sector, in terms of both the number of businesses and turnover. The average turnover per business is 13.4 million euros, about the same as the national average. The area specialises in prepared food, ready meals and soups segment, and almost half of the businesses in the area work in this segment.

The area has **8 fish markets** (Dunkirk, Boulogne-sur-Mer, Dieppe, Fécamp, Port en Bessin, Grandcamp-Maisy, Cherbourg, Granville) selling seafood. The fish market at **Boulogne-sur-Mer** is the largest. There is a downward trend in sales in most fish markets, both in terms of quantity landed and value. The best selling species are scallops, common sole, squid, whelks and whiting. Finally, several hundred fishmongers, as well as wholesale businesses are located in the coastal area. There are also around **sixty companies processing fish, crustaceans and molluscs**, employing around **3500 people**, mainly located in the **Pas-de-Calais** department and in particular in Boulogne-sur-Mer, Europe's leading seafood processing centre. The 20 largest companies employ three quarters of the total workforce.

To conclude, in the Normandy region, **Normandie Fraîcheur Mer (NFM)**, brings together fishermen, fish markets and wholesalers with the aim of guaranteeing the quality and sustainability of seafood products and to promote their industry.

Secteur du mareyage en Manche Est - mer du Nord (CA et VA en milliers d'euros).
Source : enquête FranceAgriMer. Données : 2015

	Classe 1 1 à 2 salariés	Classe 2 3 à 5 salariés	Classe 3 6 à 9 salariés	Classe 4 10 à 19 salariés	Classe 5 20 à 49 salariés	Classe 6 50 salariés et plus	Total/ Moyenne
Nombre d'entreprises	5	12	15	18	21	4	75
Emploi total	9	47	118	262	710	370	1 516
Chiffre d'affaires total	3 309	29 522	36 897	73 500	305 911	225 173	674 312
CA / entreprise	662	2 460	2 460	4 083	14 567	56 293	8 991
Valeur ajoutée totale	1 129	6 982	9 184	10 552	49 667	17 550	95 064
VA / entreprise	226	582	612	586	2 365	4 387	1 268

Nombre de halles à marée : 37



References:

1. Business survey FranceAgriMer 2015
2. 2014 survey, Service de la statistique et de la prospective/Statistics and Planning Agency (SSP)

MARITIME AND COASTAL ACTIVITIES - AGRICULTURE

The coastal departments of the Eastern Channel-North Sea coastal areas are characterised by field crop production, mainly cereals and oil seed and protein crops, and extensive dairy farming, mainly in the Normandy bocage.

The number of agricultural holdings declined by 29% over a 10 year period (2000-2010) and can be explained by the [upward trend in the number of large farms](#) at the expense of smaller ones. The utilised agricultural area remained the same over that period, while farm employment decreased by 26%.

Added value in the Hauts-de-France and Normandy coastal regions remains stable and was estimated at [4124 million euros in 2010](#). Organic agriculture continues to expand, with the number of organic farms in the coastal departments increasing by around 12% between 2014 and 2015.

In the Eastern Channel-North Sea sea basin, agricultural land covers [69% of the land area](#) of the 7 coastal departments. It is made up of [73% arable land](#) and [27% permanent grassland](#). Agriculture in the coastal area is dominated by arable crops and cattle farming. Arable farming is particularly prevalent in the **Eure** and the **Somme**, and the **Manche** department specialises in dairy farming. Elsewhere there is a mix of the two activities. More localised production is also a feature of agriculture in the coastal area: [horse breeding](#) in **Calvados** and **Manche**; intensive farming (pigs and poultry), while only minimally present in the region, is concentrated in the Manche and Nord, as are vegetable crops.

With an [annual production of 4.9 billion litres](#), a third of which is produced in the Manche department, the coastal area provides [20% of national milk production](#). 1.3 million hectares of land is used for [cereals and oilseed and protein crops \(COP\)](#), [11% of national production](#). The area has two key assets: some of the [highest agricultural yields in France](#), thanks to the oceanic climate, and the quality of the soil. The port of Rouen, the leading West European grain port, handles between 5 and 6 million tonnes of soft wheat every year, almost half of which comes from Normandy and Hauts-de-France. The area has three other emblematic products: [flax fibres](#) (78% of the national land area), [potatoes](#) (60%) and [industrial sugar beet](#) (32%).

In 2010, there were just over [48,000 agricultural holdings](#) in the department of the coastal area, providing [63,000 direct jobs](#) (full-time equivalent). The downward trend that has been ongoing for several decades continues at a rate of 2.5% per year. In Normandy and Hauts-de-France, agriculture had an average annual turnover of [more than 11 billion euros](#).

Chemical and biological waste from agriculture, often carried by rivers, puts significant pressure on the marine and coastal environments. A challenge for the sector is limiting the resulting environmental and health impacts.

On the right:

Territorial distribution of agricultural units in the coastal area according to their specialisation

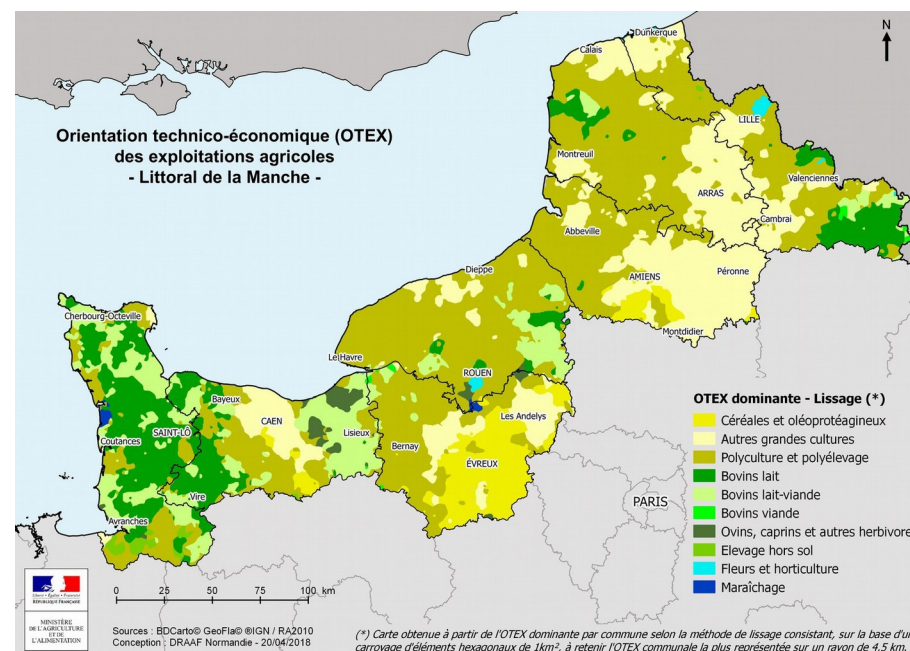
(An agricultural holding is specialised if the standard gross production of production(s) exceed two thirds of total production. OTEX is a European classification.)

Appendix no. 1: Detailed description of activities

Données de production en 2016

Sources AGRESTE : RA 2010 ; Statistique agricole annuelle 2016 ; comptes de l'agriculture 2010-

	UAA of farms (1000 ha)	Arable land (1000 ha)	Permanent grassland (1000 ha)	Dairy cows (1000 heads)	Milk production (Million litres)
Manche	422.5	238.1	183.0	244.7	1592.6
Calvados	377.6	227.6	146.8	100.0	628.2
Eure	376.2	318.3	56.0	31.9	226.7
Seine-Maritime	397.3	290.2	105.6	92.9	631.5
Somme	464.2	424.4	39.0	53.2	414.0
Pas-de-Calais	460.9	383.1	77.4	98.3	747.4
Nord	349.4	271.9	76.7	88.0	680.4
Total	2848.0	2153.5	684.5	708.9	4920.8



MARITIME AND COASTAL ACTIVITIES - TOURISM AND BEACH USE

Tourism is a key economic activity in the Eastern Channel-North Sea sea basin, with visitors attracted to the wide variety of sites and natural landscapes along the coast, and the region's rich cultural and historical heritage. In 2011, the Eastern Channel-North Sea coastal area accounted for **23% of all jobs in the tourist sector in France's coastal regions** and 9% of jobs in tourism at a national level. In 2013, the total number of overnight stays in the area's coastal departments accounted for 13% of all overnight stays on the French mainland coast, a slight reduction since 2008.

There is a strong link between tourism and the **natural characteristics of tourist sites**. For example, in municipalities with at least one protected area, the ratio of tourist accommodation capacity to their permanent population was higher than the national average in 2016. Heavily dependent on an environmentally sound and healthy waters, tourism nevertheless puts significant pressures on the coast and marine environments, particularly through waste and disturbance (nighttime activities, land artificialisation, etc.). The major challenges for the industry are **raising awareness** among tourists of environmental conservation by adapting tourism practices, and developing **plural and diverse tourism opportunities**.

Swimming and beach activities, excluding water sports, boating and tourist demand, affect around **two thirds of the French population**, according to opinion polls on the perception of the sea carried out by the market research organisation Brûle Ville et Associés (BVA) in 2014 and 2015.

And 11% of the sea bathing areas in mainland France are located in the Eastern Channel-North Sea coastal area. The **Manche** and **Calvados** have the most, with a total of **66% of the documented bathing areas** in the six coastline departments. **17% of these zones are developed and equipped** for swimming. In 2017, 7% of the **Blue Flag** beaches in mainland France were in the coastal area.

The **quality of bathing water** in the Eastern Channel-North Sea coastal area has on the whole remained stable since 2013, with the percentage of beaches classed as poor standing at 5%. At the end of 2017, 5 bathing areas were classed as poor for five consecutive years. These waters will be closed for swimming, at least for the 2018 bathing season. The main sources of pollution are water outfall discharges, collective and individual sewerage systems, runoff from agricultural spreading, discharge of bilge water. Some factors which demonstrate environmental degradation (green algae, waste, decline in water quality) can change tourists' perceptions of environmental quality.

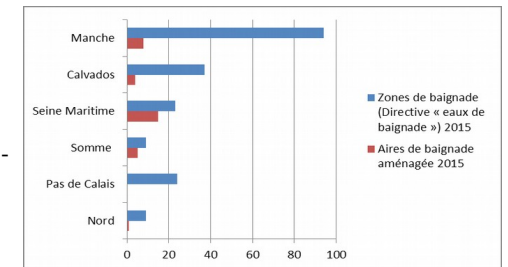
In addition to bathing, beach use is also economically important. It often takes place through **beach concessions**, allowing public or private persons to carry out economic activities for a fee.

To promote the sustainable development of beach tourism, the **Blue Flag** label was established in 1985. A Blue Flag beach has facilities for minimising visitor impact, safety precautions and beach access should be in place, and bathing water quality should be displayed, as well as information about the local flora and fauna.

Appendix no. 1: Detailed description of activities

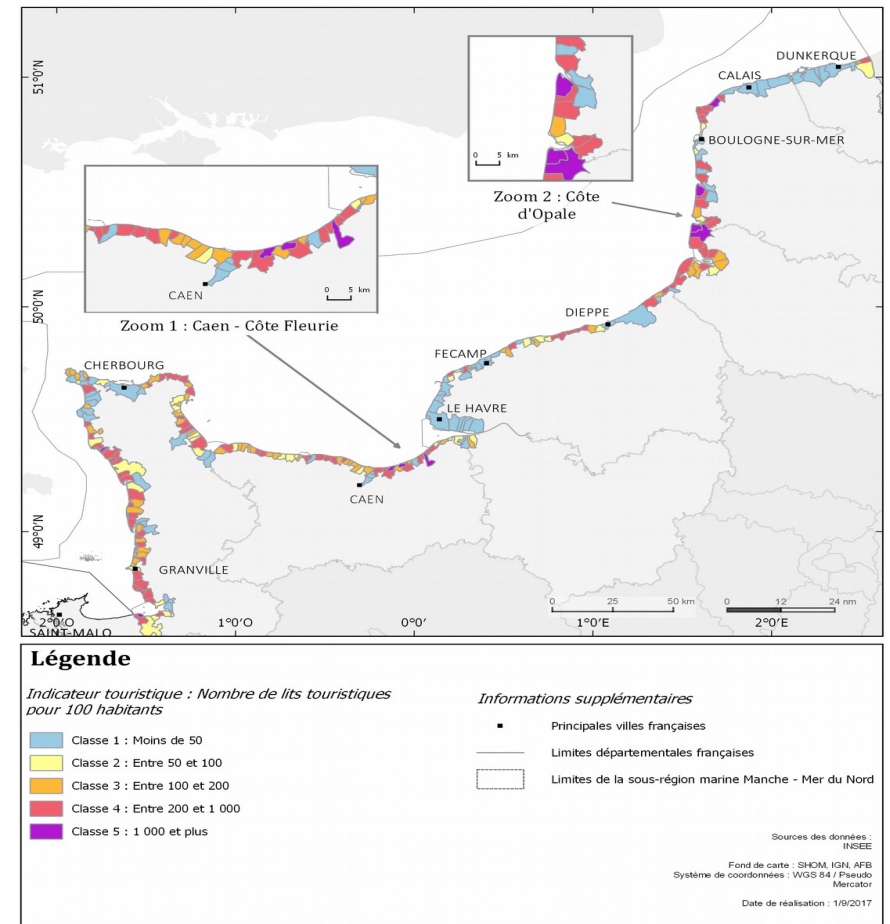
Bathing along the coast of Eastern Channel-North Sea coastal area

Source: Ministry of Health, Ministry for Sports - Census of sports facilities



Rate of tourist function by coastal municipality in the coastal area (2013)

Source: Insee, SoeS, 2017



MARITIME AND COASTAL ACTIVITIES- BOATING AND WATER SPORTS

A wide range of water sports and leisure activities are practiced from the coastline right out to open sea: (boating, sailing, kitesurfing, jet skiing and water skiing, scuba diving, sand yachting, canoeing and kayaking, rowing, walking in the sea or along the coast, rescue and first aid, free-dive sports fishing, open water swimming, hiking, horse riding and cycling, beach sports). These activities contribute to regional economic development. They can also put pressure on the environment: recreational vessels could discharge oily water and other waste, for example. Developing a framework and structuring the industry could help to limit this pressure: initiatives such as the “**Clean Ports**” label encourage and guarantee environmentally responsible recreational boating, for example.

Recreational boating is a widespread activity in the waters of mainland France. It is less frequent in the Eastern Channel-North Sea coastal area, compared to other French coastal areas. In 2016 there were 128,626 registered boats in the regions of Normandy and Hauts-de-France, accounting for 13% of the mainland fleet, and 36 marinas (with a reception capacity of 15 422 boats) located mainly in the departments of **Manche** (one third of berths in the coastal area), **Calvados** and **Seine-Maritime**. Most of the facilities for water and nautical activities in the coastal area are also situated in these departments (25% and 37% respectively).¹

Water sports and leisure activities are practiced in clubs (as members) or freely without any particular affiliation to an organised structure. 23% of the sailers in mainland France's coastal departments are based in the Eastern Channel-North Sea coastal area (estimated by the number of members of the FFV, the French Sailing Federation), a number which decreased by 17% between 2009 and 2014. 24% of underwater sports enthusiasts in mainland France's coastal departments are based in the coastal area (estimated by the number of members of FFESSM, the French Federation of Undersea Studies and Sports), with a 5% increase between 2009 and 2014.

In 2017, sea activity federations had 68,400 members in the Eastern Channel-North Sea coastal area, not counting members of hiking and swimming associations and triathletes. The ratio of affiliated to non-affiliated enthusiasts is 1 to 10, according to the barometer of sports and nature². It can therefore be estimated that there are 680,000 sea activity enthusiasts in the regions of Normandy and Hauts-de-France. Sailing catamarans, and dinghies and windsurfing are the most popular activities near the shore. In an effort to consolidate the structures and facilities, providers are increasingly offering a wider range of activities. For example, a sailing club may offer sailing, but also sea walks, canoeing and sand yachting.

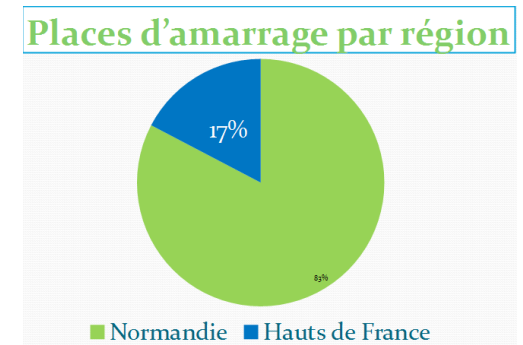
A water sports enthusiast often begins practicing in a club or with a professional organisation (initiation and/or equipment rental), where the activity is supervised, thus guaranteeing responsible use of the marine environment. The Picardy Estuaries and Opal Sea Marine Nature Park, have, for example, introduced “**Educmer**”, an initiative aimed at raising awareness among sport educators and water sports and leisure enthusiasts of the need for environmental protection.

Respect for the environment is a major concern for nature sports enthusiasts³, who can be considered as guardians of the quality of sites, since 60% of them have stated they inform the municipality, an association or a management organisation of their observations.

References:

1. Census of sports facilities by the Ministry for Sport in 2017.
2. PRNSN, Ministry for Sport, 2016
3. Survey by the Hauts-de-France Regional Directorate for Youth, Sport and Social Cohesion between 2011 and 2015.

Appendix no. 1: Detailed description of activities



MARITIME AND COASTAL ACTIVITIES - GOVERNMENT ACTION AT SEA

The State carries out many maritime missions: surveillance of maritime approaches, sea rescue operations, assistance to ships in difficulty, counter pollution operations at sea, maritime safety and combatting illegal activities, explosive device disposal, management of protected areas, sustainable management of maritime spaces, etc.

Government Action at Sea (AEM) is **the administrative and operational** structure introduced by France to meet the **challenges of protection, security and management of maritime spaces** under its sovereignty or within its jurisdiction. Across all authorities (overseas and mainland) around 16,000 people participate in the AEM. To this should be added approximately 7000 people not paid by the State (SNSM - the national sea rescue organisation, voluntary firefighters); bringing the total to 23,000 people working for the AEM at the national level. In mainland France, the Manche department accounted for 20% of hours at sea and 15% of flight hours in 2015. These figures are approximate and should be regarded as ballpark figures.

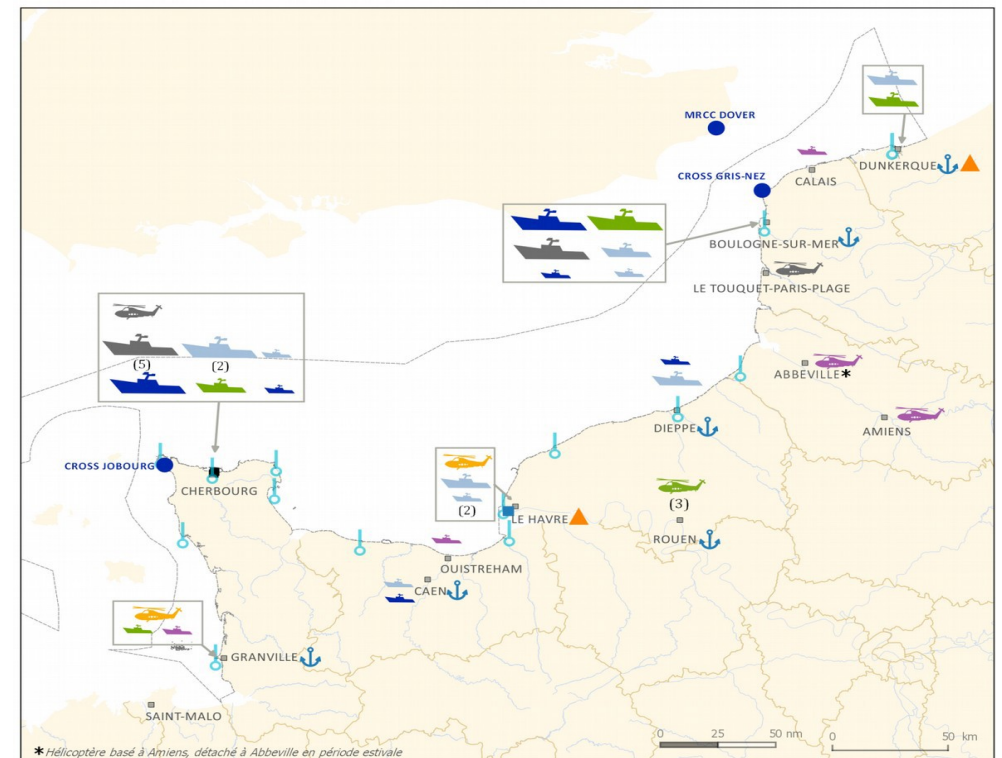
In accordance with Decree no. 2004-112 of 6 February 2004 concerning the organisation of Government Action at Sea, the **Maritime Prefect** is the representative of the State at sea. **As a government delegate**, they oversee the implementation of laws, regulations and government decisions. Invested with **police powers**, they have authority in all domains relating to Government Action at Sea. Based in **Cherbourg-en-Cotentin**, the Maritime Prefect of the Channel and the North Sea is responsible for **leading and coordinating the resources of public authorities at sea**.

The **Prefect of the Normandy Region**, based in **Rouen**, has jurisdiction over the **regulation and policing of sea fisheries** across the Eastern Channel-North Sea coastal area. In addition to **counter pollution operations** at sea under the authority of the Maritime Prefect, Department Prefects lead the combat against land-based maritime pollution.

Authorities with response capabilities at sea (National Navy, Maritime Gendarmerie, Directorate of Maritimes Affairs, Directorate of Civil Defence, Customs, Departmental Gendarmerie, National Police) carry out public service missions at sea under the authority of the Maritime Prefect, as part of the coast guard function. In addition to State capacity, SNSM (the sea rescue organisation), conducts sea rescue operations and assists vessels in difficulty.

The **Departmental Prefects** also issue administrative authorisations, ensuring that economic development projects carried out at sea (exploitation of marine aggregate concessions, development and operation of offshore wind farms or tidal turbine systems, laying undersea cables, etc.) are consistent with both marine environmental conservation and the vocation of the public maritime domain. Beyond territorial waters, project authorisation is the responsibility of the Maritime Prefect.

Available State resources in the Eastern Channel-North Sea



LEGENDE

ACTEURS

- Affaires maritimes
- Douanes
- Gendarmerie maritime
- Gendarmerie nationale
- Marine nationale
- Sécurité civile

MOYENS NAUTIQUES

- Hauturier
- Côtier
- Léger

MOYENS AERIENS

- Hélicoptère

MOYENS TERRESTRES

- Centre de sécurité des navires
- Centre de stockage POLMAR-Terre
- Centre régional opérationnel de surveillance et de sauvetage (CROSS)
- Direction Interrégionale de la Mer
- Préfecture maritime
- Sémaphore

Informations supplémentaires

- Limites des départements
- Limites de la sous-région marine Manche - Mer du Nord
- Principaux fleuves
- Villes concernées

(x) : Indique le nombre d'unités sur le site si celui-ci est supérieur à 1

Sources des données :
 Secrétariat général de la mer - 2017
 Fond de carte : SHOM, IGN, AFB, SANDRE
 Système de coordonnées : WGS 84 / Pseudo Mercator
 Date de réalisation : 09/2017

Appendix no. 1: Detailed description of activities

MARITIME AND COASTAL ACTIVITIES - DEFENCE

Specific military missions carried out by the Ministry of the Armed Forces fall [outside the scope of general law](#). In accordance with the provisions of the Environmental Code, maritime spatial planning does not apply to activities whose sole purpose is national security and defence.

In the context of a rapid and lasting deterioration of the international strategic environment, France has to face multiple risks and threats to its interests, territory and population, as well as confronting new forms of warfare and conflict, as detailed in the Defence and National Security Strategic Review of 13 October 2017. In 2017, the budget of the French Navy was 4417 million euros. 38,296 military and civilian personnel worked for the Navy in 2016. Between 2011 and 2016, the downward trend reflected a reduction personnel strength in response to fiscal policy, until the 2015 terrorist attacks led to a change in safety and security policies.

A breakdown of Navy personnel and budget per coastal area is technically not possible.

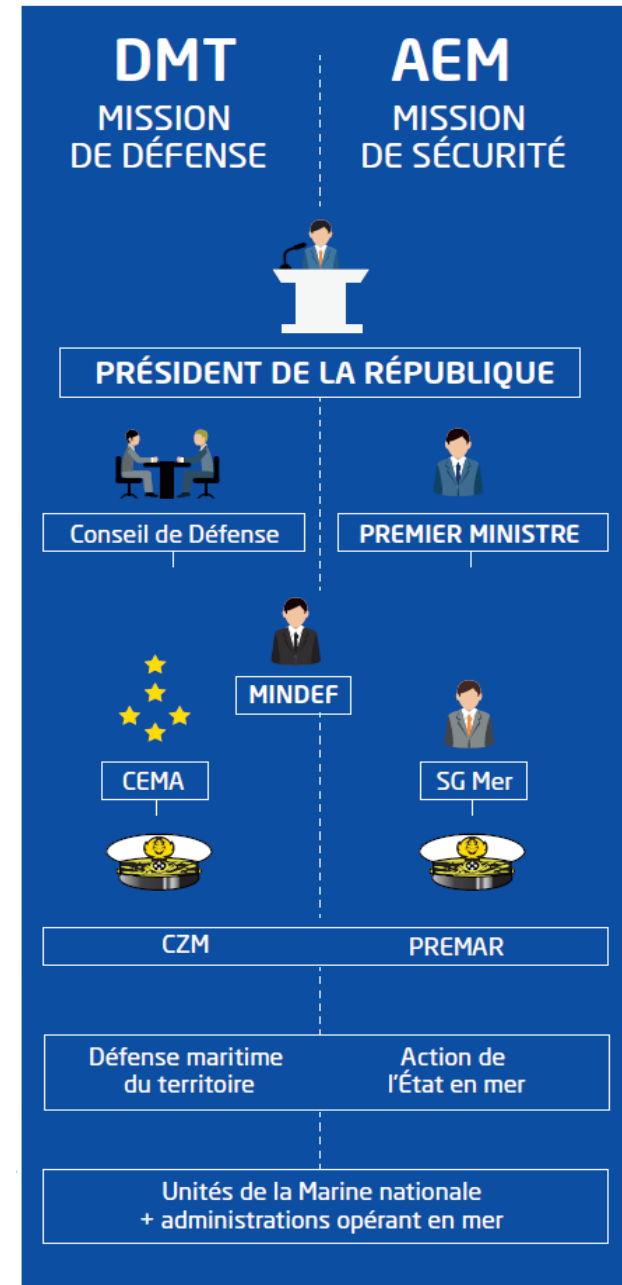
To respond to these challenges and [maintain its strategic decision-making autonomy and freedom of action](#), the armed forces implement the **Defence and National Security Strategy** through five strategic functions: [deterrence, knowledge and anticipation, prevention, protection, intervention](#).

Under the authority of the **President of the Republic**, who is the head of the armed forces, the French armed forces form a complete armed forces model. Under the operational command of the **armed forces chief of staff**, the forces are ready to deploy, even at very short notice, to tackle the [wide range of threats and conflicts](#). Carrying out these missions are the Naval Action Force (FAN), the Strategic Ocean Force (FOST), the Naval Fusiliers and Special Operation Forces Command (FORFUSCO), Naval Aviation and the National Gendarmerie.

In the Channel-North Sea maritime area, the armed forces mainly carry out missions for maritime defence of the territory. National Navy installations in the Eastern Channel-North Sea coastal area are mainly based at Cherbourg. Under the authority of the **commander of the Channel-North Sea maritime area**, a structured network of military sensors and effectors (Navy and Maritime Gendarmerie semaphores, patrol vessels and vedettes, helicopters and military surveillance planes) continually monitor maritime and air approaches and remain on standby to deploy in the event of a threat or violation of our security.

These military missions for maritime defence of the territory, headed by the commander of the Channel-North Sea maritime area, [complement the civil missions carried out in the framework of Government Action at Sea](#), under the authority of the Maritime Prefect of the Channel and the North Sea. Together they form the **permanent maritime security posture**.

Appendix no. 1: Detailed description of activities



MARITIME AND COASTAL ACTIVITIES - PUBLIC RESEARCH AND KNOWLEDGE

Research is vital to increase **knowledge** of the sea, for **technical and technological** innovation and for the **quality of marine and naval training**. Knowledge gaps in understanding of the marine environment, acknowledged during work on integrated maritime policy by the European Commission since 2006, could give rise to conflicting uses and interests between the different activities at sea and on the coast; strengthening research on the sea and coast thus became a strategic focus for France and Europe. The aim is twofold: gain knowledge for better control of the impacts of maritime activities and innovate to capitalise on “blue growth”.

French public research in the maritime field has an **overall budget of approximately 695 million euros**, for around **5244 people**, divided between 46 joint research units. France has around 10% of the total European research fleet; these sophisticated and multidisciplinary vessels account for 40 to 50% of the total cost of marine research (SHOM, Genavir and IFREMER, etc.).

Created in 2012, the **Sea Programme of the National Alliance for Environmental Research (AllEnvi)** identified three key pillars of research: knowledge of the “ocean system”, sustainable exploitation of marine resources and management of the coastal zone.

Operational oceanography (Coriolis project and the **Copernicus Marine Environment Monitoring Service**) constantly documents the state of the oceans over the whole water column, using satellites, vessels and fixed or drifting autonomous systems. Seismic surveys carried out by scientific vessels can emit acoustic signals to which marine mammals are sensitive, and some sampling activities can be harmful to the marine environment.

Public research on the marine environment involves 313 people in the Eastern Channel-North Sea coastal area. Four research vessels harbour in the coastal area. Stakeholders in the coastal area are involved in three main competitive clusters bringing together businesses, science and training: the **AQUIMER** cluster, based at Boulogne-sur-Mer, the **Nov@log** cluster, in the territories of Normandy and Île-de-France and the **Mer Bretagne Atlantique** competitiveness cluster, based in Brittany. Research and economic sector partnerships focus on 4 main areas: **sea fisheries**, shellfish and fish farming; **shipbuilding** and boat construction; **marine renewable energy**; **logistics**. The Regions of Normandy and Hauts-de-France have to contend with declining public and private investment in research and development.

A major challenge for research and development is the need for further study into the cumulative risks of human activities, in order to plan synergies that respect marine and coastal environments, as well as innovation into sustainable techniques and technologies. The development of joint research projects with British laboratories also helps to improve environmental knowledge.

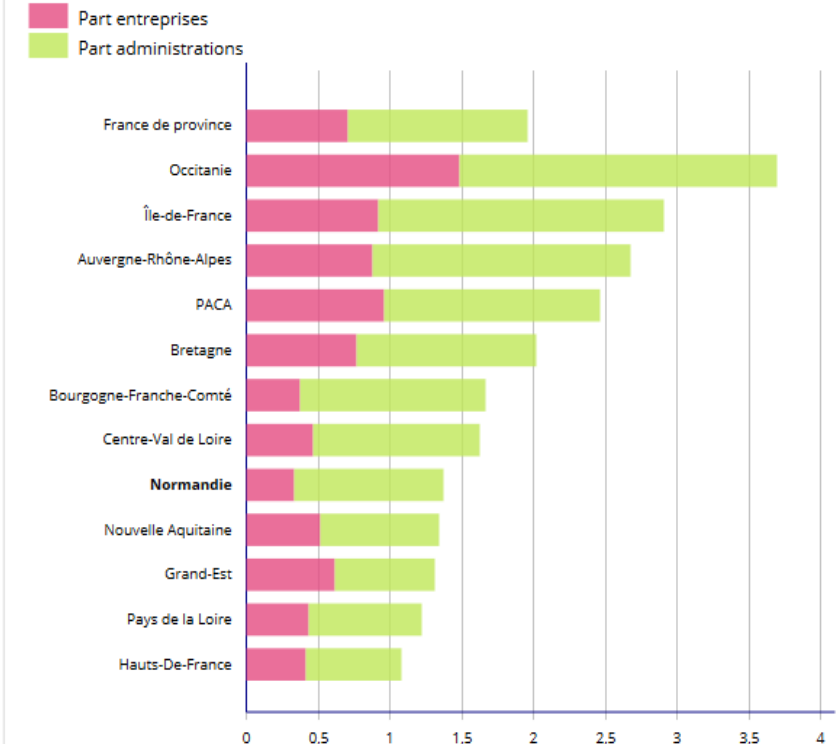
The State and public bodies play a key role in **data collection** and its availability in the coastal area. In addition to scientific laboratories, **civil society organisations** establish inventories of natural heritage and carry out ecological monitoring of habitats and populations, and several stakeholders in the coastal area have formed **groups or unions** to defend their interests. To improve data flow and access, some national and local information sharing portals in the Eastern Channel-North Sea sea basin offer free access and promote data interoperability.

Research remains weak (businesses and authorities) in Normandy and Hauts-de-France.

Source: Graph: INSEE Normandy analyses: publication 16/12/2016

Un effort de recherche parmi les plus faibles

Effort de recherche des entreprises et des administrations en 2013 par région (en % du PIB)



Champ : France métropolitaine hors Corse.

Source : MENESR, Enquêtes annuelles sur les moyens consacrés à la R&D dans les entreprises et les administrations

MARITIME AND COASTAL ACTIVITIES - TRAINING FOR MARITIME PROFESSIONS

There is a broad range of prospects in maritime professions, including work opportunities in coastal tourism and port operations, the main generators of employment. Maritime and maritime-related activities employ over 300,000 people.

To develop the sector, **maritime training** enables access to the **regulated seafaring profession** (merchant shipping, fisheries, aquaculture, recreational boating, marine engineering, etc.) and it is constantly adapting to the professional environment by strengthening links with business and by developing general awareness in the populations of maritime areas.

Training can be provided at secondary level and short cycle higher education, in **Vocational Maritime Secondary Schools**, from the CAP professional certificate to the BTS technical diploma, via the BEP qualification and professional baccalaureate. In 2017, 1105 students received a maritime education qualification. There are three vocational maritime secondary schools in the Eastern Channel-North Sea coastal area, located in Cherbourg, Fécamp and Boulogne-sur-Mer. They train on average between 300 and 400 students per year.

Advanced training programmes for the profession of **Merchant Navy Officer** are also offered by the **National Maritime College (ENSM)**, under the supervision of the Ministry for an Ecological and Solidary Transition. There is an ENSM campus in the Eastern Channel-North Sea coastal area, at Le Havre. Every year it trains over 300 students, representing 50 FTE.

Consistent with the aim of making maritime training visible and attractive, the **Normandy Centre for Maritime Professions** in Cherbourg was certified as a Campus of Professions and Qualifications in 2017. It brings together all the training centres involved in maritime training in Normandy, whatever the field.

In addition, in 2017, 8 private centres were authorised to offer continuous training in the Eastern Channel-North Sea coastal area. In 2016, the Interregional Directorate for the Sea awarded 6533 maritime diplomas, corresponding to 15.4% of the total number of diplomas awarded nationally.

Seafarers require a **licence**, which is issued after receiving a diploma and acquiring experience at sea. It is possible to receive this through a Validation of Prior Experience. Licences and certificates enable progressive specialisation in three training courses: bridge, machinery and engineering.

Job-seekers in the maritime sector in Normandy by skill level and profession.



MARITIME AND COASTAL ECOSYSTEMS - STATUS, IMPACTS AND PHYSICAL PRESSURES

The status of the coastline and maritime coastal area is primarily defined by the **physical components** of the water body, type of substrate and species distribution.

- **Climatology** is principally concerned with winds, which affect marine ecosystem dynamics, particularly ocean circulation.
- **Currentology** highlights the nature and importance of the circulation of water masses on the entire water column and the bottom. The main influences are tides, winds and density gradients. Currents disrupt the distribution of animal and plant species and sediments.
- **Water flows** are freshwater inputs into the sea. Flows input minerals which act as a fertiliser and are essential to primary production, but they can also input toxic substances that disrupt the ecosystem.
- **Swells and waves** are the rapid components of surface ocean dynamics. These sea states raise the surface as well as changing speeds and pressure, which is felt right to the sea bottom according to the wavelength.
- **Seabed** studies reveal the bathymetric morphology, sediment type and structure of the ocean floor.
- **Temperature, salinity and turbidity** describe the hydrology of water masses in the marine environment. These three parameters determine the distribution, migration, nutrition and reproduction of marine species. Turbidity is the obstruction of light penetration in water due to the presence of suspended particulates. It is caused by terrigenous sediments, the presence of organic particles and sediment re-suspension from waves and currents.

In addition to natural and climate affects, **physical pressures and impacts** have been identified in the Eastern Channel-North Sea coastal area:

- The **artificialisation** of the coast is characterised by permanent structures and coastal development, installations in the sea to protect against natural hazards, as well as offshore construction projects. Their presence primarily affects currents.
- Human activities, including **shellfish farming, power station cooling, agricultural irrigation and channelisation of water courses, can affect the hydrological parameters of the sea.**
- **Deposits on the sea bed** lead to siltification and temporary or permanent coverage, affecting the distribution of sediments and natural habitats. These can include dredged materials, and material from burying cables and pipelines, and wrecks.

There are other physical sources of **direct pressure**, such as noise pollution from works and sea traffic, pollution from marine waste and also wildlife disturbed by human presence. See the complete list of significant proven pressures p.42

Physical component	Coastal area features
Climatology	The prevailing winds are from the South West and North East. The topography and orientation of coastlines are the main factors that determine their strength and direction. The frequency of winds is seasonal in the coastal area. They funnel and speed up in narrow areas.
Currentology	The main physical process is the semi-diurnal tide, which causes extremely variable tidal ranges and the strongest tidal currents in mainland France. Residual currents and the wind can counteract the effects of tides. The spatial variation of currents also depends on bathymetry.
Water flows	22 hydrographic areas have been identified in the coastal area. Only the Seine is considered a "main river": It drains over half of the surface of the basin and accounts for half of riverine input, despite the high input from secondary waterways. There are interannual fluctuations due to seasonal and climatic variations.
Wave exposure	The height of waves becomes considerably smaller at the start of the Channel until the North Sea, which is directly exposed to wind. The Normandy coast is especially sheltered from Atlantic swells. In the Baie de Seine, the sea is smooth. High turbulence velocity near the bottom and opposing tidal currents can affect wave height.
Seabed	Bathymetry: the sea basin is shallow, largely ranging from 50 to 100 metres. Hurd's Deep, however, has a depth of 160 metres. The coastal zones are very dynamic. The coastline evolves due to the semi-diurnal tide, climatic conditions, and sediment movement.
	Type of seabed: the seabed is highly diverse. Two different types can be distinguished: the Paris Basin rests on soft sedimentary rock, while the American Massif has a resistant geological formation. The sedimentary composition depends on the geology, sediment input from rivers and hydrodynamic factors. Sediments are mainly gravelly in the coastal area, and fine sediments are more characteristic of sheltered areas and offshore. The presence of prominent sandy reliefs, with mobile and resilient bottoms, should be noted.
Temperature, salinity, turbidity	Temperature: in the Eastern Channel temperature variation is marked. Surface temperatures vary from 8 to 11°C in winter and 14 to 17°C in summer. The Seine river plume has cold surface water temperatures.
	Salinity: being the main river in the area for its input of fresh water into the sea, the range of reduced salinity levels is linked to the Seine's input flow rate, extending 50 km both sides of the estuary and not rising above 33 psu.
	Turbidity: the Seine plume is the main example of turbidity in the marine sub-region, it depends on the seasonal movements of the silt plug. Flows of suspended particulate matter, all waterways combined, decreased by 70% between 1999 and 2009. However, the shallow depth of the seas, subject to the action of waves, favours resuspension, especially in coastal waters.

MARITIME AND COASTAL ECOSYSTEMS - STATE, IMPACTS AND CHEMICAL PRESSURES

The state of affairs of the coastline is thus defined by **chemical components**, closely related to the physical components as well as to the biological activity of the organisms that are present.

- The **acidification of the marine environment** results in the water's pH value being lowered. It is related to the salinity and temperature regime, the ocean's ability to absorb CO₂, as well as the respiration of living beings and the decomposition of organic matter.
- The **concentration of dissolved oxygen** influences the life of marine organisms. It is governed by many physical, chemical, and biological processes. Similarly, the **availability of nutrients and mineral salts** allows for primary production, which is the first step of the food chain, made possible by the presence of **chlorophyll**, a photosynthetic pigment.

So-called "problematic" chemical substances are added to these chemical elements that are naturally present in marine environments, which are necessary for the development of living beings. These substances are deemed to be problematic as they present risks for organisms and ultimately for people.

Natural and anthropogenic chemical **pressures and impacts** are well known on the Eastern Channel-North Sea coastal area. The disturbances are induced by compounds that may or may not be synthetic, biologically active molecules, and naturally occurring chemical elements which, in excess, produce serious environmental and health damage.

- **Chemicals** are of natural or synthetic origin and are considered harmful when their properties cause the depletion of marine ecosystems or pose a risk to human health. They come from direct and chronic sources, in other words, human activities accompanied by the aquatic and atmospheric natural cycles.
- **Radionuclides** result from the degradation of minerals in the earth's crust and the action of cosmic rays, but some human activities discard more of them in the natural environment.
- **Nutrient salts, nitrogen and phosphorus, and organic materials** occurring naturally in the marine environment are essential for the development of algal communities. From non-point or point sources, the nutrients arrive in these waters by riverwater inputs and atmospheric fallout. However, they cause excessive eutrophication, which disrupts the state of the waters.

Chemical component	Coastal area features	Sources of pressure	Localised disturbances
Acidification of the marine environment	Due to shallow depths, strong tidal currents, and riverwater inputs of nutrients, the marine sub-region appears mainly as a sink for atmospheric CO ₂ . The pH value significantly decreased between 1994 and 2004. However, its value at the surface varies spatially and temporally in relation to biological activity and riverwater inputs.	Increasing releases of atmospheric CO ₂	Decreasing pH values and increasing acidification of the marine environment.
Dissolved oxygen concentration	The concentration of oxygen in the surface layer is strongly controlled by exchanges with the atmosphere and the effects of air flow. It is a quality element of the ecological state of the waters. In the sub-region, the lack of vertical stratification of marine waters makes monitoring difficult. Hypoxia is very rare.	Domestic uses, agri-food and paper industries	Self-purification of water
Availability of nutrients, minerals, and chlorophyll	<p>Nutrients and mineral salts: Of fluvial or atmospheric origin, the spatial coverage of nutrients is heterogeneous. There is no significant trend. However, large spatio-temporal variations are observed in the surface layer, where the values are homogeneous for most of the year. In coastal zones, non-utilised riverwater inputs from the winter bring large concentrations of nutrients. The dispersion of river plumes and phytoplanktonic development also cause these variations.</p> <p>Chlorophyll: The change in concentration is seasonal. Phytoplankton production starts early in the year and then grows progressively from west to north following increasing amounts of light and turbidity. In summer, there is significant coastal production in estuaries.</p>	<p>Human activities that produce excess nitrogen and phosphorus</p> <p>Riverwater inputs of nutrients and organic matter, atmospheric deposition, confined and lit areas</p>	Excessive nutrient and organic matter enrichment resulting in eutrophication of the marine environment, i.e. algal and planktonic growth responsible for hypoxia
Potentially ecotoxic chemical substances	<p>Pollutants are present in water as well as in sediment and living matter, hence their harmful potential. They are mainly transported via maritime traffic, emissions from industrial activities, and natural pathways.</p> <p>There are three families of substances: metals, organochlorines, and polycyclic hydrocarbons. On the coastline, sensitive areas are identified because of past and recent human activities, and sometimes because of the confined geomorphology. Despite the presence of regular contaminants in shellfish, the sub-region does not exceed regulatory contamination rates.</p> <p>However, human activities, coupled with riverwater inputs and atmospheric depositions, large quantities of metals such as zinc, lead and copper are discharged.</p>	<p>The natural water cycle, atmospheric transport, riverwater inputs, special vulnerability of the sub-region</p> <p>Domestic uses, industrial activities, landfills, agricultural products, discharges from wastewater treatment plants, phosphate-based fertilisers and nuclear activities, accidental pollution, illegal dumping, dredging, sludging, sediment immersions</p>	<p>Increased levels of chemical substances by pollution of soils, rivers, and groundwater up to the arrival in marine waters</p> <p>Disturbances in the development of marine organisms and health risks for people.</p>

MARITIME AND COASTAL ECOSYSTEMS - STATE, IMPACTS AND BIOLOGICAL PRESSURES

The biological state of affairs of the coastline is defined, on the one hand, by the physical components of the habitats (**biotopes**) and, on the other hand, by the populations of fauna and flora associated with these habitats (**biocenoses**).

The main **benthic habitats** of the Eastern Channel and North Sea are characterised by the presence of coarse sediments and circalittoral gravel in the central and western Channel, giving way to alternating sandy banks in the eastern part. Fine sediments are present, at low gradient, in the bays of Saint-Malo and Seine.

As regards **pelagic habitats** (i.e. the hydrological landscapes of the coastal area), there are three categories in the Channel-North Sea:

- strongly desalinated waters, rich in inorganic suspended particulate matter and chlorophyll in the **plume of the Seine**
- shallow waters, also under the influence of plumes but to a lesser extent, in a narrow coastal strip (**Mont-Saint-Michel Bay, coastline of the Somme and Hauts-de-France**)
- waters with little or no stratification, remaining relatively cold, in the **rest of area**

There are three types of **pressures and impacts**:

- The introduction of **microbial pathogens** (bacteria and viruses) affecting waters (bathing waters, shellfish production areas and natural shell beds) and infectious agents affecting molluscs. (See “health risks” in the risk summary sheet p.35)
- The **introduction of non-native species**, in particular through fish farming and maritime transport. This introduction can strongly affect species diversity, change the use of resources such as the food web, habitats and ecosystems. On the scale of the North Sea in the broad sense, and more generally on a European scale, it seems that our territory is one of the most affected by the introduction of non-native species. It also appears that at least half of the introductions of non-native marine species in Europe have had France as their source of dissemination.
- The selective **extraction of species**, targeted or incidental (through discards and incidental catches), can cause changes in marine and coastal food webs. Of the 84 stocks, 12 have a “good environmental status” but 13 stocks have an unsatisfactory environmental status (other stocks do not have sufficient data or knowledge to allow an assessment). The ten-year analysis of the indicators for these 25 stocks makes it clear that their conditions are improving.

References: Assessment of good environmental status (descriptor3), in Appendix

Level of marine stratification / relevant biocenosis	Classification of biotopes	Description and classification of the main populations encountered
Phytoplankton	Coastal zones	Frequency of blooms marking a dysfunction on the whole coast of the North Sea and on the South of the estuary of the Seine (Côte Fleurie). Some species that can produce dangerous toxins for consumers may be observed, as well as others that may be harmful to the environment.
	Offshore zones	Insufficient data
Intertidal zone (Water retention zones and resurgence of the zone where water levels fluctuate, characterised by high tides, the presence of heterogeneous sediments and strong alongshore currents)	Soft seabeds (coastal mudflats, sands that are more or less silty and clean fine sands) and hard seabeds	Molluscs
	Special habitats (animal and plant species creating a biotope different from their original habitats)	Mussel beds, seagrass beds, honeycomb worm reefs
Infralittoral and circalittoral zones (Areas more or less sheltered from hydrodynamic influences)	Coarse sands and gravel, mobile sediments	Features of bivalves
	Medium to fine-grained sand	Bivalves and amphipods in high abundance
	Mud and sandy mud (most sheltered areas)	Abundance of varied and specific growth
	Heterogeneous sediments	Greater specific richness, significant biomass, food source for crustaceans and fish
	Hard seabeds	Infralittoral zone characterised by the presence of photophilic algae Circalittoral zone characterised by their disappearance and the development of animal species
Upper (archi-benthic) and lower (abyssal-benthic) zones	Special habitats	Sea grass, schools of horse mussels (in danger), flat oyster beds (in decline), reefs, schools of sand mason worms, underwater caves
	Seabed or near the surface (denmersal fish populations)	Diversified species (flatfish, gadids, crustaceans, cephalopods, etc.). Nurseries, spawning grounds and migration routes
	Pelagic area (Wide variety of habitats)	The Channel is a transition zone where cold-water (North Sea) and cool-water (Atlantic Ocean) fish coexist. 130 species of fish identified, 30 in abundance. Small pelagics occur seasonally and are distributed according to their migration cycle (mackerel) or breeding requirements (herring). There are nine species of cetaceans and two species of seals. The entire coastline is a crucial area for the harbour porpoise (hypothesis that the population shifts towards the south). Few turtles.
Coastline (biocenoses depending exclusively or very predominantly on the marine environment)	The Seine and Somme Estuaries	Important nursery habitats, tendency to increase the habitation of the species in both zones. Cephalopods exploited: cuttlefish, squid.
		Seabirds, breeding or not in France. Eighteen species regularly nest on the coastline, eight of which are considered endangered, vulnerable or near-threatened. They are all subject to monitoring and protocols.

MARITIME AND COASTAL ECOSYSTEMS - THE COST OF ENVIRONMENTAL DEGRADATION

Existing devices to [preserve the marine environment and combat its degradation](#) have been identified for ten themes, related to public policies and [pressure or state descriptors](#), established by the directive.

The **ten themes** are: biodiversity, noise, waste, eutrophication, non-native species, oil pollution, micropollutants, shellfish resources, fishery resources and health issues.

For each theme, **three types of degradation costs** are differentiated:

Costs [related to monitoring and information](#) induced by monitoring and information-gathering mechanisms put in place to support research and promote the acquisition of knowledge;

The costs of [positive actions](#) for the environment, which include prevention and avoidance actions;

The costs of [mitigation](#), corresponding to actions implemented ex-post with the aim of reducing impacts on the marine environment.

Finally, the analysis is completed by a [characterisation of residual impacts](#), persistent impacts despite the implementation of all these measures.

The costs associated with the degradation of the marine environment are presented by theme, in [Appendix 3](#).

MARINE WASTE

The amounts allocated to manage the degradation of the marine environment due to waste on the Eastern Channel-North Sea coastal area are in the national average for each cost category.

The cost of monitoring and information measures amounted to €797,896, prevention and avoidance measures amounted to €898,977 and mitigation measures amounted to €866,901.

From the point of view of the origin of the financing, the French State and public structures essentially devote their efforts to follow-up and information actions. Actions related to the avoidance and mitigation of waste at sea are mainly supported by local authorities and associations whose efforts for the latter are mainly based on volunteering.

The numbers presented in this summary should be taken with caution. Some costs are approximations due to the complete unavailability of data (e.g. costs related to certification, pressure monitoring). Other categories of costs, particularly as regards the fight against beach waste through the awareness-raising actions of associations or collection by coastal municipalities, are only a reflection of initiatives in this area which we have seen. These costs therefore cannot be exhaustive.

In general, the costs presented should be considered as minimum values for monitoring and information, avoidance and prevention, and mitigation actions.

IMPACT OF INVASIVE SPECIES

Only the monitoring and information costs could be correctly reported. For the Eastern Channel-North Sea coastal area, they amount to €749,632.

Mitigation costs are often included in the overall costs of cleaning shellfish farms.

Little is known about residual impacts, although some have been identified.

Thus, it seems that we are still in a phase of characterising the pressure (see the gradual implementation of monitoring within the framework of the Monitoring Programme) and not in the phase of implementing actions to manage this pressure.

MICROPOLLUTANTS

Micropollutants are persistent chemical substances that can cause damage to living organisms and the environment, and whose intensity depends on toxicity and concentrations in the marine environment. The most impacted areas within the Eastern Channel-North Sea coastal area are the Seine Estuary and the Pays de Caux region by pollution with PCBs and various metals.

Expenses related to micropollutants in the Eastern Channel-North Sea account for 38.7% of national costs.

The costs of prevention and avoidance are the largest (93.2%) and result in 45.5% of the measures taken to limit industrial discharges.

The implementation of the REACH Directive dominates the category of monitoring and information costs (89%) whose decrease in costs (-33.9%) between 2011 and 2016 results from its gradual implementation and a methodological overhaul.

The inherent costs of mitigation measures are almost zero (0.1%) due to the lack of measures in place to reduce chemical pollution ex-post.

HEALTH ISSUES

The main causes of marine health degradation are the proliferation of toxin-producing algae (ASP, DSP, PSP) and/or contamination with microbial pathogens (bacteria, viruses and parasites).

The inherent health costs of the Eastern Channel-North Sea include, for this second cycle, health problems resulting from the presence of phycotoxins, and represent 16.1% of costs at the national level.

The significance of prevention and avoidance costs (97.8%) is exclusively due to the measures implemented to preserve the quality of water mainly through urban sanitation and agricultural practices.

Research implementation costs are the largest in the monitoring and information cost category (45.9%) and are similar to the 2011 estimates.

The share dedicated to mitigation measures is low (1.5%) and only concerns the costs of decontamination of shells classified in zones B whose increase (82%) between 2011 and 2016 results from an increase in the number of decommissioned sites and the number of purification approvals granted.

OIL SPILLS AND ILLICIT RELEASES OF HYDROCARBONS

The significant decline in marine oil pollution over the period studied continues, both in terms of accidental pollution (but the decrease is observed on a global scale, and this is likely as a result of international regulations), and in terms of illegal discharges (here, it is more likely that the surveillance and repression efforts developed by the French State in recent years should be recognised);

The POLMAR Terre device is being reorganised to improve its effectiveness (training, adaptation to the new organisation of the State, responsiveness of crisis deployment of oil spill equipment). Efforts should be made in terms of preparing for the fight against smaller-scale pollution, particularly by local authorities within the framework of “Infrapolmar” spill response plans.

New risks of marine pollution related to maritime transport must be taken into account: enlargement of ship size, biofuels with unknown environmental consequences, chemicals, containers, question of the rapid unloading of pollutants collected at sea.

INTRODUCTION OF ENERGY IN THE ENVIRONMENT

Monitoring and information costs related to noise disturbances and hydrographic changes along the Eastern Channel-North Sea coastal area have the following characteristics: this area spent the least on pressure monitoring actions;

this area concentrates more than a third of national monitoring and information costs;

this coastline concentrates most of the expenses for monitoring changes in hydrographic conditions, because of the follow-ups associated with the four nuclear power stations present in this area.

The figures presented in this summary should be taken with caution. They do not reflect the current situation due to the lack of data on avoidance and mitigation costs.

DEGRADATION OF FISHERY RESOURCES

The estimated avoidance and prevention costs are the highest (€16 million), with a significant weight of management actions, shared between the administration and professionals. Fisheries monitoring and control is also a substantial cost item.

Next come monitoring and information costs (€5.8 million), with significant costs for monitoring, research and expertise. The research projects related to the theme mainly concern assessments and methods for evaluating the state of certain stocks, as well as adaptation to the landing obligation implemented in the last reform of the CFP.

It should also be noted that the budgets dedicated to fleet exit plans and temporary shutdowns have significantly decreased since the analysis carried out in the first cycle, due to a change of strategy in the new CFP.

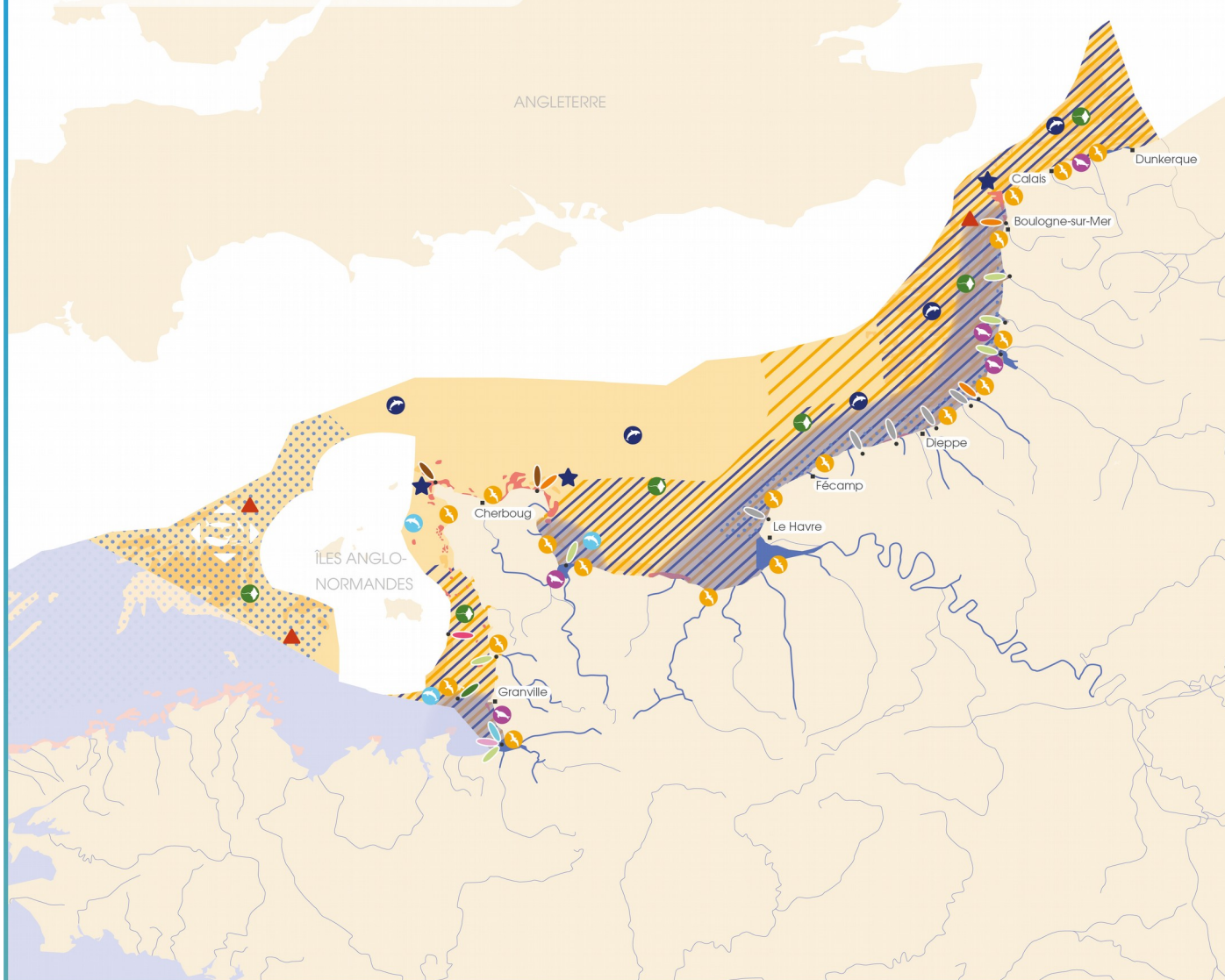
In the same way, during the first cycle, the “blue contracts” represented several million euros. They were not taken into account in this study because they disappeared at the end of the EFF agenda in 2013, and the relevance of averaging over the period of interest was therefore questionable.

MAINTAINING THE BIODIVERSITY AND INTEGRITY OF SEABEDS

Costs related to the maintenance of biodiversity and the integrity of the seabed are mainly focused on the monitoring and information system regardless of the marine sub-region studied, except for the Mediterranean coastal area, where there are slightly more avoidance and prevention measures. This responds to the persistent lack of knowledge about marine ecosystems. The second item of expenditure relates to avoidance and prevention measures, mainly through the costs of managing protected marine areas. However, as mentioned in the sheet “Protection of the coastal and marine environment” (“Use of our waters” section), even though the number of marine natural parks has doubled in metropolitan France, the number of staff dedicated to their management has not doubled and the budget per FTE even decreased from €130k to €100k per year. Thus, even if the objectives are met in terms of area covered by the marine protected areas (MPAs) in metropolitan France, the resources allocated to their operation do not seem to follow on, thus raising the question of the effectiveness of the device. Finally, mitigation costs remain low and mostly related to voluntary initiatives undertaken by the Coastal Conservatory. Measures to restore degraded ecosystems still appear to be underdeveloped in metropolitan France, despite the commitments made by France in this area.

ENJEUX ÉCOLOGIQUES EN MANCHE - MER DU NORD

Cette carte illustre les travaux sur la priorisation des enjeux d'importance nationale. À vocation communicante, elle représente des informations claires et simplifiées et ne peut-être utilisée à des fins d'analyses spatiales. Ce travail national n'exclut pas l'identification d'autres enjeux à une échelle locale ou régionale



Espèces et réseaux trophiques

- Colonies d'oiseaux marins et limicoles
 - Fortes densités et alimentation des oiseaux marins
- Enjeux pour les oiseaux marins

- Estuaires
 - Cours d'eau
- Enjeux pour les amphihalins

- Concentration de poissons fourrages
- Enjeux pour les poissons fourrages

Enjeux pour les élasmobranches

- Densité maximale de marsouins
 - Population sédentaire de Grands dauphins
 - Colonies de phoques
- Enjeux pour les mammifères

- Enjeux pour l'ensemble de la mégafaune

Habitats

- Roches et autres substrats durs
 - Sédiments meubles (vases, sables, cailloutis, sédiments grossiers)
 - Dunes hydrauliques
 - Hauts-fonds rocheux et fosses
- Structures géomorphologiques à enjeux

- Maërl
 - Laminaires
 - Hermelles
 - Bancs de moules
 - Huîtres plates
 - Prés salés
 - Zostères
- Habitats particuliers côtiers à enjeu fort ou majeur

Conditions hydrologiques et habitats pélagiques

- Détroits et zones associées
- Zone de front thermique et halin
- Apports fluviaux et baies macrotidales

Source : AFB
Fonds cartographiques : AFB, Shom, Sandre
© AFB, 2018

0 100 kilomètres
50 milles marins
Projection cartographique : WGS84 / Pseudo Mercator

AGENCE FRANÇAISE
POUR LA BIODIVERSITÉ
ÉTABLISSEMENT PUBLIC DE L'ÉTAT

PROTECTION AND RECOVERY - MARINE AND COASTAL ENVIRONMENTAL PROTECTION

In this context, analysis of the activities to protect the coastal and marine environment takes into consideration public policies related to the implementation of actions aimed at protecting natural marine and coastal areas and recovering the quality of these environments.

Preserving marine and coastal environments is a strong commitment made by France, notably through the **national strategy for the creation and management of marine protected areas** (SCGAMP). This strategy is fully in line with the National Strategy for Biodiversity and the National Strategy for the Sea and Coastline. In mainland France, this strategy contributes to the implementation of the Marine Strategy Framework Directive and the **Natura 2000 network**.

Marine Protected Areas (MPAs) are defined areas at sea that meet long-term nature protection objectives. For this, a number of management measures are implemented: scientific monitoring, an action programme, charters of good practices, protection of maritime public property, regulations, surveillance, public information, etc. The French Environmental Code now recognises **15 types of Marine Protected Areas**, each of which has its own management mode and protection purpose.

Between 2012 and 2016, even though the number of marine natural parks doubled in metropolitan France, there is still a need to increase animation and management tools. Compared to the other coastlines, the Eastern Channel-North Sea coastal area only represented 9% of the total area of metropolitan MPAs in 2017. Nevertheless, around **30% of the coastline's waters currently enjoy a protection status**. The Channel area is more widely protected if we take into account the border MPA networks (United Kingdom, Belgium, Channel Islands).

These are tools for the **sustainable management of the marine environment and coastal spaces**. By including all the stakeholders involved in their mode of governance, their protection objective is not exclusive to reasoned economic development. Thus, certain categories of marine protected areas may be very restrictive for the exercise of the uses at sea, because of very strong protection stakes, such as the Nature Reserves or the biotope protection orders; while other categories have objectives to support maritime activities that are important from a socio-economic and cultural point of view in a sustainable development approach.

The MPAs include in particular:

- The **Marine Nature Park of the Picardy Estuaries and the Opal Sea** which covers 2300 km² of maritime surface and runs along 118 km of coastline;
- **6 national nature reserves**, with a maritime area covering a total area of about 13,000 ha;
- 2 plots of the maritime public property (DPM) allocated to the Coastal Conservatory: the emerged and submerged maritime public property of the **Chausey archipelago** (with an area of 5000 ha) and some mainly emerged plots of maritime public property on the **Oye plateaus** in the Pas-de-Calais region;
- 4 biotope protection orders on the land-sea interface covering a total area of 392 ha;
- **45 Natura 2000 offshore sites** (16 SPAs and 29 sites of community interest / special conservation areas) covering more than 12,000 km²;

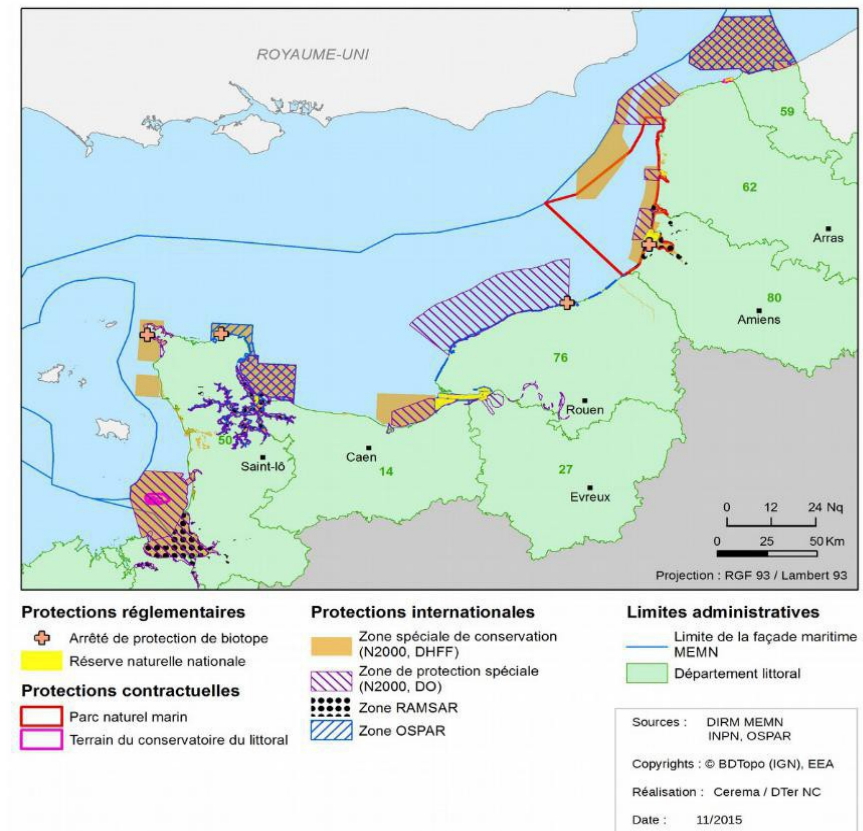
The preservation of marine and coastal environments also involves establishing other types of protected areas (regional natural parks, noteworthy coastal areas, sensitive natural areas and fishing areas) that are not full MPAs, there are also:

- Three sites listed under the **RAMSAR** convention covering a total of 100,000 ha;
- One World Heritage Site, by the United Nations Educational, Scientific and Cultural Organization (**UNESCO**)
- 10 sites listed under the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR).

The **Coastal Conservatory** is also a major lever for preserving coastal areas. This public establishment is a land operator that **constitutes and develops**, in close relation with communities of all kinds (regions, departments, communities of municipalities, municipalities themselves), a **natural heritage open to the public or for different uses**, thus contributing to the sustainable development of the territories registered under the Convention for the Protection of the Marine Environment of the North-East Atlantic (**OSPAR**).

The **objectives of the Coastal Conservatory** respond to multiple issues: Preserving natural environments and remarkable and threatened landscapes; balancing coastal areas and taking climate change into account through a balanced management with local partners; receiving the public and granting them access in respect of the sites to raise awareness on preserving the environment; sustainable development for all the activities present on the sites (agriculture, heritage management, etc.).

The **Coastal Conservatory's "2015-2050 intervention strategy"** sets **long-term objectives** which ensure an overall coherence of the action of the establishment, in particular successive acquisitions. As regards the coastal area, 12,000 ha have already been acquired and protected by the Conservatory and 45,000 ha have been identified as intervention zones, intended to be protected by 2050.



Appendix no. 1: Detailed description of activities

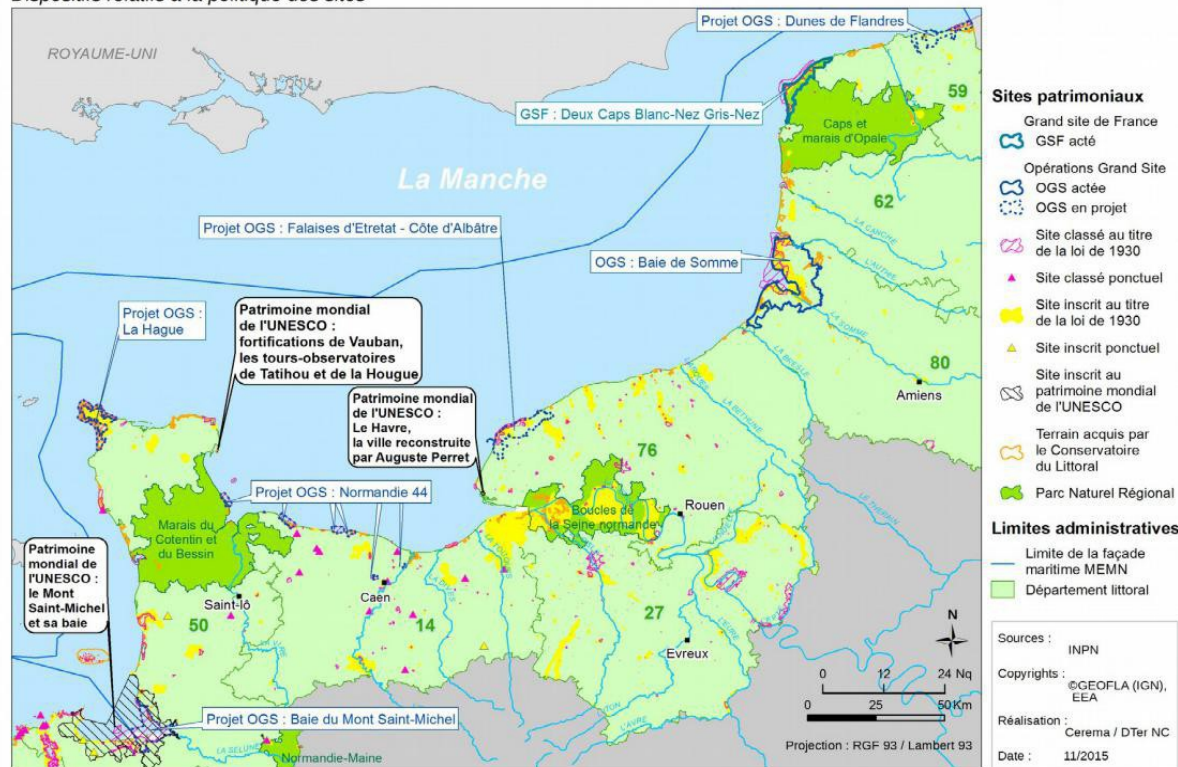
PROTECTION AND RECOVERY - SITES, LANDSCAPES AND HERITAGE

Presenting challenges related to **attractiveness** and **spatial planning**, the landscape contributes to the population's quality of life. In line with the "Coastlines" Act of 1986, the protection and enhancement of landscapes were listed in 1993 in the "**Landscape**" law, then in the **European Landscape Convention** (entered into force in 2006). The objectives of preserving and promoting the quality and diversity of landscapes give particular attention to the coastlines, which are exposed to urbanisation and tourism. Finally, the **2016 Law for the Recovery of Biodiversity, Nature and Landscapes** puts several **tools and approaches in place** to enrich the knowledge of landscapes and deepen qualitative objectives.

The Eastern Channel - North Sea basin contains a **great richness of landscape diversity**. Two regional natural parks with part of their territory on the coast have created landscape charters, but only the Hauts-de-France region has before and after pictures showing the evolution of the landscape of the coastline of the area (five in Nord and Pas-de-Calais). The Coastal Trail is a unique pedestrian route.

The State's commitment to a **policy for the protection and enhancement of natural sites** first focused on exceptional and isolated landscapes and then extended to a dynamic management of large entities. The law establishes two further levels of protection: **classification and registration**. Both are an official recognition of quality and a desire to place the area under the control and responsibility of the State.

Protection et mise en valeur du patrimoine au sein de la façade maritime Manche Est - mer du Nord
Dispositifs relatifs à la politique des sites



Despite its small size, the Eastern Channel-North Sea sea basin is characterised by a **high number of classified sites, including several exceptional sites**. At the end of 2015, the coastline of the coastal area and its immediate surroundings included **60 classified sites and 36 listed sites**. The vast majority of the sites are located in **Normandy** with the notable presence of military remains on the landing beaches, the Mont-Saint-Michel Bay, and the cliffs of Etretat. For Hauts-de-France the following sites are emblematic: the "**Grand Site des Deux Caps**" (site of two capes), the **Dunes of Flanders**, and the **Bay of Somme**.

The **Grande Site Operation (OGS)** is a plan dedicated to high-profile and high-traffic areas, attesting to a high-quality natural and cultural landscape and a recognised national dimension. It is a partnership approach of sustainable and concerted management proposed by the State to the local authorities to manage the reception and maintenance in the big sites; this management can be rewarded by the "Grand site de France" label. All of the abovementioned sites are subject to an OGS. In addition, the Mont-Saint-Michel Bay, the city of Le Havre, and the Bay of Somme are part of the **UNESCO World Heritage Site**, attesting to their outstanding universal value. Finally, the **Conservatory of Coastal Areas and Lake Shores** conducts a land policy for safeguarding natural areas.

The "**coastal cultural heritage**" refers to a specific heritage related to all maritime and coastal activities. A footprint of history, the Eastern Channel-North Sea sea basin contains four types of coastal cultural heritage:

- **Maritime heritage** concerns the elements related to human activities around the sea. The coastline was lined by lighthouses spread along the coasts, which are being developed for their historical interest. The coastline includes a rich archaeological and underwater heritage, including shipwrecks and submerged land sites. Finally, **nine maritime museums** with different themes are located on the coastline to highlight this heritage.

- **Seaside heritage** is linked to tourism and recreation. Seaside resorts are characterised by a wide promenade lined with green spaces. Entertainment facilities (casinos, theatres, baths) and transatlantic transport stand alongside residential buildings marked by period architecture. On the Eastern Channel-North Sea coastal area, seaside and tourist activity developed with the arrival of the railway towards the coast, facilitating the arrival of leading figures from Paris; fashionable seaside resorts thus sit alongside more family-friendly resorts, which are just as busy.

- **Military heritage** is mainly characterised by the fortification of the coasts, built from the 17th century (including Dunkirk, Dieppe, Cherbourg and Bergues). Subsequently, the Second World War resulted in the construction of the "Atlantic Wall". Blockhouses and bunkers leave lasting traces on the coast. The landing beaches and their military cemeteries, like Omaha beach, are key areas. Finally, the architecture of some cities is evidence of their reconstruction after the war. Museums and memorials accompany these remains.

- **Industrial heritage** is mainly related to port activities, developed thanks to a productive hinterland and in order to receive raw materials. Docks, depots, factories and shipyards constitute a particular heritage of the coastline, for example in Dunkirk, Le Havre and Rouen.

PROTECTION AND RECOVERY - ARTIFICIALISATION OF COASTAL AREAS

The coastal areas constitute the [top metropolitan tourist area](#), and concentrate about 10% of the French population on 4% of the mainland territory; they are therefore the most affected areas by an significant artificialisation process. Indeed, although about 36% of the territory of coastal municipalities were under the management of a **protected natural area or special protection in 2015**¹, coastal areas have been urbanised twice as much as the rest of the territory. To reconcile the development of economic activities and protection of the natural heritage, the **“Coastlines” law of 3 January 1986** regulates the possibilities and modalities of construction and development of the maritime municipalities bordering oceans, seas, lagoons and estuaries downstream of the transversal limit of the sea.

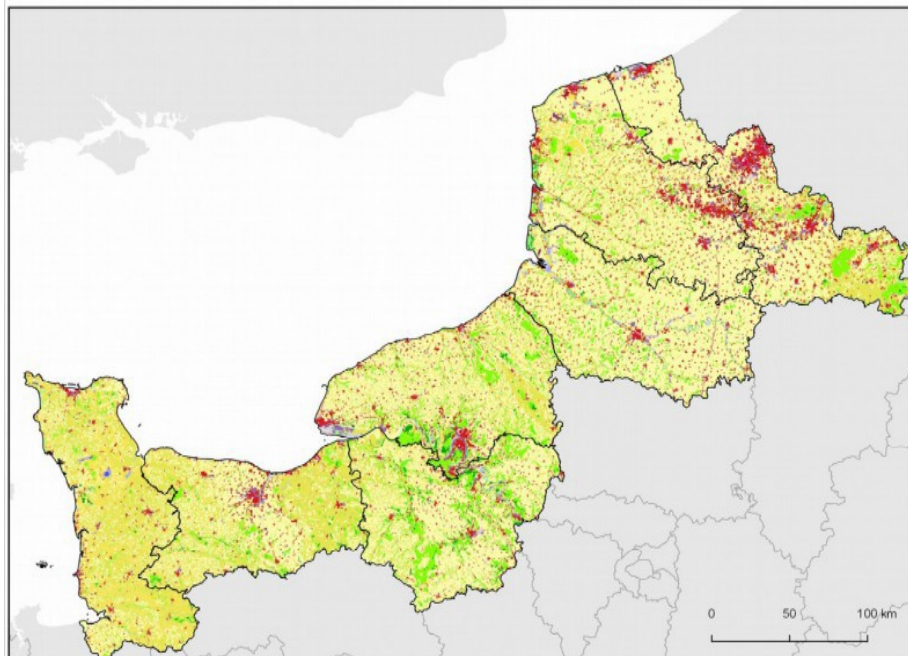
Artificialisation of soils is a source of pressures and impacts on the environment, in particular because of **atmospheric emissions from the production of waste (pollutants with health effects and greenhouse gases, mainly from the industrial sector, transport and household activity)**, and from the **diffuse and continuous emission of pollutants**, including wastewater. In addition, artificialisation of soils can increase the risk of marine submersion, and some equipment increases coastal erosion.

As regards the Eastern Channel-North Sea coastal area, the rate of artificialisation in 2012 was 18.7%, which is increasing according to national trends. The coastal towns of the Eastern Channel-North Sea coastal area are characterised by a high population density (305 inhabitants per km² in 2018) and an artificialisation rate higher than the national average. However, the densification of coastal municipalities has decreased by around 10% in 10 years (2000 - 2010) in favour of the municipalities of the hinterland. The area occupied by agricultural areas in coastal municipalities increased by around 9% between 2006 and 2012.

Among the six **Territorial Planning Directives (DTA)** specifying the application of the Coastline Act, one of them concerns the [Seine Estuary](#). Its scope concerns three departments (Seine-Maritime, Eure and Calvados) and 54 coastal municipalities. It includes [recommendations for objectives, orientations and accompanying policies](#), and enacts urbanisation rules for all areas close to the shore by identifying sensitive spaces and spaces at risk of development. In addition, the coastline has **19 Territorial Coherence Plans (ScoT)**, which makes it possible to design territorial projects in order to ensure a balanced development oriented towards the hinterland, limit urbanisation of the areas near the shore by reserving them for the maritime and traditional activities, and managing the problem of coastal risks (marine submersion, erosion of the coastline, dune migration).

Finally, the share of coastal municipalities covered by regulatory protected areas, property or contracts, is higher than the French average, but lower than the average of the mainland coastline. Protection levels vary from one department to another within the Eastern Channel-North Sea sea basin, depending on the environmental characteristics. Among the protected areas and **Natura 2000** sites, the coastal area includes three regional natural parks and a proposed park: the **Cotentin and Bessin marshes**, **that of the loops of the Norman Seine**, and the Opal Capes and Marshes nature park.

Occupation du sol dans les départements littoraux de la sous-région marine Manche - Mer du Nord



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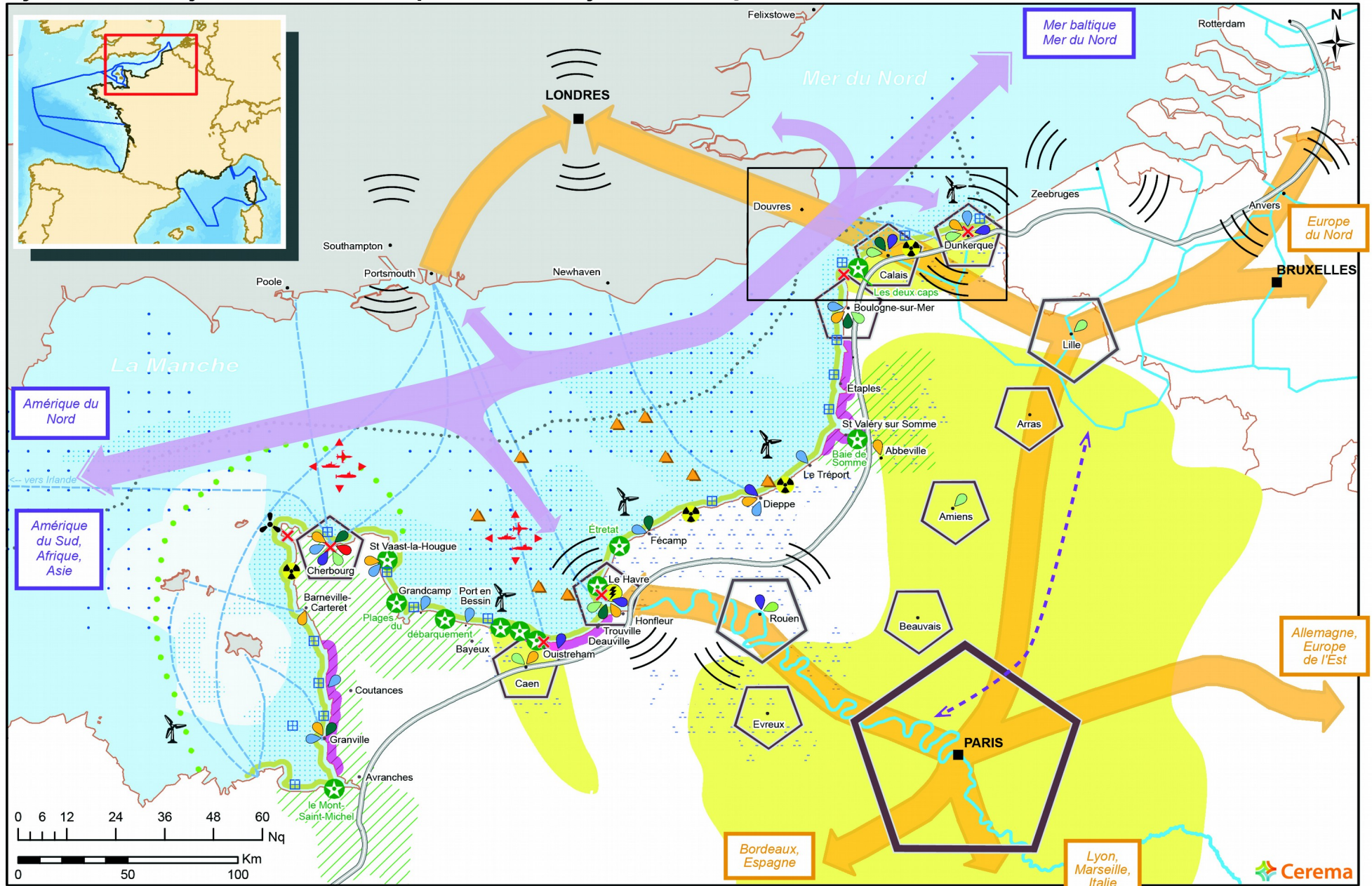
Appendix no. 1: Detailed description of activities

OVERVIEW OF RISKS

Type of risk	Description of the risk	Events on the Eastern Channel-North Sea coastal area	Public policies and risk management measures
Coastal erosion	Phenomena of natural origin can be aggravated by some human activities (work on the coast), coastal erosion threatens the future of many coastal areas, both constructed and natural. It is emphasised by the effects of climate change.	<p>More than one third of the coastline is eroding (37.6%). This is the highest proportion of the four coastal areas.</p> <p>Erosion is particularly high in Seine-Maritime (73.9% of the coast) and in Pas-de-Calais (77% of the coast) and remains significant in the Somme (34.7% of the coast). It is reducing a large proportion of the documented natural coastline: 85% for the Pas-de-Calais coast and 92% for that of Seine-Maritime.</p>	The National Strategy for Integrated Coastal Area Management (2012) commits the State and local and regional authorities to an approach based on shared knowledge and local strategies. This public policy accompanies the observation and identification of territories at risk, encourages shared risk management strategies and spatial recomposition of the territory, and provides a framework for financing measures.
Marine submersion	<p>As a phenomenon of natural origin can be aggravated by some human activities (artificialisation of the soil), marine submersion is characterised by temporary flooding of the coastal zone in severe meteorological and tidal conditions. It is emphasised by the effects of climate change (rising average sea level).</p> <p>"<i>Low-lying areas</i>" are areas subject to submersion hazards, defined by an altitude lower than the levels reached by the sea in extreme conditions.</p>	<p>On the coastline, it is estimated that there is 11,750 km² of low-lying areas, of which almost half are in Nord and Pas-de-Calais, the Bays of Canche, Authie and Somme and a quarter in the Channel and Calvados.</p> <p>12.3% of these areas are artificial territories, mostly agricultural land. It is estimated that 408,500 people live in low-lying areas on the coast, more than three quarters of whom live in Nord and Pas-de-Calais, departments which are also home to many "Seveso"-classified industrial sites.</p>	<p>The Natural Hazard Prevention Plans (1995), developed by State services under prefectural authority, deal with the risks of floods, land movements, marine submersion and storms.</p> <p>The Rapid Submersion Plan (2011) aims to ensure the safety of people through preventive measures, prediction and protection of populations.</p>
Health risks	<p>Health risks include microbiological, chemical and biological risks related to water pollution. These risks can disrupt marine and coastal ecosystems, but also pose threats to human health (e.g. bathing or shellfish consumption).</p> <p>Regulatory monitoring of the quality of water and shellfish focuses on bathing sites and shellfish production areas (shellfish accumulate compounds present in the marine environment, and are therefore good indicators of the quality of the environment).</p>	<p>The coastal area has 193 seaside bathing sites that are subject to health monitoring. Water quality is rated as good or excellent at 85% of coastal beaches.</p> <p>More generally, the microbiological quality of coastal waters is evaluated as average.</p> <p>Monitoring the chemical quality does not show if health thresholds are exceeded, but rather shows a relatively greater contamination at the Seine estuary and plume.</p> <p>Monitoring of phytoplankton toxins have revealed phycotoxin contamination in Seine-Maritime and Calvados.</p> <p>Studies in the Channel have shown a link between the continental nutrients supply of the Seine and episodes of unwanted microalgae blooms.</p>	<p>The Shellfish Waters Directive (2006/113/EC) applies to coastal waters and brackish waters that need to be protected or improved and the growth of shellfish to allow the life and growth of shells (bivalve molluscs and gastropods) and thereby contribute to the good quality of directly edible human products.</p> <p>Specific and complementary health monitoring on shellfish from the main natural deposits frequented by recreational anglers is carried out by the regional health agencies on the coast.</p> <p>The Bathing Water Directive (2006) aims, in particular, to identify and characterise the sources of pollution likely to affect the quality of water and present a health risk for bathers. Vulnerability profiles of shellfish production areas are either linked to or dissociated from the bathing water vulnerability profiles, according to the sectors of the coastline.</p> <p>In 2011, the Ministry of Health introduced measures concerning the monitoring and management of algae strandings in the health control system of bathing waters.</p> <p>Vulnerability profiles of the shellfish production and bathing areas are carried out jointly in Normandy and separately in Hauts-de-France.</p>

Type of risk	Description of the risk	Events on the Eastern Channel-North Sea coastal area	Public policies and risk management
Nuclear risks	Nuclear risks are related to nuclear power generation and processing facilities .	The area includes the highest concentration of nuclear activities in mainland France . It hosts several plants (Gravelines, Paluel, Penly and Flamanville , a reprocessing plant and a rail terminal for waste transportation (La Hague), a storage centre (Manche), maintenance workshops and installations related to defense and research.	The opinions of France’s Nuclear Safety Authority (ASN) , an independent administrative authority, guide the general regulations on nuclear safety issued by the Government via the Nuclear Safety and Radiation Protection Mission (MSNR) . The ASN has regulated means of monitoring and sanctions powers. The French Institute for Radiological Protection and Nuclear Safety (IRSN) provides expertise and public research. The creation of a Basic Nuclear Installation requires prior authorisation issued by decree and accompanied by a preliminary safety report that identifies the risks, analyses the provisions intended to prevent them and justifies the measures to limit the probability of incidents or accidents and their effects.
Industrial risks	These risks are related to enterprises and fixed installations producing or using hazardous materials . There can be many effects of industrial accidents: thermal effects, overpressure conditions, and toxic effects.	The areas concerned by industrial risks on the coast are mainly the Industrial Port Areas of Dunkirk and Le Havre . The departments of Seine-Maritime and Nord are classified as the first and third nationally ranking departments with the largest number of active Seveso sites, respectively.	The “Risks” law (2003) , strengthens the regulation and the methodology for studying industrial dangers, and organises Technological Risk Prevention Plans , with the aim of solving difficult urban planning situations to protect populations near Seveso sites. The Seveso 3 directive (2012) requires States and companies to identify the risks associated with industrial activities and to take the necessary measures to deal with them. It introduces new methods of classifying substances and creates new hazard names, and reinforces the provisions on public access to security information, its participation in decision-making and access to justice.
Risks related to the transport of dangerous materials	These risks relate to all types of transport (road, rail, inland waterways, marine, pipelines), as well as intermediate storage sites, flammable, toxic, explosive, corrosive and radioactive goods .	More than three-quarters of the Normandy and Hauts-de-France regions are affected by these risks, due to the high concentration of goods traffic.	The regulation is mainly international, with an obligation to apply European directives within the Member States, such as the RID regulation (rail transport) and European agreements such as ADR and ADN (road and river transport). The Maritime Codes and Resolution for the Transport of Dangerous Goods (2000) (shipping), and the technical instructions of the International Civil Aviation Organisation (air transport) are also part of the regulation. The “Risks” law (2003) introduces the obligation to draw up hazard studies for road, rail, port or inland navigation infrastructures or multimodal installations that may pose serious hazards due to the parking, loading or unloading of dangerous goods.
Risks related to maritime safety	The risks related to maritime safety result from the density of traffic flows and their crossings, the concomitance of which is likely to increase the danger for goods and people. Currents, winds and temperature are also factors that aggravate the risks. These risks concern all transport, fishing, boating, cable, dredging and military activities at sea. We can also mention the risks of accidents related to safety at work.	The coastline is subject to dense and continuous maritime traffic, which represents nearly a quarter of global traffic for a restricted area and is largely open to influences from West and East disturbances. And 20% of the ships in circulation in the coastal area are oil, gas and chemical tankers. Overall, the dangerousness on the coastline presents a medium likelihood of risk to public health, a strong risk to goods and economic activity, and a permanent risk to human life at sea and the environment.	The internal security code provides for the ORSEC maritime device , developed on the basis of a risk analysis process. This device identifies the danger and risks of the maritime zone. The French Directorate for Maritime Affairs (DAM) , within Directorate-General for Infrastructure, Transport and the Sea (DGITM) , includes a maritime safety sub-directorate, which develops regulations, organises the inspection of ships, and organises search and rescue mission at sea (Regional Operational Monitoring and Rescue Centres - CROSS).

Synthèse des enjeux socio-économiques forts et majeurs de la façade maritime Manche Est - mer du Nord









Sources : DIRM MEMN, SHOM - Copyrights : Mapinfo Corporation - Réalisation : Cerema Normandie Centre - Date : 08/2018







Projection : RGF 93 / Lambert 93

L'espace transmanche : une façade maritime reliée à l'économie mondiale







Enjeux économiques internationaux et transfrontaliers

-  Axe de trafic mondial et européen
-  Principales dynamiques de flux économiques par voie maritime (accès aux grands ports maritimes)
-  Porte d'entrée maritime de l'Europe, pôle industrialo-portuaire majeur
-  Synergies portuaires (interconnexion axe Seine et axe Nord)
-  Corridor économique majeur à l'échelle européenne (dont flux transitant par le tunnel sous la Manche)
-  Système fluvial transfrontalier

Principales productions agricoles pour l'export par voie maritime :






-  Zone de production du lin
-  Zone de production céréalière
-  Transport de passagers transmanche
-  Pôle touristique littoral majeur
-  Bassin de plaisance : Golfe normand-breton
-  Cohabitation des usages transfrontaliers (pêche)

Gouvernance, défense et sécurité maritime

-  Zone économique exclusive
-  Brexit
-  Délimitation maritime des îles anglo-normandes
-  Gestion du détroit : concentration du trafic maritime, migrants
-  Sécurité et sûreté maritime
-  Activités de défense

Les spécificités économiques de l'interface terre-mer en Manche Est - mer du Nord

Gestion durable des ressources marines et littorales







-  Pêche professionnelle : pêche artisanale côtière et principaux secteurs pour les navires immatriculés en MEMN et équipés du VMS (données 2013-2014)
-  Aquaculture (conchyliculture, pisciculture en mer)
-  Extraction de granulats marins
-  Attraits littoraux pour le tourisme et les loisirs : patrimoine (historique, paysager, environnemental ou industriel), espaces muséographiques, parcs de loisirs bases nautiques, eurovéloroute n°4...
-  Production agricole littorale sous signe de qualité (AOC, IGP)

Énergies marines renouvelables - Énergies terrestres non renouvelables

(Site projet ou à l'étude)

-  Éolien posé
-  Centrale nucléaire littorale
-  Hydrolien
-  Centrale thermique



Les filières maritimes de la façade maritime

-  Transport et industries : 1^{ère} façade maritime pour l'emploi
-  Pêche, aquaculture et transformation : 2^{ème} façade maritime pour l'emploi
-  Filière nautique (construction, entretien, réparation, déconstruction navale et services associés)
-  Formation maritime
-  Pôle universitaire : formation et recherche sur la mer et le littoral
-  Défense

Les marchés de la façade maritime

-  Principale aire urbaine du littoral
-  Principale aire urbaine de l'arrière-pays dont la Métropole Rouen Normandie et la Métropole Européenne de Lille
-  Bassin parisien
-  Espace littoral à forte fréquentation touristique

Les axes majeurs de la façade maritime

-  1^{er} système logistique, industriel et touristique de France (Vallée de Seine)
-  Autoroute des estuaires

LOCALLY INTEGRATED MANAGEMENT AND PLANNING INITIATIVES

Traditionally, the State was in charge of managing the sea, then the progressive involvement of stakeholders in managing the coastal zones required the legal instruments to be adapted. The concept of **Integrated Maritime Policy (IMP)** developed by the EU is reflected in the [integration of the different sectoral policies](#) implemented in the marine environment. Each component is then debated and planned on the appropriate territorial scale. The IMP comes in two complementary governance instruments aimed at better coordination of public action: [Marine Spatial Planning \(MSP\)](#) and the [Integrated Coastal Zone Management \(ICZM\)](#), integrated and strengthened in France through the [Integrated Management of the Sea and Coast \(GIML\)](#). MSP is defined as the process of organising human activities in maritime areas to achieve environmental, economic and social objectives. ICZM is the dynamic process of the sustainable management and use of coastal zones, mobilising communities and laboratories around the assessment of coastal territories.

For each coastal area, governance requires the involvement of sea and coastal stakeholders and users, in order to integrate a plurality of interests and to reach decisions that are understood and accepted by all. Thus, many **stakeholders with specific skills** are involved in the planning and integrated management of the sea and coast. First and foremost are [international and European structures](#), which set guidelines and directives. Then there are the [State services](#), with the **Ministry for an Ecological and Solidary Transition**, supported by various departments, which implements government policy. The [territorial authorities](#) have jurisdiction for various sectors related to maritime activities; in the Eastern Channel-North Sea, two regions, seven departments and the communes and their groupings are involved. Finally, the [socio-professional and scientific stakeholders](#) (joint associations, public institutions, managers of protected areas, federations, and associations) contribute to this integrated management by ensuring the conservation and animation of spaces, bringing their expertise, or helping with decision-making.

As an example of public institutions (the French Agency for Biodiversity, Water Agency, etc.) and scientific institutes (the French Institute for Marine Research, the Centre for Studies and Expertise on Risks, the Environment, Mobility and Management, etc.) are part of the planning process for the maritime space in the Eastern Channel-North Sea. The [Conservatory of Coastal Areas and Lake Shores](#) also conducts a land policy for safeguarding areas. Among the professional stakeholders, we can mention the Regional Committees for Marine Fisheries and Marine Livestock, the National Union of Aggregate Producers, the Electricity Transmission Network, the major maritime ports (Le Havre, Rouen, Dunkirk), and the joint associations and mainland hubs on the coast. France Nature Environment and the French Federation of Recreational Harbours are involved stakeholders.

The coastal area therefore has local governance bodies complementary to the French Maritime Cluster (SBC) and whose concerted reflection work makes it possible to further enrich the provisions that were adopted during the **Assises de la mer** launched in March 2013.

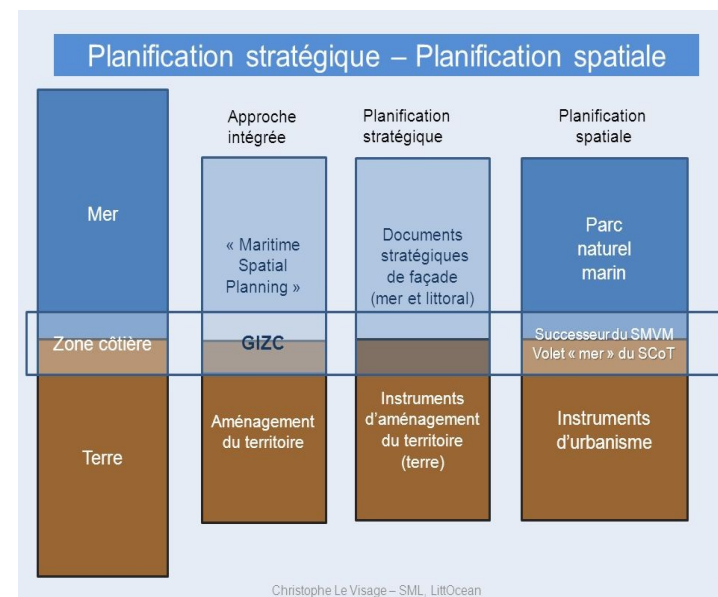
The development of maritime and coastal activities implies the **creation of synergies to avoid conflicts** for resources and maritime space, to minimise **risks**, which are increasing due to the growing density of the uses of the sea, and taking into account **cumulative impacts** due to human activities. These are the main objectives of the **management and planning tools at sea and on the coast**.

Must be compatible or made compatible with the SBSC: the programme plans and diagrams relating to the activities located on the coastline, development work projects and schemes, marine development plans, regional development plans for marine aquaculture (see introduction on this topic).

Planning at the regional level is governed by “schemes” that help to identify and prioritise local issues, including protecting natural habitats from urbanisation. There is a particular interaction between the SBSC and the [Regional Plan for Planning, Sustainable Development and Territorial Equality \(SRADDET\)](#), a document currently being drawn up and intended to bring together three types of existing plans. The [Territorial Coherence Plans \(ScoT\)](#) with a section regarding the coast have a role of integrating all sectoral policies for the sustainable management of a living area or agglomeration. There are 18, including 4 in development, on the Eastern Channel-North Sea coastal area, covering 91.3% of coastal municipalities. ScoTs may include an individualised coastal section focusing on marine development. On the other hand, the [territorial directive of the Seine Estuary](#), which classifies spaces according to urban issues, is the only one on the coastline of the seaboard, although it covers three departments. There are other planning tools for some maritime activities, such as [Regional Development Plans for Aquaculture](#), [Strategic Projects for Major Sea Ports](#) and the [Marine Renewable Energy Planning Documents](#).

97.3% of the coastal towns in the area have [Land Use Plans \(POS\)](#) and [Local Urban Plans \(intercommunal\) \(PLU\(i\)\)](#). Many of these are also covered by regulatory protected areas, property or contracts, which are characteristic of the seaside. Among these, there are three [Regional Nature Parks \(PNR\)](#) (the Opal Capes and Marshes nature park, loops of the Norman Seine, the Cotentin and Bessin marshes) and a [Marine Nature Park](#) (Picardy estuaries and the Opal Sea), as well as 71 [Marine Protected Areas \(MPAs\)](#) including 45 Natura 2000 sites.

Planning in the field of water is carried out through the [Master Plans of Development and Water Management \(SDAGE\)](#), aiming at the sustainable management of the resource in the territories. Finally, the management of coastal risks meets the principle of prevention, which prevents the environment from being damaged. For example, there are the [Plans for the Prevention of Foreseeable Natural Risks \(PPRNP\)](#) which delimit risk zones with coastal specificities and a regulation of uses; or [Specific Response Plans \(PPI\)](#) which are local arrangements established to address the risks associated with the presence of hazardous industrial facilities.



CHALLENGES - INTERACTIONS BETWEEN ACTIVITIES AND THE ENVIRONMENT

Summary of issues by activity

Of the activities on the Eastern Channel-North Sea sea basin, **eight main activities** have been identified as particularly important for the coastline:

- Commercial fishing
- Aquaculture
- Port, transport and maritime commerce activities
- Marine renewable energies
- Tourism and leisure activities
- The extraction of marine aggregates
- Dredging

The **challenges** met are grouped into **eight categories**:

- Economic challenges (competitiveness of the sector)
- Challenges related to good environmental status, reduction and avoidance of pressures and impacts on the environment
- Challenges related to the use, access and occupation of resources and spaces (including the question of the coexistence of uses of the sea and coastline in new and historical uses)
- Challenges of knowledge, innovation, research and development
- Challenges related to the management of natural and man-made risks
- Training, education and awareness challenges
- Governance challenges (local, national, European and international).

Overlapping of challenges between activities

The overlap of the challenges between the activities reveals wide margins of manoeuvre concerning the establishment of synergies between the different uses of the maritime and coastal area. The development of multi-activity spaces, through concerted land-use planning between public and private actors, could make up for the reduced surface area of the area, as well as the need for land for the diversification of port activities. To do this, and as part of the integration of the PAMM to the SBSC, the development of research on the cumulative impacts of activities will be crucial.

There are some cross-sectional challenges that are shared by the activities which appear particularly frequently:

1) Challenges concerning the **recovery** of sea trades, their social acceptability and the products resulting from these activities. The lines of concrete action emerge through the creation of dedicated labels and by the efforts of the sectors and the State as regards **communication to the general public and education on the sea**.

2) Challenges related to **administrative simplification and legal security**, which would allow concerted and faster action, as well as **international regulations** of the activities, related to Brexit.

3) Challenges related to the **good environmental status and quality of the environment**, through health rankings of water quality and the establishment of infrastructure to treat waste in a circular economy.

4) Challenges related to **acquisition, dissemination and sharing of data and knowledge** on activities and marine and coastal environments. This work on knowledge should allow the development of new activities and clean techniques, as well as a better consideration of the impacts and pressures activities have on the environment.

5) Challenges related to **training** and **employment** show the need to train a qualified workforce corresponding to the needs of the sectors, allowing both job creation and professional retraining.

Synthèse des états de compatibilité entre activités dans une même zone

Appearing in the table below:

- in **green** are the activities that do not interact with each other and/or for which coexistence rules are already defined (e.g. steering and sailing rules, nautical charts and sailing directions, etc.)
- in **yellow** are the activities for which rules of technical, regulatory and/or temporal coexistence are to be established
- in **orange** are the activities that are difficult to match directly in one place, for legal or technical reasons

Croisement activités	Pêche professionnelle	EMR	Aquaculture	Câbles marins	Tourisme et loisirs	Extraction de granulats marins	Dragage	Clapage	Ports et transports maritimes
Pêche professionnelle									
EMR									
Aquaculture									
Câbles marins									
Tourisme et loisirs									
Extraction de granulats marins									
Dragage									
Clapage									
Ports et transports maritimes									

In order to plan the maritime area, account must be taken of the coexistence of socio-economic activities in the same area or in the immediate vicinity, any new uses or new activities must present an analysis of its interactions with other uses present and its impacts on the marine environment. In particular, this analysis must be based on an "avoid-reduce-compensate" sequence.

It is also important to determine the impacts and pressures of activities on the marine and coastal environment since the development of some of them depends on the achievement or restoration of a good environmental status (GES).

Activités	Pêche professionnelle	EMR	Aquaculture	Câbles marins	Tourisme et loisirs	Extraction de granulats marins	Dragage/Clapage	Ports et transports maritimes
Dépendance au BEE	X		X		X			

Pressures likely to be generated by maritime and coastal activities

The natural environments are subject to natural pressures and/or human activities. This document describes the known potential contributions of these activities to these pressures, based on the scientific reports developed in the second cycle of MFSD. These pressures do not take into account the local context of the environment concerned, the application of the “avoid, reduce, compensate” sequence and the technologies or techniques used. Telluric discharge pressures are not analysed in this document since they are mainly processed via the joint MSFD/WFD programme (see chapter Marine and Coastal Ecosystems, page 26).

Maritime transport and port activity	Maritime works and artificialisation	Commercial fishing activity	Aquaculture activity
Waste discharge (<i>Ifremer and Cedre, 2017</i>)	Generation of physical pressures relating to the integrity of the seabed: permanent and temporary changes in the topography and the nature of the seabed, and temporary hydrodynamic modifications related to defense works, dredging, piling (<i>BRGM, 2017</i>)	Extraction of living resources: targeted and non-targeted species (<i>Ifremer, 2018</i>)	Risk of introduction or spread of non-native species, particularly through the exchange of aquaculture batches between sites, infrastructures and floating waste (<i>MNHN, 2018</i>)
Introduction of ecotoxic substances in the marine environment (<i>Ifremer, 2018</i>)	Modification of hydrographic conditions, including the current flow patterns, turbidity and nature of the seabed (<i>SHOM, 2017</i>)	Risk of introduction or spread of non-native species (<i>Ifremer, 2018 and MNHN, 2018</i>)	Waste discharge (<i>Ifremer and Cedre, 2017</i>)
Generation of physical pressures relating to the integrity of the seabed: permanent and temporary changes in the topography and the nature of the seabed, and temporary hydrodynamic modifications related to port works and maritime transport (<i>BRGM, 2017</i>)	Generation of acoustic emissions from transient sources (impulse sounds) (<i>SHOM, 2017</i>)	Waste discharge (<i>Ifremer and Cedre, 2017</i>)	Modification risks of hydrographic conditions, including the turbidity and nature of the seabed (<i>SHOM, 2017</i>)
Modification of hydrographic conditions, including the nature of the seabed (<i>SHOM, 2017</i>)	Tourism and leisure activities	Generation of physical pressures relating to the integrity of the seabed: temporary modifications of the topography of the seabed and temporary or permanent modification of the nature of the seabed. These effects appear mainly when fishing gear is dragged on the seabed, such as trawls or dredges (<i>BRGM, 2017</i>)	Generation of physical pressures relating to the integrity of the seabed: temporary modifications of the morphology of the nature of the seabed (<i>BRGM, 2017</i>). The contribution of the activity to the pressure, however, seems less significant than other activities.
Extraction of living resources via collisions with marine mammals in particular (<i>PELAGIS observatory - UMS 3462, University of La Rochelle and CNRS, 2018</i>)	Waste discharge by coastal tourism activities (<i>Ifremer and Cedre, 2017</i>)	Modification risks of hydrographic conditions, including the turbidity and nature of the seabed (<i>SHOM, 2017</i>)	Activities related to the extraction of marine materials
Potential vectors for the introduction and propagation of non-native species (ballast water, bio-soiling on ships' hulls, in particular) (<i>MNHN, 2018</i>)	Activities related to marine renewable energies (MRE)	Agricultural activity	Generation of physical pressures relating to the integrity of the seabed, in particular the extraction of marine aggregates: permanent and temporary changes in the topography and the nature of the seabed (<i>BRGM, 2017</i>)
Generating permanent background noise in the marine environment (continuous noise) (<i>SHOM, 2017</i>)	Generation of physical pressures relating to the integrity of the seabed: permanent and temporary changes in the topography and the nature of the seabed, and temporary hydrodynamic modifications related to offshore structures for renewable energy production (<i>BRGM, 2017</i>)	Release of nutrients: mainly diffuse terrestrial inputs of nitrates and phosphates and evaporation of reduced nitrogen (NH ₃ in the atmosphere) (<i>Ifremer, 2017</i>)	Modification of hydrographic conditions, including the current and wave flow patterns, and changes in turbidity and the nature of the seabed (<i>SHOM, 2017</i>)
Cable ship activity	Activities related to energy production from non-renewable sources	Introduction of ecotoxic substances in the marine environment (<i>Ifremer, 2018</i>)	Recreational fishing activity
Modification risks of hydrographic conditions, including the temperature and nature of the seabed (<i>SHOM, 2017</i>)	Risks of changes in hydrographic conditions, including current flow patterns (<i>SHOM, 2017</i>)	Industrial activity	Extraction of living resources: targeted and non-targeted species (<i>Ifremer, 2018</i>)
		Waste discharge (<i>Ifremer and Cedre, 2017</i>)	Waste discharge (<i>Ifremer and Cedre, 2017</i>), , but contributes less pressure compared to commercial fishing
		Introduction of ecotoxic substances in the marine environment (<i>Ifremer, 2018</i>)	

Appendix no. 2: Detailed description of activities

VISION FOR THE EASTERN CHANNEL-NORTH SEA COASTAL AREA



The Eastern Channel-North Sea sea basin extends from Mont Saint-Michel to the maritime borders between France, the United Kingdom, the Channel Islands and Belgium. A small and windy area, with strong currents and shallow depths, it remains a major axis of world maritime traffic, where navigation routes intersect and where, in a very restricted space, many socio-economic activities that place marine and coastal environments under strong anthropogenic pressure coexist.

By 2030, the Eastern Channel-North Sea coastal area will become a gateway to Europe. Its ports open up the continent's economy to the world. It has port areas that are developing cooperation which will strengthen their economic competitiveness and that are implementing a global strategy for the positioning of French ports in the North-European Range, fostering an interlinked approach between the Seine Axis/ north axis/ Seine-North Canal. A high level of maritime and port security reinforces the economic attractiveness of the coastline. These navigational safety conditions and the prevention of accidental pollution of the maritime environment in the main strait of the world are reached through the sustainability of the organisation of the action of the State at sea and the consolidation of the means of monitoring navigation, dockside monitoring of ships, intervention and assistance at sea. The coastline reinforces the security of its port areas and maritime areas in a context of increased terrorist risk and sustainability of the migratory phenomenon.

The protection of the marine environment and the good environmental status of the environments constitute an opportunity for the success of the economic and industrial evolutions of the coastline. The sustainable development of activities that structure the economy of the coastal area is guaranteed by the sustainable management of resources, compliance with environmental standards, the promotion of the circular economy and an improved resilience of the area around the coast to natural risks as well as the adaptation of the territory to climate change. The Eastern Channel-North Sea sea basin has good water quality which promotes its attractiveness and allows the sustainable development of activities directly related to the quality of the environment (marine fisheries, fish farming, sea-cage aquaculture, etc.). This water quality is a guarantee of dynamic, balanced and productive ecosystems. It promotes high-quality tourism and a healthy practice of recreational fishing, bathing and water sports in accordance with good environmental practices. The Eastern Channel-North Sea sea basin actively contributes to the energy transition by providing a framework for dialogue and acceptability for the development of marine renewable energies in synergy with existing activities. It has exceptional natural assets and rare industrial expertise that makes it a hub of excellence in marine renewable energies.

Its marine aggregates resource is strategic for new public works projects (on land or at sea). This is why the area offers favourable conditions and visibility for the sustainable exploitation of this resource. Access to the marine aggregates resource is preserved in a conciliation framework with other uses of the sea. By diversifying fishing activities, the area ensures the maintenance of living resources and their rational exploitation, from supply to marketing. Fishing and fish farming are social markers of the coastal territories and their maritime identity. Access to fisheries resources is preserved, after the UK leaves the EU, in a conciliation framework with the new uses of the sea and coastline and redefining the conditions of coexistence of foreign fleets. The processing of seafood is a recognised expertise of the coastal area. This is becoming a reference in marine aquaculture and implements a reasoned and diversified development of coastal fish farming, consistent with the evolution of marine fishing activities. Increasing the value of seafood products, from both fishing and aquaculture, is reinforced, notably through the pursuit of labelling processes.

The Eastern Channel-North Sea sea basin promotes its strong coastal tourism potential to nearby European metropolises. The diversification of the tourist offer and the opening to the new coastal and nautical leisure activities is done with respect for natural environments and the historical, cultural and natural heritage which are attractive for sustainable tourism. The dynamism of yachting, most often based on the collaborative economy and functionality, allows the development of nautical industries.

The coastal area relies on its network of research and higher education stakeholders to develop a capacity for scientific mediation on all knowledge problems related to the marine environment. It has enhanced the attractiveness of its initial and continuous training, and continuously adapts it to emerging sectors.

The conditions for the sustainable development of the maritime economy are integrated into spatial and territorial planning approaches. Activities and cooperation are part of an international vision of the Channel and the North Sea area.

In anticipation of possible recognition as a specific European management unit, the Eastern Channel-North Sea coastal area must anticipate the consequences of Brexit. The temporary closure of fishing areas in European waters, together with the forthcoming emergence of marine renewable energy zones, as well as port traffic and activity, require the integration of a new vision in the coordination of cross-border policies.

GENERAL STRATEGIC OBJECTIVES

*CMF*The general strategic objectives include the specific environmental and socio-economic objectives, by major theme, available in the Appendices (Appendices 5 and 6), which will structure the action programme of the SBSC. The order of presentation of the objectives does not refer to any hierarchy between them.

OPERATION OF MARINE AND COASTAL ECOSYSTEMS

1 - Maintain or restore the functioning of marine ecosystems by limiting anthropogenic pressures on coastal, inshore and offshore areas.

Decline in 39 particular EOs

A major challenge of the strategy of the Eastern Channel-North Sea sea basin is that marine ecosystems are complex and fragile ecological structures whose functioning depends directly on the nature and level of pressures generated by human activities.

The limitation of physical disturbances of pelagic and benthic habitats and the implementation of sustainable exploitation techniques of marine resources with limited environmental impacts aim at reducing pressures on species and habitats.

Avoiding activities that disturb protected species and limit the risks of introducing invasive non-native species also help to reduce pressure on the marine environment.

MARINE AND COASTAL BIODIVERSITY

2 - Preserve species and marine habitats that are rare, endangered or play an important role in the food web and ecological connectivity by taking appropriate protection or restoration measures.

Decline in 15 particular EOs

A major challenge for the strategy of the Eastern Channel-North Sea sea basin is that maintaining marine biodiversity requires taking appropriate protection or restoration measures.

The area is extremely rich in marine habitats, and is thus also a place where many marine species live, find food, rest and spend the winter, reproduce, and pass through, which all contribute to the biodiversity and functioning of marine ecosystems, from the bottom to the top of the food chain.

In addition to actions to reduce anthropogenic pressures on the marine environment, the adoption of marine protected area management documents and the adoption of regulatory measures to protect rare or endangered species and habitats conserve the ecological wealth of marine environments.

The implementation of actions to remove artificial obstacles and restore natural areas also makes it possible to preserve or restore the ecological connectivity of marine environments and to promote marine biodiversity.

COMMERCIAL FISHING

3 - Strengthen marine fishing activities by maintaining productive and healthy marine habitats and ensure sustainable management of the Channel and North Sea resources.

Decline in 21 particular EOs and 4 SEOs

With 780 ships present in the waters of the coastal area, generating 24% of the national production value from this activity, fishing relies on the naval industry sector to renew its fleets and equipment.

Strengthening the link with other production and marketing chains in the Eastern Channel-North Sea promotes the best increase in value of seafood products.

Oriented towards achieving the maximum sustainable yield, the development of fishing remains conditioned by the good environmental status of marine environments, particularly benthic and pelagic habitats. Maintaining fish stocks and feeding areas and spawning grounds is promoted through the management of fishing effort and responsible practices.

Technological innovation contributes to strengthening the environmental dimension of commercial fishing activities.

Adapting the maritime training offer contributes to encouraging commitment to commercial fishing professions.

AQUACULTURE

4 - Strengthen the shellfish assets and fish potential of the Eastern Channel-North Sea sea basin by preserving the quality of coastal waters and maintaining healthy and productive marine environments.

Decline in 17 particular EOs and 6 SEOs

Innovation, research and development, and the simplification of administrative procedures help to improve the shellfish and aquaculture productivity of the Eastern Channel-North Sea sea basin. The aquaculture sector in Normandy and Haut-de-France is committed to increasing fish production by 40% by 2020, in compliance with health and environmental requirements.

The optimisation of cultural practices, in particular monitoring the risk of dissemination of non-native species and technical innovation both support the adaptation of the sector to the issues of coastal waters and marine ecosystems, keeping local aquaculture in line with a sustainable perspective. The establishment of shellfish and aquaculture enterprises on the coastal fringe, in the immediate vicinity of production areas and access to seawater, is ensured by privileged access to coastal land.

Training in various aquaculture activities is reinforced by the development of traineeships, allowing easy access to employment and taking into account the specificities of each sector (fish farming, shellfish farming, aquaponics, seaweed farming and crustacean farming). Trades will be made more attractive by improving working conditions, notably by encouraging housing solutions close to the operating areas.

Increasing the value of the products is promoted by establishing signs of quality, developing marketing (short circuits, export, etc.) and through campaigns and promotional events.

RENEWABLE MARINE ENERGIES

5 - Develop all the Renewable Marine Energy sectors and their connections in the coastal area.

Decline in 16 particular EOs and 4 SEOs

The diversification of the energy mix is a major challenge for the Eastern Channel-North Sea coastal area and corresponds to a national issue of ecological transition.

Five to eight calls for tenders on offshore wind turbines should be launched in the area by 2030 to take full advantage of its wind potential (1500 to 2400 km² minimum of potential areas). Identifying suitable areas for the development of wind and tidal projects are subject to extensive consultations. Coexistence between activities is encouraged in the planning and decision-making process.

“Research and development” encourages the mobilisation of new marine renewable energy technologies, and is based in particular on feedback from the first MRE projects and their associated environmental follow-up, which make it possible to more precisely describe the impacts of this activity on the environment. The development of shared connections of commercial or pilot fleets contributes to reducing the environmental footprint of these projects. This innovation reinforces the coexistence between historic and emerging activities. The development of these MRE projects supports innovation in terms of connections to meet current and future real-world test requirements for medium and large powers, further offshore. The industrial fabric of the area, particularly the naval industry, is developing synergies that contribute to the development of the MRE sector. Maritime training must adapt to meet the specific needs of this sector.

MREs are addressed in the context of territorial projects. As such, they contribute to the consolidation of port infrastructures in relation to their reception in the activity zones.

GENERAL STRATEGIC OBJECTIVES

THE EXTRACTION OF MARINE AGGREGATES

6 - Maintain the strategic interest of the coastal area in material contributions to major regional and supra-regional infrastructure projects as well as the building and public works sector. Support the marine aggregate extraction sector to the tune of 10.5 million m³ authorised annually in the area. Anticipate future needs by assigning research permits, if necessary.

Decline in 12 particular EOs and 2 SEOs

The seven concessions for the exploitation of marine aggregates of the Eastern Channel-North Sea sea basin currently meet material needs and participate in the management of the coastline.

An analysis of cumulative pressures generated by the strong interweaving of activities in the Eastern Channel-North Sea sea basin, especially by those involved in the extraction of marine aggregates, with fishing, MREs and ports through a group of scientific interest, make it possible to explore opportunities to limit cumulative impacts on wildlife.

The reception of this activity in the area's ports is facilitated by the development of spaces dedicated to the installation of sites to receive marine aggregates (unloading and treatment facilities).

MARITIME TRAFFIC AND PORT SPACES, DREDGING

7 - Reinforce the strategic positioning of ports in the European Range; promote port cooperation; modernise infrastructure and equipment to diversify activities while limiting environmental disturbances.

Decline in 39 particular EOs and 9 SEOs

As the main zone of global maritime traffic, the Eastern Channel Sea-North Sea sea basin concentrates three major competitive seaports and is part of an efficient inter-regional coordination process. The major ports and secondary ports complement one another by axis approach (Seine Axis, North Axis, Seine-North-Europe Canal), facilitated by the development of mass transport, which reinforce the national and European axes of transport of goods in their connection to the hinterlands. The strategic positioning of ports at the international level is also favoured by the creation of a single port authority, facilitating the transmission of declaratory formalities for ships entering or leaving EU Member States.

Modernisation of port and industrial equipment as well as innovation in the management of traffic and goods flows can optimise land space and strengthen the economic competitiveness of ports, while adapting port spaces to welcome new activities (cruisers, unloading dredged sediments and extracted marine aggregates, LNG, shipyard reconciliation) on reduced land spaces. These developments contribute to the enhancement of maritime trades and the emergence of industrial tourism.

A coordinated policy to prevent pollution from ports, in particular by the systematisation of adapted careening areas, such as the special attention devoted to the limitation and avoidance of environmental pressures related to maritime traffic (continuous noise, air quality, collisions with mammals and turtles), are major objectives for the ecological transition of port activities.

Organising the dredging activity at the scale of the coastal area makes it possible to maintain maritime and river accesses and to adapt them to the increasing size of the ships and the evolution in port activities, while limiting the impacts on marine habitats and their features. The emergence of value chains for dredged sediments is a major objective, participating in the economical management of the natural mineral resources of the Eastern Channel-North Sea sea basin.

NAVAL AND NAUTICAL INDUSTRIES

8- Develop, support and diversify the construction, decommissioning and repair of ships and promote SMEs and ETIs structuring the territory of the coastal area.

Decline in 26 particular EOs and 5 SEOs

Maintaining the production capacity of the construction sector is a major challenge for the Eastern Channel-North Sea sea basin, supported by the presence of one of the three French shipyards approved by the European Commission to dismantle the ships, in Le Havre.

By supporting small and medium-sized enterprises, and scientific and technical innovation driven by research and development, it is a question of adapting the trades and the construction, repair and dismantling sector to become a sustainable economy with short-distribution channels. The recovery of waste from ship dismantling is a strong objective in this respect.

Activities related to leisure and the tourism sector are reorganised around a model focused on service delivery and the sharing and functional economy, boosting the shipbuilding and boating industries, in order to make the best use of the marina space.

AGRICULTURE

9 - Maintain agricultural and pastoral activities in the coastal zone in a perspective of sustainable development and structuring of the coastal and subtidal spaces of the Channel and the North Sea.

Decline in 7 particular EOs

The importance and variety of farmland on the Eastern Channel-North Sea coastal area contributes to maintaining the diversity of landscapes and coastal ecosystems. It is supported by a port infrastructure by allowing export leveraging of productions.

The strong contribution of the agricultural sector of Normandy and Hauts-de-France to the national production of milk, cereals and oil-protein crops, just as the emblematic productions of the coastal area (flax fibre, potatoes and industrial sugar beet) are maintained. These activities are evolving to limit disturbances to water quality (contribution of nutrients involved in eutrophication, release of contaminants).

Agriculture contributes to the maintenance of the coastlines and in particular the salt marshes, by limiting the impact of human activity on the environment (eutrophication) and taking into account the maintenance or improvement of the chemical, ecological and mainly microbiological quality of marine waters in pastoral practices.

REGIONAL INTERVENTION OF THE STATE AT SEA AND ON THE COAST (SAFETY AND SECURITY)

10- Maintain and adapt the State's surveillance and intervention capabilities at sea to preserve the safety and security conditions of maritime and port areas.

Decline in 11 particular EOs and 2 SEOs

Missions involving monitoring navigation, search and rescue at sea, assistance to ships in difficulty, the fight against pollution and neutralisation of explosive devices provided by the State directly contribute to safeguarding people and property and protecting the environment.

The implementation of means of securing maritime and port areas and operations against illegal activities (drug trafficking, illegal immigration, etc.) ensure a high level of safety in offshore, coastal and port areas and help to strengthen the competitive positioning of the ports on the coastline.

Monitoring and control of activities likely to impact marine ecosystems and fisheries policing missions ensure compliance by marine users with rules that protect the marine environment and that govern the exploitation and use of marine resources.

GENERAL STRATEGIC OBJECTIVES

TOURISM AND MARITIME AND COASTAL LEISURE

11 - Preserve the environmental assets and remarkable sites of the coastal area that influence the attractiveness of the Channel and the North Sea to tourists. Promote coastal and nautical recreational activities based on knowledge of the sea and the discovery of environments.

Decline in 36 particular EOs and 4 SEOs

With 60 classified sites and 36 listed sites, including several sites with a global reach, the Eastern Channel-North Sea sea basin extends from Mont-Saint-Michel to the Dunes of Flanders, passing by the Grande Site of the Two Capes. It owes its attractiveness to tourists to its natural characteristics; increasing tourist traffic then assumes a certain number of amenities.

Protecting areas with significant environmental and preservation challenges, or, depending on the sector, reclaiming the quality of coastal waters, are necessary conditions to support and strengthen a varied tourism offer (cruises, outdoor sports, swimming, yachting, recreational fishing).

Sharing a common maritime culture enables public awareness (health and safety standards, eco-responsible behavior, etc.) and the development of sustainable tourism practices. The evolution of the organisation of activities related to sailing and boating diversifies the tourism and leisure offer and reinforces approaches such as "Clean Ports" and "Blue Flag", while also raising awareness amongst boaters.

RESEARCH, INNOVATION, TRAINING

12 - Reinforce the structuring by hub of professional and higher training offerings, innovation and knowledge dissemination capacities within the coastal area.

Decline in 10 particular EOs and 7 SEOs

The Eastern Channel-North Sea sea basin continues its commitment to boost local employment areas through a training offer dedicated to maritime and coastal activities. The objective is to respond to new challenges related to the coastal and marine trades by adapting the training offer, structured around the maritime professions cluster, based in Cherbourg, and maritime training centres (high schools, ENSM, etc.).

Transdisciplinary contributions, links between sea trades within training courses reinforce vocational guidance towards multi-activity and facilitate the resumption of studies as well as retraining and increasing qualification levels. Apprenticeships and sandwich courses are encouraged, making access to employment easier and more attractive.

The creation of specific training courses around new activities (Liquefied Natural Gas, wind power, etc.) allows the evolution of professional practices in line with the Ecological and Solidarity Transition.

The strengthening of the national competitiveness cluster Aquimer and specialised research laboratories (Intechmer, ULCO, French Regional Centre for Fisheries, Aquaculture and Fish Farming, etc.) leads to the creation of inter-university thematic groups (genetic selection of fish stocks, strengthening of studies on pressures and impacts, monitoring of environments, species and marine economic activities, etc.) enabling activities to be adapted to the effects of climate change. The French Research Institution for the Exploitation of the Sea (IFREMER) contributes to the improvement of knowledge on the activities and the marine environment.

Groupings of scientific interest driven by industrial sectors (MRE, aggregates, ports, commercial fishing, etc.) promote the development of a blue economy, adapted to the spaces and respectful of the coastal area's resources. Empirical knowledge is mobilised if necessary.

MARITIME AND COASTAL HERITAGE

13 - Raise awareness of the maritime, cultural, industrial and natural heritage of the Eastern Channel-North Sea sea basin.

Decline in 9 particular EOs and 4 SEOs

Rich in a strong historical heritage, both tangible and intangible, the Eastern Channel-North Sea sea basin enhances the maritime and coastal wealth of its territories to bring out a true shared culture of the sea. Historical activities such as fishing have made their mark on the seascape and continue to shape coastal territories.

The renewed recognition of maritime professions and the improvement of working conditions contribute to the attractiveness of maritime employment. The modernisation and development of industrial and port spaces encourage the recognition of the coastal area's industrial heritage.

The development of major nautical and maritime events, such as the setting up of information and awareness campaigns around the issue of energy or limiting pollution in port areas, promote awareness of environmental and environmental issues related to the sea and coastline.

Enhancement of the maritime and coastal natural heritage and its presentation, especially to the general public and the younger generations, provide a better understanding of its value, the ecological features it brings and its cultural significance.

LAND-BASED POLLUTION

14 - Prevent land-based pollution impacting water quality and marine and coastal ecosystems

Decline in 12 particular EOs

The presence and discharge (by riverways or atmospheric routes) of contaminants and pollutants (microbiological, mineral and chemical) of terrestrial origin have a strong impact on marine and coastal ecosystems and food webs; they can lead to significant health risks for both people and economic activities. The environmental objectives and restoration of the quality of the marine environment are articulated with the SDAGE's objectives of good water quality.

The creation of a plan to fight against pollution, providing for a reduction at the source of plastic waste, especially those related to food packaging, contributes to the restoration of the good environmental status of habitats.

MANAGEMENT OF THE COAST AND ITS ARTIFICIALISATION, PREVENTION OF NATURAL HAZARDS

15 - Define, in application of the National Strategy for Coastline Management, a concerted strategy or strategies at the right scale, of natural risk management in the Eastern Channel-North Sea and master artificialisation of the coastal area.

Decline in 31 particular EOs and 2 SEOs

The functional contributions of the coastal margin to the entire marine ecosystem are fundamental; integrated margin management therefore calls for engineering and environmental engineering.

Faced with the natural risk present in the Eastern Channel-North Sea, first a strategy or strategies must be defined to manage the coastline and the risks of submersion at the right scale, concerted between the actors, which can strengthen or, if necessary, reposition coastal activities and goods over the long term. This networking encourages the sharing of feedback on the coastline and nurtures national experiences and those of neighbouring countries. Solidarity is mobilised between the coastal zones and inland coastal areas.

Urban planning, development, economic activities such as coastal agriculture, aquaculture and tourism adapt to limit the artificialisation of the coastline and disturbances to species and environments.

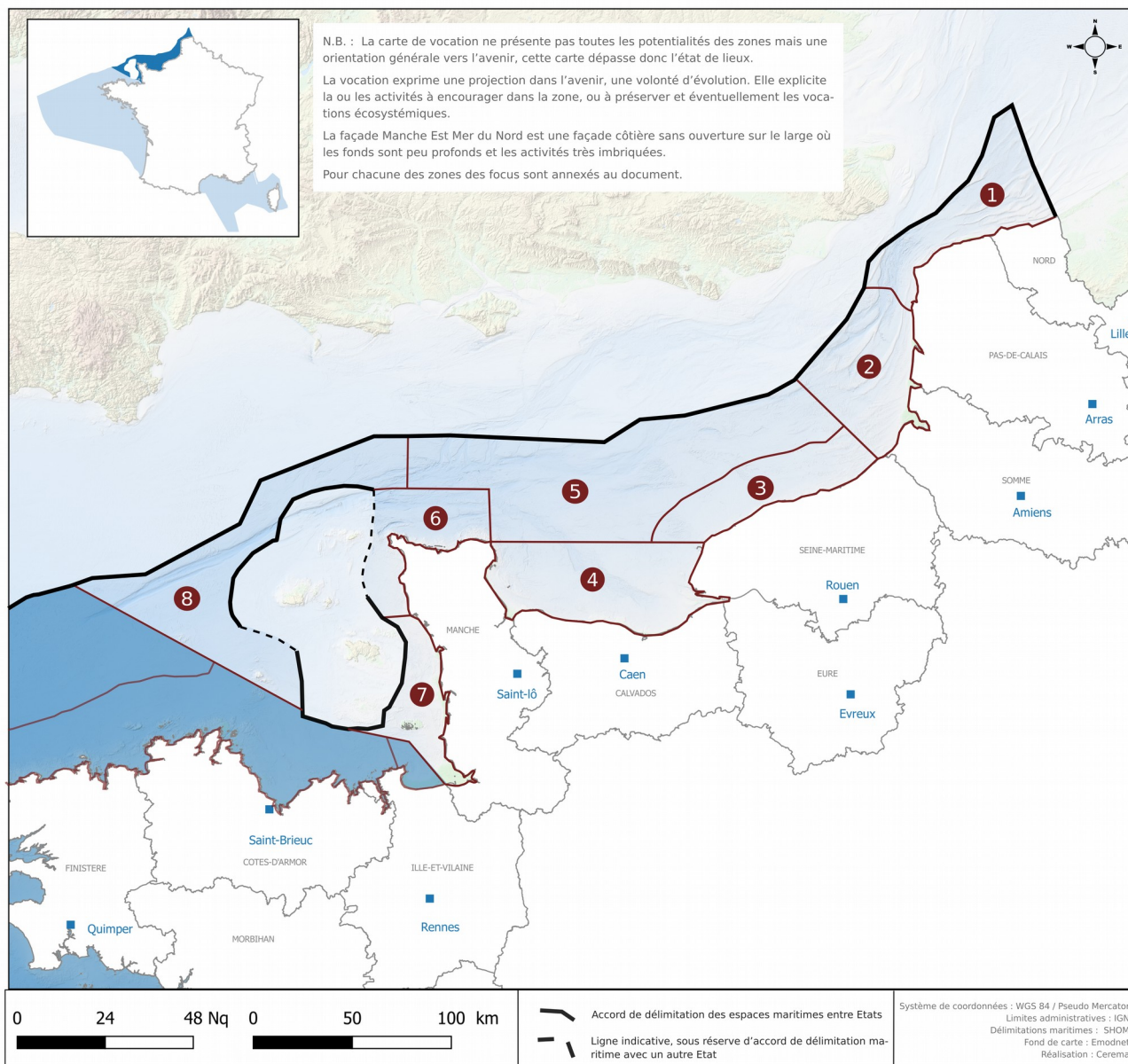
Appendix no. 5: Descriptive sheets of particular socio-economic objectives

Appendix no. 6: Table of specific environmental objectives

Carte des vocations de la façade maritime Manche Est - Mer du Nord

V8 - septembre 2018

Appendix
no. 8:
Descriptive
sheets of the
sectors of
the
designated
uses map



- 1 Caps et détroit du Pas de Calais**
Prédominance de la navigation maritime, des enjeux de sécurité maritime et des infrastructures portuaires et EMR. Besoin de maintenir l'activité de pêche maritime, le potentiel aquacole de la zone ainsi que de granulats marins, tout en permettant l'accueil des activités touristiques grandissantes. Préservation des corridors migratoires et des habitats remarquables.
- 2 Estuaires picards et mer d'Opale**
*Prédominance de la navigation maritime et des enjeux de sécurité maritime.
Zone de développement de la connaissance du patrimoine marin, de protection et de développement durable du milieu marin (pêche et aquaculture marine durables, et activités portuaires associées, tourisme littoral, préservation des zones fonctionnelles halieutiques et granulats).*
- 3 Côte d'Albâtre et ses ouverts**
Zone de confortement du potentiel des énergies marines renouvelables, des activités de pêche durable et d'extraction de granulats marins dans le respect des zones fonctionnelles halieutiques
- 4 Baie de Seine**
Zone de renforcement de la cohabitation des usages dans un contexte de multi-activités présentes ou à venir (granulats marins, pêche, aquaculture, énergies marines renouvelables, attractivité touristiques, infrastructures portuaires, industrielles majeures et défense) et de forts enjeux écologiques estuariens (nourriceries, frayères, sites de nidification, etc.).
- 5 Large baie de Seine**
*Prédominance de la navigation maritime et des enjeux de sécurité maritime.
Zone de développement des EMR et des granulats marins, en cohabitation avec les activités maritimes existantes, dont la pêche et la défense, et le besoin spécifique de protection des mammifères marins.*
- 6 Nord Cotentin**
Zone à fort potentiel de développement durable des activités maritimes actuelles ou émergentes (pêche et aquaculture marine durables, production d'énergie par hydroliennes, construction navale, activités militaires, tourisme littoral, etc.).
- 7 Ouest Cotentin - Baie du Mont Saint-Michel**
Zone de conciliation de sa vocation conchylicole et de pêche maritime d'une part avec son attractivité touristique, la richesse de son patrimoine naturel et de ses écosystèmes marins d'autre part.
- 8 Manche ouest au large des îles anglo-normandes**
*Prédominance de la navigation maritime et des enjeux de sécurité maritime en cohabitation prioritairement avec les activités de pêches professionnelles durables et à vocation de développement d'énergies marines renouvelables.
Zone de préservation des mammifères et oiseaux marins.*

Appendices to the E.Channel – N.Sea maritime and coastal strategy

1. Detailed description of activities
2. Scientific and technical overview of the initial assessment of the environmental status of marine waters and the environmental impact of human activities (*Article R219-5 of the French Environmental Code*)
3. Ministerial Order defining the good environmental status (*Article R. 219-6 of the French Environmental Code*)
4. Map summarising the major socio-economic challenges of the coastline
5. Summary map of major environmental issues
6. 6-1) Descriptive sheets of particular socio-economic objectives
6-2) Summary table and descriptive sheets of environmental objectives
7. Table of rationales for concessions granted with respect to environmental objectives (*Articles L.219-12 and L.219-14 of the Environmental Code.*)
8. Descriptive sheets for the areas defined in the designated uses map

Appendix 1

Detailed description of activities

Appendix 2

Scientific and technical overview of the initial assessment of the environmental status of marine waters and the environmental impact of human activities
(Article R219-5 of the French Environmental Code)

Appendix 3

Ministerial Order defining the good environmental status
(Article R. 219-6 of the French Environmental Code)

Appendix 4

Map summarising the major socio-economic challenges of the coastline

Appendix 5

Summary map of major environmental issues

Appendix 6

6-1) Descriptive sheets of particular socio-economic objectives

6-2) Summary table and descriptive sheets of environmental objectives

Appendix 7

Table of rationales for concessions granted with respect to
environmental objectives
(Articles L.219-12 and L.219-14 of the Environmental Code.)

Appendix 8

Descriptive sheets of the sectors
of the designated uses map