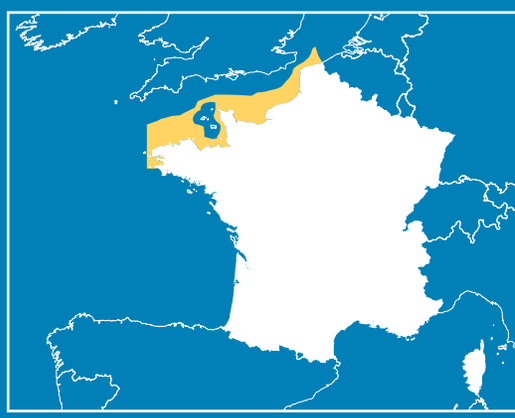
ACTION PLAN FOR THE MARINE ENVIRONMENT

Programme of measures

English Channel - North Sea marine subregion



Marine Strategy Framework Directive
Summary intended for the general public - 19 December 2014

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The Agency of Marine Protected Areas and Ifremer
ensure the scientific and technical coordination of the
implementation of the MSFD

Programme of Measures of the action plan for the marine environment in the English Channel – North Sea marine subregion

Summary intended for the general public

This summary aims to inform the public about the projected Programme of Measures (PoM) for the marine environmental action plan in the English Channel-North Sea marine subregion, submitted for public appraisal in the frame of the consultation organised from 19 December 2014 to 18 June 2015.

It has two parts:

- Methodology overview;
- Challenges, objectives and existing or new measures overview.

PART ONE: METHODOLOGY OVERVIEW

I – Regulatory context

In order to achieve or maintain Good Environmental Status (GES) of the marine environment by 2020 at the latest, Directive 2008/56/EC of the European Parliament and Council of 17 June 2008, called the **Marine Strategy Framework Directive (MSFD),** leads the Member States of the European Union to take the measures required to reduce the impacts of human activities on this environment.

The Directive aims to maintain or reinstate the proper functioning of marine ecosystems, i.e. to preserve biological diversity, interactions between species and their habitats, dynamic and productive oceans, whilst allowing the conducting of uses by future generations within a sustainable development outlook.

The MSFD promotes an integrated approach to marine environmental management by taking existing public policies into account. It features:

- an integrated, ecosystem-based approach over a vast geographic area, enabling challenges to be taken into account and actions to be conducted on various scales;
- regular review cycles, as comprised in the Water Framework Directive, to use both feedback and developing scientific knowledge and "quickly" readjust any measures which

are not sufficiently efficient;

- a "power to question" making it possible to put forward recommendations for action at the international and EU level.

In France, the MSFD has been transposed into law in the Environment Code (articles L. 219-9 to L. 219-18 and R. 219-2 to R. 219-17). It applies to waters around the French mainland, which are subdivided into four marine subregions: the English Channel – North Sea, Celtic Seas, Bay of Biscay, and Western Mediterranean Sea.

For each marine subregion, the competent authorities must develop and implement an **action plan for the marine environment (PAMM)** comprising five elements which are to be revised every 6 years:

- ***an initial assessment of the environmental status*** of marine waters and the environmental impact of human activities on these waters (approved in 2012);

- ***the determination of good environmental status*** for these waters based on qualitative descriptors (approved in 2012);

- ***the determination of environmental targets and associated indicators*** with a view to achieving good marine environmental status (approved in 2012);

- ***a monitoring programme*** for the ongoing assessment of the status of marine waters and periodic updating of targets (approval expected in early 2015);

- ***a programme of measures*** and associated operational targets designed to achieve or maintain good environmental status in marine waters (approval in 2015 and implementation in 2016).

The public was consulted about the first three components of marine environment action plans from 16 July to 16 October 2012. The plans were approved by ministerial orders and notified to the European Commission in December 2012.

The fourth element (monitoring programme) was submitted to public consultation from 22 August to 21 November 2014 and is on its way to being approved.

II – Framework for drawing up a Programme of Measures

Purposes

The Programme of Measures is the fifth and last element of the PAMM plan. It comprises all of the

concrete and operational actions fulfilling one or several environmental objectives in order to achieve or maintain the Good Environmental Status of marine waters by 2020.

It is drawn up on the basis of the initial assessment and the environmental targets determined in 2012.

Contents

A Programme of Measures (PoM) is defined as “a set of measures that the Member State is responsible for implementing, put into context with each other and referring to the environmental targets they address. Programmes of measures include existing and new measures".

Existing measures are measures that have been adopted under other environmental or sectoral policies and that are entirely or partly relevant for the achievement of the environmental targets set in 2012.

Indeed, several public policies (environment and sectoral) and their tools include measures which are already contributing to protecting the marine environment at various scales (local, regional, marine subregional, national, European and international). For instance, the measures taken in the frame of the "Habitats" Directive, the "Birds" Directive, the Water Framework Directive, the "Floods" Directive and the Urban Waste Water Directive or of some "sectoral" policies (common fisheries policy, maritime transport policy).

However, the programmes of measures are not intended to exhaustively list all actions allowing the marine environment to be protected. Only those actions considered to be the most relevant to address the challenges identified during the initial assessment of marine waters and the environmental targets are included.

New measures are measures which have been identified in the PoM as being necessary to achieve or maintain Good Environmental Status in marine waters in 2020 when existing measures are not sufficient. These can be measures to complement existing ones (to reinforce, optimise or extend geographic scope) or entirely new ones. They can contain recommendations on actions to be conducted on national, EU or international levels.

The **linkage between the implementation of the MSFD and the Water Framework Directive (WFD)**, which aims to achieve or maintain the good status of surface water, groundwater and coastal waters, is a major challenge. So that the stakes common to both these directives can be dealt with jointly, developing the PAMM action plan's objectives and measures was linked to the master plans for water management and development (SDAGEs) and the associated programmes of measures concerning the Loire-Brittany, Seine-Normandy and Artois-Picardy basins.

Furthermore, marine protected areas can be designated and managed in order to ensure the protection and preservation of marine biodiversity and its ecosystems. Thus the MSFD explicitly provides for Programmes of Measures to contain **spatial protection measures** contributing to

create a coherent and representative network of marine protected areas addressing ecosystem diversity in a satisfactory manner. This means that the measures proposed are consistent with the national strategy on creating and managing marine protected areas.

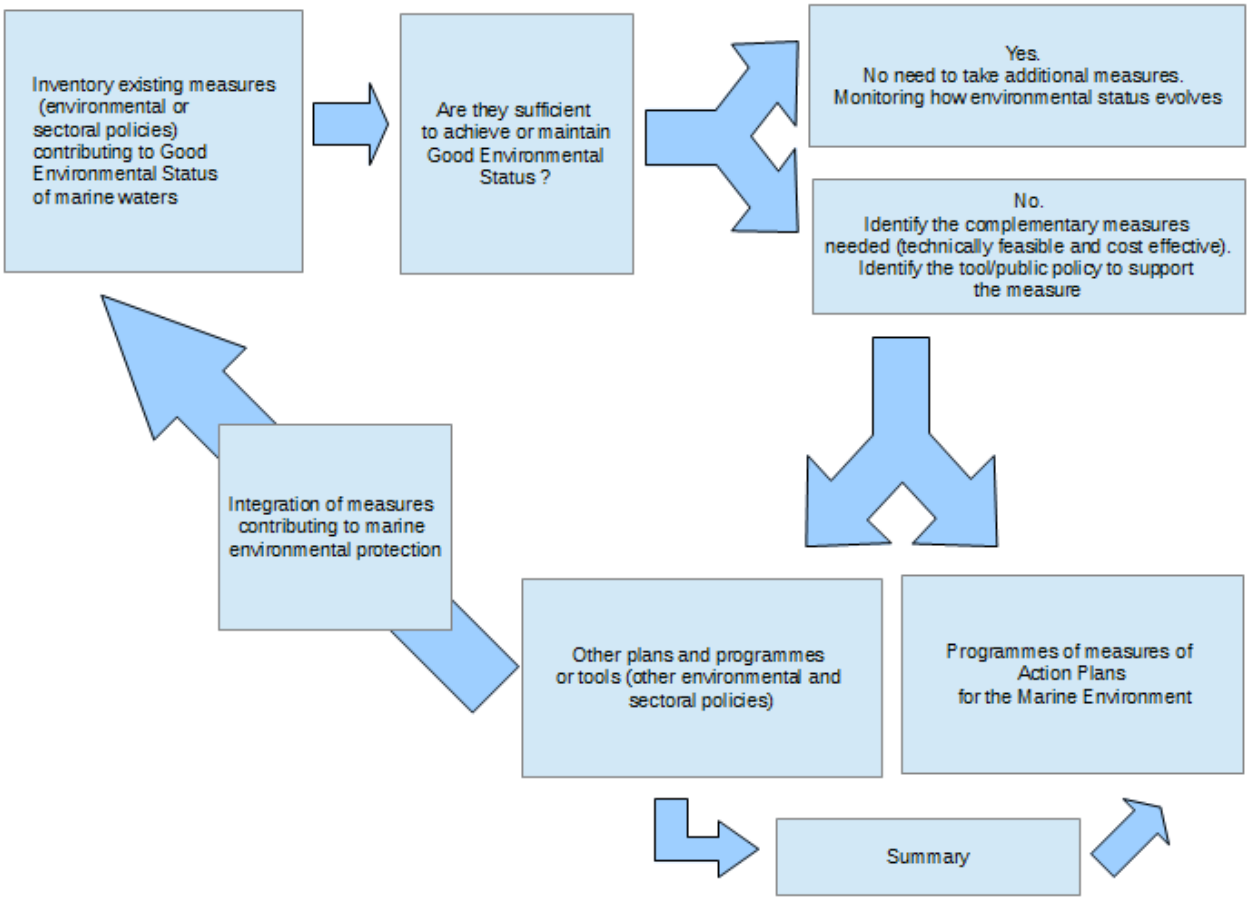

Diagram illustrating the process to determine measures in PoM

Main steps in drawing up the Programme of Measures

National level

The programme of measures is drawn up under the authority of the coordinating prefects (who represent the French State at regional and county levels), the maritime prefect for the English Channel and the North Sea and the prefect for the Haute-Normandie region.

- ***Inventory of existing measures*** implemented in the framework of other environmental and sectoral public policies and analysing how adequate and effective these measures are (1st semester of 2013);

- ***Identification of possibilities for new measures*** and associating stakeholders on these potential paths for new measures and then analysing their technical and legal feasibility (2nd semester 2013);

- ***Study on the economic, social and environmental impact*** of new measures particularly in terms of their cost-effectiveness (October 2013 – March 2014);

- ***Alignment with national scope*** of new measures chosen (April 2014);

- ***Associating stakeholders*** at marine subregion level in Programme of Measures projects (May – July 2014);

- ***Environmental assessment*** of Programmes of Measures projects and submission to the environmental authority for approval (July – August 2014);

- ***Consultation of authorities, bodies and public*** on planned programmes of measures, linked with the consultation about SDAGE master plans and Water Framework Directive Programmes of Measures, and with the consultation of flood risk management plans (from 19 December 2014 on);

- ***Consideration of the advice of authorities and bodies and the public and finalisation*** of the programmes of measures for ***approval by orders*** of the maritime prefect of the Channel and North Sea and the prefect of the Haute-Normandie region and for ***notification to the European Commission*** (late 2015 – early 2016);

- ***Implementation*** of the Programme of Measures (2016).

European Union and international level

In keeping with MSFD provisions, cooperation with Member States of the European Union sharing a given marine region or subregion has been established in the framework of drawing up programmes of measures in order to ensure that measures are consistent and comparable.

Cooperation has also been sought in the framework of Regional Sea Conventions: for France, these are the convention for the protection of the North East Atlantic, called the OSPAR Convention and that for the protection of the Mediterranean Sea, called the Barcelona Convention.

PART TWO: CHALLENGES, TARGETS, EXISTING MEASURES AND PROPOSED NEW MEASURES FOR THE MARINE SUBREGION

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In the framework of drawing up the Programme of Measures, operational environmental targets are proposed in order to specify the fields of action for measures which could make it possible to achieve or maintain the Good Environmental Status of marine waters.

When the operational environmental targets are not followed by new measures, that means that the existing measures are sufficient to achieve these targets.

The new measures have been numbered as follows: "MMN aa-bb-cc". Here,

- MMN is the English Channel – North Sea
- aa is the number of the relevant descriptor*;
- bb is the number of the relevant operational target;
- cc is the number of the measure.

For instance: measure 01-02-01 is a measure of descriptor 1 related to the operational target 01-02 and it is the first measure for this operational target.

Abbreviations used in measure designations:

MMN : English Channel-North Sea

GdG: Bay of Biscay

MC: Celtic Seas

MO: Western Mediterranean

OO: Operational target

OT: Cross-cutting target

Descriptor 1: biodiversity

Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographical, geographical and climatic conditions.

Ecological challenges

The English Channel-North Sea marine subregion holds numerous habitats and species which should be maintained in good protection status. The challenge for descriptor 1 is maintaining biodiversity and good functioning of marine environments.

Environmental targets determined in 2012

Safeguard the habitats and species with a key functional role in the ecosystem.
Protect rare or threatened species and habitats
Sustainably safeguard species and habitats with ecological stakes in a given area.
Maintain or achieve good conservation status for species and habitats of Community interest.
Sustainably safeguard common species and habitats (including their functions) on the scale of the marine subregion.

Operational targets

MMN 01-01. Safeguard and/or protect species and habitats by improving the performance of the network of marine protected areas
MMN 01-02. Safeguard and/or protect species and habitats by maintaining or restoring sea-land connectivities
MMN 01-03. Safeguard and/or protect species by reducing the rate of accidental by-catches
MMN 01-04. Safeguard and/or protect species by updating lists of protected marine habitats and species.

Existing measures

Several national strategies have been determined to benefit biodiversity: the Blue Paper of commitments from the 2009 Grenelle marine summit, the national biodiversity strategy (SNB) 2011-2020 and the national strategy to create and manage marine protected areas (2012).

Marine protected areas contribute to meeting the challenges for safeguard in the "Habitats" Directive on habitats, fauna and flora (92/43/EEC) and the "Birds" Directive (2009/147/EC) in the Natura 2000 network. There are different categories of marine protected areas which do not all have the same modes of protection of habitats and species. A marine nature reserve, for example, is a strong protection tool with respect to activities, unlike the Natura 2000 network which is less restrictive. Each marine protected area has a management document setting out the protection measures to be implemented. Placing of sites already designated in territorial waters under management and assessing this management should continue over the marine subregion. However, the conservation stakes offshore are currently not taken sufficiently into account.

On the catchment basin scale, planning and water management masterplans (SDAGE) comprise the challenges related to hydrology/hydromorphology, habitats, biodiversity and wetlands. In SDAGE programmes of measures, protected areas, including marine protected areas, take priority.

Land-sea connectivity is taken into account via various management tools at the catchment level:
- management plans for migratory fish (PLAGEPOMI) propose measures to acquire knowledge about the stocks of migratory fish in the marine environment;
- ranking of streams and rivers makes it possible to prohibit any new obstacle to ecological continuity, or through corrective measures, to limit the impact of existing structures on fish circulation;
- the SDAGE masterplans for water development and management for the three catchment basins in the marine subregion comprise numerous provisions whose objective is to improve ecological continuities for ecosystems, functional zones and migratory fish.

The Coastal protection agency (Conservatoire du littoral) helps preserve the environment at the land-sea interface through a policy of land acquisition and safeguarding of coastal areas. Since 2002, the Conservatoire can also work in the State-owned maritime domain where it has the remit to promote coherent management of the land-sea interface.

Regulations on accidental by-catches are currently being modified. In particular, a European action plan made up of a set of measures covering fisheries and vessels was proposed by the Commission in 2012 with the aim of reducing by-catches of seabirds. However, the Member States want to have more accurate scientific data before its implementation becomes effective. On the national level, the implementation of the 1st July 2011 order requiring that any cetacean or pinniped specimen accidentally caught in fishing gear must be reported, will enable knowledge gaps about by-catch impacts to be filled.

Based on sound scientific knowledge, there are numerous lists of species and habitats which are rare, threatened or in decline (IUCN global red lists of threatened species, IUCN red list of threatened species in France and the OSPAR list of threatened species and habitats). These lists make it possible to identify priorities for action and species conservation without necessarily giving rise to protection actions. Nationally, the lists of protected species are set out by orders, as in the case of marine mammals, seabirds, sea turtles and fish. However, in the English Channel-North Sea, no marine habitats, marine invertebrates or marine plant species is protected by a by-law or order.

New measures

MMN 01-01-01. Complement the offshore Natura 2000 network to address the challenges identified for mammals, birds and reefs.
MMN 01-01-02. Complement the network of marine protected areas by setting up increased protection areas using existing tools (national nature reserves, biotope protection orders, no-take zones in national parks, etc.) in sectors of remarkable biological diversity
MMN 01-01-03. Set up (temporary or permanent) protection areas in functional fisheries zones.
MMN 01-02-01. Reinforce the assignation and allocation policy of natural areas in the State-owned domain to the Coastal protection agency (Conservatoire du littoral).

MMN 01-04-01. Update the list of marine protected species and habitats at national level.
MMN 01-04-02. In addition to national studies, prepare a protection status for marine species and habitats at the marine subregion scale.

Descriptor 2: non-indigenous species (NIS)

Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems.

Ecological challenges

Introduction of non-indigenous species corresponds to the appearance of a species in a zone where it was not previously present. It does not necessarily lead to a disturbance in the ecosystem. However, whenever a non-indigenous species adapts and becomes invasive, it leads to the disturbance of the ecosystem through trophic and/or spatial competition with indigenous species. This disturbance can reach a level of actually modifying the habitat. In this context, the challenge is to protect native species and related habitats from the invasion of non-indigenous or alien species.

Environmental targets determined in 2012

Limit the risks of accidental introduction, risks related to voluntary introduction and the dissemination of non-indigenous species.
Reduce the impacts of invasive non-indigenous species.

Operational targets

MMN 02-01. Limit the risks of introducing non-indigenous species by managing ship ballast water (discharge and treatment).
MMN 02-02. Limit the risks of introduction and dissemination of non-indigenous species by managing fouling on ship hulls and on installed structures (buoys, mariculture structures, etc.).
MMN 02-03. Limit the risks of disseminating non-indigenous species by supervising the production of new non-indigenous species.
MMN 02-04. Limit the risks of disseminating non-indigenous species by supervising the production of already introduced or indigenous farmed species brought in from another area.
MMN 02-05. Reduce the impact of non-indigenous species presenting risks of invasion on uses
MMN 02-06. Reduce the impacts of non-indigenous species.

Existing measures

Numerous international conventions take account of the issue of non-indigenous species. This is the case for the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the Bern Convention, the Bonn Convention, the Montego Bay Convention, the Convention on biological diversity and the Agreement on the Conservation of African-Eurasian Migratory Waterbirds. Indeed, preventing the introduction and spread of non-indigenous or alien species, whether intentional or accidental, by acquiring rapid detection tools is required to protect marine biodiversity.

The stakes for non-indigenous species are also comprised in some national and regional scheme, in fishfarm management planning documents, in plans to manage endangered species, in Natura 2000 site objectives documents, and so on.

Within the English Channel-North Sea marine subregion, the vectors of introduction and dissemination non-indigenous species identified are marine cultures, shipping via biofouling, seawater tanks and ballast tanks and fisheries.

Inspection of vessels and the treatment of their discharges (ballast water and sediments, biofouling, black and grey water) is being put into place, thanks in particular to the measures recommended by the International Maritime Organization (IMO). The international convention for inspection and management of vessel's ballast water and sediments, the first binding international instrument in this field, has not yet entered into force. Transfers of marine and farmed shellfish species from one country to another or one region to another to be re-submerged are mainly governed by the Water Framework Directive (2000/60/EC).

Behind the dissemination of non-indigenous species are by-catch discards and the absence of international regulations for the management of biofouling on fishing gear and equipment, fostering secondary introductions and accidental translocations. Scientific recommendations alone make it possible to avoid the dispersal of invasive alien species. Projects to make commercial use of invasive non-indigenous species (as feed or raw material) have come into being, one of them in Brittany.

A European Parliament and Council Regulation on the prevention and management of the introduction and spread of invasive alien species was adopted on 22 October 2014. It establishes a legal framework for limiting their impacts on ecosystems and the economy. It provides for drawing up a list of non-indigenous species, complemented by a surveillance system designed to collect and record data related to these species in order to prevent propagation.

New measures

MMN 02-05-01. Combat the dissemination and the proliferation of invasive non-indigenous species by adapting fisheries techniques.
MMN 02-06-01. Identify the marine species which could be included to the European list provided for in the draft regulations on invasive alien species.
MMN 02-06-02. Study the regulatory, economic and ecological feasibility of deriving valuable utilisations of invasive species in order to regulate their development.
MMN 02-06-03. Set up a watch and alert system for non indigenous species (INS).

Descriptor 3: commercially exploited stocks

Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.

Ecological challenges

The challenge is to preserve the good health of commercially exploited species (populations of fish and cephalopods, shellfish, crustaceans and seaweed). However, it is hard to know the current stock status for the entire range of fished species.

Environmental targets determined in 2012

Maintain or achieve good status of exploited stocks.
Maintain stocks in good condition.
Improve the status of stocks in poor condition in order to achieve good status.
Promote the regeneration of stocks in very poor condition in order to achieve good status.

Operational targets

MMN 03-01. Maintain / achieve good status of stocks by adapting professional fisheries activity.
MMN 03-02. Maintain / achieve good status of stocks by encouraging best practices for recreational fisheries.

Existing measures

The marine fisheries activity is highly regulated and controlled on international, European, national and regional scales. Regulations of interest to the English Channel-North Sea environmental action plan concern the use of fishing gear, access to fishing grounds and stock management.

At the European level, the Common Fisheries Policy (CFP) was designed to manage common resources by defining a series of rules intended to manage the European fisheries fleet and to safeguard the stocks of the species fished. In the fisheries management field, the CFP provides *inter alia* for multiannual planning in order to manage community stocks of commercially exploited species. For this, fisheries management relies on international scientific organisations (e.g. the International Council for the Exploration of the Sea (ICES), regional fisheries management organisations (RFMO)) and on data provided by various bodies in determining catch limits, for instance, (total allowable catches (TAC) and quotas), and by ensuring that the established rules are complied with and applied.

At national and regional levels, the CFP is clarified and supplemented by management measures. Each State takes measures for vessels registered under its flag and in its territorial waters. In France, regional, departmental or interdepartmental committees take part in supervising marine fisheries activities on their scale. These committees play a significant part in drawing up regulations, as well as in implementing policies to protect and enhance seafood and marine products. Special management measures can also be set up to adapt an activity with respect to

available resources, notably through granting licences.

Recreational fisheries are also a source of pressure on species stocks and reserves. It is also subject to regulations, which differ from those for professional fisheries. These regulations are adapted to local practices and stakes and are specific to each department (~ county). It is vital to acquire knowledge about practices and the species fished and to raise the awareness of fishers about best practices. When resources are clearly deteriorated, the decision can be taken to close (temporarily or not) an area of resources or limit the number of catches in order to preserve the resources.

New measures

MMN 03-01-01. Leave seashore fishing zones fallow along the coast.
MMN 03-02-01. Expand to further species the limitation on individual or by-ship catches number for recreational fisheries (on-bord, seashore and underwater fishing).
MMN 03-02-02. Compulsory prior declaration of activity for practice of recreational marine fisheries and related methods.
MMN 03-02-03. Regulate recreational seashore fishing practices in a coherent manner.
MMN 03-02-04. Establish an observatory of recreational seashore fishing activities in the marine subregion (monitoring seashore fishing areas, frequentation rate, practices and targeted species).

Descriptor 4: food web elements

All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity.

Descriptor 4 involves the functioning of the food web, i.e., of all food chains. The challenge is to maintain the correct functioning of the food web, and its restoration in zones where dysfunctions have been noted.

The challenges related to this descriptor are dealt with more specifically in descriptors 1 "biological diversity is maintained", 3 "commercially exploited fish stocks" and 6 "sea-floor integrity".

Descriptor 5: eutrophication

Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters.

Ecological challenges

Eutrophication is a phenomenon characterised by an ecological imbalance caused by excessive fertilisation (dystrophy) in mineral or organic elements of anthropogenic origin. Eutrophication has significant consequences for the environmental status aquatic and marine environments.

Descriptor 5 takes account of the mechanisms leading to eutrophication in the marine environment which are: a confined water body, good radiance of algae in suspension and inputs of terrigenous nutrients, coming from soil erosion by water and which exceed the site's capacity to evacuate or dilute them.

This means that surplus inputs of nutrients (especially nitrogen and phosphorous) to the environment, support primary production (photosynthesis) and contribute to the productivity of coastal zones, with various impacts, such as green algal blooms and the development of harmful or even toxic phytoplankton species.

Therefore, the challenge for this descriptor is defined as safeguarding environments and maintaining their functions, by reducing the phenomenon of eutrophication, while ensuring the sustainable use of goods and services rendered by the ecosystem.

Environmental targets determined in 2012 consistent with the environmental objectives of the water management and development masterplans (SDAGEs)

Maintain the zones hardly or not impacted by eutrophication.
Significantly reduce the excessive inputs of nutrients to the marine environment.
Increasingly reduce inputs to areas of proven eutrophication (in order to help achieve OSPAR objectives).
Reduce the inputs of atmospheric nitrogen (Nox) from agricultural, urban and industrial sources and those due to maritime shipping and land transport.
Continue to reduce point-source pollution from local authorities, industries and farming, in order to take account of the targets set for the receiving environment. Limit their transfers to the aquatic environment.
Increasingly reduce non-point-source pollution from farming sources and limit their transfer to the aquatic environment.

Operational targets

MMN 05-01. Safeguard areas which are hardly or not impacted by eutrophication by limiting telluric nutrient inputs, at the source and during transfers, in the catchment areas concerned in the marine subregion

MMN 05-02. Identify zones of proven eutrophication and the catchment basins which are the largest contributors of the main nutrient inputs from the source to the outflow.
MMN 05-03. Continue to reduce the impact of point-source pollution on the marine environment by reinforcing the treatment of inputs from urban and industrial wastewater in the catchments which contribute most for urban areas with 2,000 population equivalents or more. In catchment basins covered by an SAGE plan, they could be asked to determine adequate reduction targets and the schedule for achieving them.
MMN 05-04. Continue to reduce point-source pollution by better taking account of storm water discharge for collecting and treating wastewater in the catchments which contribute the most.
MMN 05-05. Increasingly reduce non-point source pollution from agriculture over all vulnerable areas by determining appropriate local actions. In catchment basins covered by an SAGE plan, they could be asked to determine targets and means to reduce fluxes, especially nitrate fluxes.
MMN 05-06. Increasingly reduce non-point source pollution from agriculture by improved mastery of fertilisation in the catchments of the marine subregion which contribute the most
MMN 05-07. Limit the transfer of non-point source pollution to aquatic environments by adopting appropriate management of soils and farm areas, fostering the retention and reduction of nutrients over all catchments in the marine subregion
MMN 05-08. Limit the transfer of non-point source pollution by fostering natural denitrification and the fixing of phosphorous before nutrients are transferred to the environment.
MMN 05-09. Reduce inputs of atmospheric nitrogen (Nox) by taking marine environmental stakes into account in plans to combat atmospheric pollution, regional air quality plans and atmosphere protection plans in the regions which contribute the most (Île-de-France, Haute and Basse Normandie, Nord-Pas-de-Calais) and by reducing regional emissions.

Existing measures and guidance of water management and development masterplans (SDAGEs)S

Seeing the strong link between sea and land in terms of eutrophication, this descriptor mostly involves measures taken to apply the Water Framework Directive (WFD, 2000/60/EC).
Measures aim to reduce coastal and marine eutrophication by targeting activities which produce nutrient emissions. Thus, in application of Directive 91/271/EEC, concerning urban waste-water treatment (UWWT, 91/271/EEC), local authorities within areas sensitive to "eutrophication" must comply with stricter standards for discharges in terms of nitrogen and phosphorous. In application of Directive n°91/676/EEC on nitrates from agricultural sources, action programmes are implemented within nitrate vulnerable zones in order to reduce pollution from farming of surface waters, groundwater and coastal waters concerned by eutrophication. Furthermore, the policy to reduce atmospheric pollutant emissions is covered by the national climate plan, territorial climate-energy plans and regional climate, air and energy plans.
The SDAGE masterplans incorporate these provisions and provide for additional measures to strengthen action programmes in vulnerable zones or in specific geographical sectors. They may also include special measures for the sea and coast.
The three catchment basins participate in reducing the eutrophication of the marine environment by taking measures to limit point-source and non-point-source pollution and atmospheric pollution.

Descriptor 6: sea-floor integrity

Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected.

Ecological challenges

Descriptor 6 aims to guarantee "sea-floor integrity" and more especially that of its benthic component, at the water and sediment interface, particularly with respect to physical pressures induced by human activities. The challenge of descriptor 6 is the protection of sea-floor integrity and the functioning of related ecosystems.

Environmental targets determined in 2012

Safeguard benthic habitats, particularly those with a key functional role in the ecosystem. The operational targets and the measures related to this general objective are dealt with directly by descriptor 1 and therefore are not listed in this chapter.

Operational targets

MMN 06-01. Reduce the impacts on functional habitats, and especially the foreshore (seagrass meadows, honeycomb worm reefs, etc.) by limiting developments located in these sensitive coastal areas.
MMN 06-02. Reduce the impacts on benthic habitats of the mid-shore by improving seashore fishing practices.
MMN 06-03. Reduce the impact of professional fisheries on subtidal benthic habitats by limited the use of bottom gear on sensitive benthic habitats (seagrass meadows, maerl beds, kelp fields, and so on).
MMN 06-04. Reduce the impacts of marine aquaculture on benthic habitats by ensuring that farming techniques methods used are appropriate for the habitats present.
MMN 06-05. Reduce the impacts of recreational boating and leisure activities on foreshore habitats by limiting the effects of trampling.
MMN 06-06. Reduce the impacts of recreational boating activities by limiting the effects of anchorages and moorings on subtidal benthic species and habitats.
MMN 06-07. Reduce the impact on subtidal benthic habitats by limiting dredging and dumping of dredge spoil in sensitive areas.
MMN 06-08. Reduce the impact on subtidal benthic habitats by limiting marine aggregate extraction in sensitive areas.
MMN 06-09. Reduce the impact on subtidal benthic habitats by limiting the impact of all marine engineering works in sensitive areas.
MMN 06-10. Reduce the impact on subtidal benthic habitats by performing monitoring of maritime activities.

Existing measures

There are regulations governing each activity in order to limit disturbances and physical damage to the sea floor, from shore to offshore.

Hence, in France, all developments and work taking place on the coast require that authorisation for temporary occupation of the State-owned maritime domain be requested. The application is examined by the departmental directorate for territories and the sea. If the project could have an impact on the marine environment or on sea-floor integrity, the application is submitted along with an impact study. Moreover, coastal towns are covered by a special planning policy in the framework of the so-called "coast" law's implementation, and town planning documents are established so that pressure for land and property uses is controlled.

As regards recreational seashore fishing, restrictions on practices can be set locally, in view of the stakes and issues of each site. Actions to inform seashore fishers and make them aware of the harmful nature of trampling and turning over rocks and boulders, as is particularly suggested in the Life+ project on recreational seafood hand harvesting and sea angling.

Regulation (EC) No734/2008 on the protection of vulnerable marine ecosystems in the high seas from the adverse impacts of bottom fishing gears complements the rules aiming to safeguard species which indirectly contribute to protecting sea floors. On a fine scale, documents setting out the targets for marine Natura 2000 sites can comprise measures designed to protect sensitive habitats. New techniques can also help limit the impact of fishing gear on seabeds.

Leases for mariculture (or the authorisation to operate marine farms) and leases in the State-owned maritime domain are covered by special regulations. On the departmental or inter-departmental level, the mariculture activity is organised through the issuance of orders from the Prefect including diagrams of facilities and installations.

In the English Channel-North Sea, moorings are organised and managed by taking environmental protection into account and preferring collective anchorage options. In addition, water sports events are supervised and their impacts are assessed.

Activities of extraction and disposal of dredge spoil at sea are regulated by the Environment Code, under the regulation for ICPE installations classified for environmental protection, and by the State domain code and the Mining Code. However, techniques that could further reduce their impacts should be sought.

Regulation of marine aggregate extraction falls under the Environment Code and the Mining Code. The protection of sea floors is ensured by the definition of de requirements for exploitation (prohibited zones, maximum exploitable depth) and the conditions of environmental monitoring and surveillance provided for in authorisations to begin mining work. Furthermore, in keeping with the sustainable development rationale, a national strategy to manage terrestrial and marine aggregates and materials and substances from quarries was drawn up 2012.

Works at sea are subject to the regulations on water and to authorisation requirements laid out in the Environment Code. There are no zones where deploying works at sea is prohibited, except in easement zones and marine protected areas with a high level of protection (biotope protection orders, nature reserves). When areas are determined for the setting up of wind farms, underwater cable tracks or other zones where work will be done, the regulations require that project sponsors take the stakes of safeguarding the marine environment into consideration.

Dredging and dumping, aggregate extraction and maritime works activities are authorised by Prefectoral order in application of the Environment Code. The terms and methods of monitoring impacts from these activities on the marine environment (parameters, frequency and duration) must be determined so that relevant and consistent indicators can be obtained on the scale of the marine subregion.

New measures

MMN 06-03-01. Improve knowledge, experiment, develop and implement new fisheries techniques to limit the impact on benthic habitats.
MMN 06-04-01. Promote methods for shellfish farming which sustainably exploit the environment.
MMN 06-05-01. Lessen the impact of public events held in the State-owned maritime domain by improving human presence management on the foreshore.
MMN 06-06-01. Promote the grouping of moorings by issuing the appropriate deeds (zone for mooring and lightweight equipment) as well as the use of techniques with an environmentally-friendly footprint.
MMN 06-07-01. Promote dredging and dumping methods with less impact on the environment (intensity, gear used).
MMN 06-08-01. Establish environmental recommendations for the future strategy to extract and manage marine aggregates.
MMN 06-09-01. Encourage environmentally-friendly practices for maritime construction and engineering works which could have an impact on sea-floor integrity, for instance by encouraging the ecodesign of any new construction in the marine environment by creating cross-compliance for authorisation of temporary occupation(AOTs).
MMN 06-10-01. For any new project involving maritime construction, marine aggregate extraction or dumping/dredging, consistently perform morpho- and bio-sedimentary environmental monitoring, harmonised over the marine subregion scale, during phases of both building and operation, in order to monitor changes in the environment subjected to this pressure.
MMN 06-10-02. Perform morpho- and bio-sedimentary environmental monitoring on sites where installations have been operated / dismantled, in order to ensure that the site is recolonised.

Descriptor 7: alteration of hydrographical conditions

Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems.

Ecological challenges

The challenges under consideration in the framework of descriptor 7 involve the water column. This takes into account disturbances located on the sea floor, at the surface, in streams and rivers, from the source to the sea. The challenge is to maintain favourable hydrographical conditions for marine ecosystems, especially in zones where pressures have a known or observed ecological impact.

Most of the relevant challenges for this descriptor which are common to descriptor 6 focusing on "sea-floor integrity" are dealt with under the latter.

Environmental targets determined in 2012

Safeguard the zones which are hardly or not impacted by a permanent alteration of hydrographic processes, especially those holding habitats with a key functional role in the ecosystem.

Reduce pressures having an impact on habitats and their functions.

Operational targets

MMN 07-01. Guarantee sufficient quantitative freshwater inputs in coastal sectors to safeguard ecosystems and their functions and ensure uses.

Guidance from water management and development masterplans (SDAGEs)

On the scale of catchment basins, SDAGE plans comprise a strand on controlling water abstraction. It takes account of environmental requirements and uses, particularly those of marine species and mariculture activities. In the scope of SAGE plans, targets for flow rates or water levels in lakes and marshes, monitoring of salinity, etc. can be set following an analysis looking at hydrology, environments, uses and the climate led by local water authorities.

Descriptor 8: contaminants in the environment

Concentrations of contaminants are at levels not giving rise to pollution effects.

Ecological challenges

Chemical substances are in very widespread use, and can be of natural (minerals, hydrocarbons, heavy metals) or synthetic (solvents, plasticizers, cosmetics, detergents, drugs and plant protection products) origin. The overarching challenge is to protect coastal and marine environments from the effects of any contamination by hazardous chemical substances. This descriptor also deals with the challenges related to descriptor 9 involving chemical contaminants in seafood consumed.

Environmental targets determined in 2012 consistent with the environmental objectives of the water management and development masterplans (SDAGEs)

Reduce or eliminate chemical contaminant inputs, whether chronic or accidental, to the marine environment.
Limit or eliminate direct inputs of contaminants to the sea.
Reduce atmospheric contaminant inputs.
Reduce or eliminate at the source, land-based inputs from agricultural, industrial and urban sources.
Limit transfers of contaminants towards and within the marine environment.

Operational targets

MMN 08-01. Limit or eliminate direct inputs of contaminants to the sea by maintaining appropriate management of shipping.
MMN 08-02. Limit or eliminate direct inputs of contaminants to the sea by putting an end to contaminant discharges related to hull-cleaning.
MMN 08-03. Limit or eliminate direct inputs or remobilising of contaminants at sea by limiting limiting impacts due to dredging, handling or dumping of sediments.
MMN 08-04. Reduce inputs of contaminants by taking marine environmental stakes into account in plans to combat atmospheric pollution, regional air quality plans and atmosphere protection plans in the regions which contribute the most.
MMN 08-05. Reduce or eliminate contaminant inputs by prioritising action in the catchments which contribute the most.
MMN 08-06. Reduce or eliminate contaminant inputs by determining the actions to be conducted with regard to industries, urban conglomerations and farms to achieve catchment targets, particularly in the SAGE framework.
MMN 08-07. Reduce or eliminate contaminant inputs by reviewing existing authorisations for industrial discharges so that the marine environment is taken into account and in controlling them.
MMN 08-08. Reduce or eliminate contaminant inputs by informing about best practices/making accountable the people who use hazardous substances over all the catchments in the marine subregion and by implementing stronger controls in the catchments which contribute the most.
MMN 08-09. Reduce or eliminate contaminant inputs by supporting the reduction or doing away with when possible, the use of hazardous substances by industry, local authorities and farms over the entire catchment basin.

MMN 08-10. Reduce or eliminate contaminant inputs by analysing and regulating the active ingredients and metabolites depending on the impact on the marine ecosystem (EU work).
MMN 08-11. Limit transfers of contaminants by adopting appropriate management of soils and areas over the entire catchment in both urban and agricultural areas, by maintaining and developing buffer zones (riparian buffers, wetlands, grassy strips, etc.) especially in zones behind the shore.
MMN 08-12. Limit transfers of contaminants towards the marine environment by identifying residual stocks of historic pollution impacting the marine environment.
MMN 08-13. Limit transfers of contaminants towards the marine environment by supporting palliative actions when it is impossible to reduce them at the source.

Guidance from water management and development masterplans (SDAGEs)

In application of the Water Framework Directive (WFD, 2000/60/EC) and aiming to achieve or maintain good status of water bodies, the SDAGE plans set out targets to reduce or even eliminate discharges, leaks and emissions of priority hazardous substances on the scale of the hydrographic district.
These targets are defined in compliance with national strategies related to the issue of chemical contaminants in aquatic and marine environments, including the second micro-pollutant plan (including PCBs, urban stormwater runoff and waste water treatment plants), the national health-environment plan and the Ecophyto plan. At the local level, SAGE plans provide significant leverage to identify sources of pollution and determine the corrective actions to implement.

Existing measures concerning marine inputs

In terms of direct inputs to the sea related to maritime transport and navigation, international regulations, including the MARPOL Convention dealing with all types of discharges at sea and the SOLAS Convention guaranteeing ship safety and security, cover the marine environmental protection stakes.

Harbour activities also contribute to direct inputs to the sea. The reception and processing plan for operating waste from vessels and cargo residues pursuant to the Seaport Code requires the harbour authority to provide users with facilities to receive waste which are adapted to the type and volume of waste produced by users. Yet, the toxic waste produced by harbour activities is still insufficiently collected and processed.

Maintenance and repair work on ship hulls is done in hull-cleaning areas. In this field, no regulations make hull-cleaning compulsory for fishing and recreational vessels (frequency, place, etc.), only the departmental harbours have authorisation in application of the Water Act's provision on the subject.

Dredging of sediments leads to either resuspending or dumping them, or processing them onshore, in the case of contaminated sediment. In view of the ecological risks generated by dumping, conventions including the OSPAR Convention and the 1996 London Convention, have laid out guidelines for managing dredge spoil materials. Thresholds (N1 and N2) established by article R214-1 of the Environment Code define sediment toxicity. If it is neither possible, nor desirable in view of environmental or health constraints, to dump or resuspend dredge sediments, onshore

processing is considered.

New measures

MMN 08-01-01. Reinforce collection and disposal services for waste and dispersed toxic waste (DTW) products in ports (fishing harbours, marinas, commercial ports, industry, etc.).
MMN 08-02-01. Make the delimiting of hull-cleaning areas in harbours compulsory and continue their upgrading to standards in order to eliminate direct discharges to the sea
MMN 08-03-01. Promote the implementation of territory-based guidance schemes for dredging operations and value chains for sediment management which can evolve and are adapted to local needs.

Descriptor 9: contaminants in seafood for human consumption

Contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards.

Ecological challenges

Chemical contaminants for which regulatory thresholds have been set are dealt with under descriptor 8. Some chemical substances (pesticides, hydrocarbons, polychlorinated biphenyls (PCBs), heavy metals, pharmaceutical substances and hormones, etc.) even in minute quantities, can have adverse effects on health and the environment. Molecules which are spread over the natural environment, e.g. in estuaries serving as fish nurseries, become concentrated in the tissues of species at the top of the food chain, many of which are consumed by humans.

Microbiological contaminants (bacteria and viruses), particularly from residential wastewater and livestock discharges, can carry pathogenic germs (viruses, bacteria or parasites) which mainly have an impact on the quality of bathing waters and of aquaculture and shellfish farm products.

The challenge of this descriptor is to maintain the levels of contamination in sea food and products below the thresholds set by the health standards in force. There are two other related challenges: combating the dissemination and outbreaks of infectious agents in aquaculture facilities and in natural stocks of mollusc and fish species, and achieving at least sufficient quality for all recreational bathing waters by the end of 2015.

Environmental targets determined in 2012 consistent with the environmental objectives of the water management and planning masterplans (SDAGEs)

Improve the microbiological quality of waters to limit the impact (or the significant risk) of contaminants in seafood on human health.
Reduce point-source discharges which have impacts.
Reduce non-point-source discharges which have impacts.
Improve the chemical quality of waters to limit the impact (or the significant risk) of contaminants in seafood on human health.
Reduce point-source discharges which have impacts.
Reduce non-point-source discharges which have impacts.

Operational targets

MMN 09-01. Improve the microbiological quality of waters by limiting insofar as possible transfers of microbiological pollutants linked to insufficient collective wastewater systems, both for treatment and collection, over the entire coast.
MMN 09-02. Improve the microbiological quality of waters by prioritising zones to be inspected by the SPANC public service authority for off-mains systems and rehabilitating individual off-mains installations depending on the microbiological sensitivity of outflows highlighted by profile studies.
MMN 09-03. Improve the microbiological quality of waters by limiting access by livestock to streams over the entire coast (grazing area).
MMN 09-04. Improve the microbiological quality of waters by upgrading for slurry/manure storage

installations and combat runoff/erosion in spraying/spreading zones (in battery farming areas).
For improvement of chemical quality, refer to the operational targets of D8 and D5 (phycotoxins).

Guidance from water management and development masterplans (SDAGEs)

As concerns the microbiological aspect, the Water Framework Directive (WFD 2000/60/EC), the Shellfish Waters Directive (2006/113/EC) as well as the application of the Urban Waste Water Treatment Directive (UWWT, 91/271/EEC) through bringing wastewater treatment stations into compliance have helped to improve water quality.

Significant efforts to prevent pollution and strict monitoring have been devoted to water quality in recreational bathing areas. This has been further reinforced with the European Bathing Water Directive (2006/7/EC), adopted in 2006.

On the catchment basin scale, the SDAGE masterplans have a strand on protecting human health, especially to maintain or improve bathing water quality and sustainable uses which depend on good water quality (mariculture, seashore fishing, etc.). These measures comprise both actions to inform and acquire knowledge and actions which can help limit contaminant inputs (modifying installations, etc.). They follow on from a vulnerability study of catchment areas which determines the sources of pollution and ranks them.

Measures under the descriptors D5 and D8 also contribute to reducing seafood contamination.

Descriptor 10: marine litter

Properties and quantities of marine litter do not adversely affect the coastal and marine environment.

Ecological challenges

Marine litter can be defined as any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine environment. Natural debris (seaweed, wood, eelgrass) and "tar balls" (hydrocarbons) are not considered as being litter. The challenge for descriptor 10 is to protect species and habitats from the presence of litter, especially the groups of species which are vulnerable to this pressure.

Environmental targets determined in 2012

Reduce the amounts of litter at sea and on the coast at the source.
Reduce the amounts of litter carried by rivers.
Reduce the production of litter by uses and activities taking place onshore.
Reduce the production of litter by uses and activities taking place at sea.
Significantly reduce the amount of litter present in the marine environment.
Reduce the impacts of litter on species and habitats (impacts of collection).

Operational targets

MMN 10-01. Reduce the amounts of litter at sea and on the coast at the source by reducing litter in general.
MMN 10-02. Reduce the amounts of litter from the land environment (rivers, wastewater drainage systems, etc.) by acting on the zones where inputs are greatest.
MMN 10-03. Reduce the production of litter by uses and activities taking place in the marine environment by supervising activities.
MMN 10-04. Significantly reduce the amount of litter present in the marine environment by increasing the collection, recycling and reprocessing of various types of litter from the marine environment.

Existing measures

Numerous international, national and infra-national laws aim to reduce the introduction of waste to the sea and to protect ecosystems.

The OSPAR Convention provides guidance for international cooperation in the field of marine environmental protection in the North East Atlantic. In order to take account of the transboundary nature of marine waste and litter, the regional action plan for the prevention and management of marine litter in the North East Atlantic recommends that collective measures be undertaken. The plan aims to substantially reduce marine litter to levels where properties and quantities do not cause harm to the marine environment.

To supplement this document, France has developed a national waste prevention plan (2014-2020). As outcomes of the Grenelle environmental fora and summit which have been further pursued in drawing up actions plans for the marine environment, one measure in this plan specifically focuses on reducing the amounts of litter from land which end up in the marine environment. Waste collection and processing falls under the jurisdiction of local authorities, notably in charge of collecting litter on beaches. The national plan is then applied locally in department and regional plans for prevention and management of hazardous and non-hazardous waste, which set targets for recycling and re-utilisation, collection and facilities to provide and schedules and investments to be made.

All ports (merchant harbours, fishing harbours and marinas) must have appropriate facilities to receive waste in keeping with their activity, since Directive n°2000/59/EC on port reception facilities for ship-generated waste and cargo residues, transposed into the Seaport Code. Furthermore, each harbour must establish a plan to receive and process ship-generated waste and cargo residues. There are harbour quality labels and guides designed for professionals, recreational boaters and harbour managers to ensure the port's good environmental quality. For aquaculture, mariculture farm facility plans include collecting of litter on the foreshore. This litter produced by maritime activities must be put into recycling process loops.

In addition, campaigns to collect litter at sea with the participation of professional fishers and seafarers make it possible to reduce the amounts present in the marine environment.

SDAGE masterplan orientations and provisions take account of the marine litter issue further upstream, by acting on reducing amounts of waste and litter from river sources.

New measures

MMN 10-01-01. Include an orientation on marine litter in the national waste prevention plan and contribute to its implementation.
MMN 10-03-01. Encourage harbours to provide adequate waste management services, especially by generalising environmental management policies.
MMN 10-03-02. Recommend the generalization of a marine litter strand in mariculture facility plans.
MMN 10-03-03. Identify and promote the most relevant systems to limit the transfer of macrowaste during dredge spoil dumping operations.
MMN 10-04-01. 'Sentinels of the sea' actions for marine litter.
MMN 10-04-02. Deal with the specific issue of marine waste and litter in departmental prevention and management plans for non-hazardous waste.
MMN 10-04-03. Examine the options for collecting and processing or recycling fishing gears and equipment at the end of its serviceable life and waste from shellfish farming.

Descriptor 11: introduction of non-harmful energy sources

Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment.

Ecological challenges

The aquatic environment has the property of propagating sound waves very well. The main sources of noises caused by human activities are shipping, sonar emissions, studies, works and structures at sea. The English Channel-North Sea marine subregion channels approximately one fifth of the world's maritime traffic; meaning that there is strong pressure due to shipping and that it gives rise to high levels of ambient noise. The use of acoustic waves in order to study and utilise the marine environment has grown since the1950s, but it is difficult to assess the level of pressure exerted by impulsive sound sources. Various works (work sites for aggregate extraction, those related to marine renewable energies, counter-mining or clean-up operations, recreational motorised water sports and boating, etc.) contribute to increasing the pressure generated by sound waves at sea.

A dozen species of marine mammals either reside in the marine subregion or visit it during migrations. Acoustics are of vital importance to marine mammals which use it for communications, breeding, orientation and echo-locating their prey and predators. Other species may also feel the impact of increased underwater noise. However, the effects of noise on fish have been less studied. Seeing the high level of human activity and the narrowness and shallowness of the English Channel, the marine subregion can be considered to be a zone where these challenges and stakes are high.

Environmental targets determined in 2012

Limit the pressures which physiologically impact species and their acoustic detection and communication capabilities and protect functional habitats from acoustic disturbances having an impact on species in these habitats.

Limit impulsive emissions to a level which has no significant impact on species.

Limit continuous emissions to a level which has no significant impact on species.

Operational targets

MMN 11-01. Limit impulsive emissions to a level which has no significant impact on species.
MMN 11-02. Limit continuous emissions to a level which has no significant impact on species by improving knowledge about background noise.

Existing measures

Internationally speaking, the actions recommended by international agreements and conventions are to implement best practices, utilise noise reduction technologies (thanks to various devices such as air bubble currents, noise dampers, etc.), and deploy software designed to assess

biological risk.

Guidelines for the reduction of underwater noise prepared by the Marine Environment Protection Committee (MEPC) of the International Maritime Organization (IMO) were adopted on 7 April 2014. However the document is not binding and does not include activities using seismics in its scope of application. Furthermore, in the framework of the OSPAR convention, the ACCOBAMS Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas and the ACCOBAMS Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area, guidelines were drawn up to deal with the impact anthropogenic noise has on cetaceans.

On the European level, Directive 2014/52/EU requires a description for maritime projects of the notable effects they may have on the environment, including noise. Also, the European collaborative research project called AQUO aiming to reduce the noise footprint of maritime traffic has been implemented to ensure better protection of the marine environment.

In France, the Grenelle environmental summit recognised noise pollution as a form of marine pollution. Moreover, the 30 November 2010 order modifying the 1st April 2008 order (related to supervised instruction and driving of motor-powered watercraft) took the Grenelle marine environmental summit recommendations into account as regards the impact of recreational water sports activities on the aquatic environment. In addition, within a marine protected area, specific measures for the reduction of anthropogenic noise can be proposed.

For shipping and boating, research studies and innovative approaches are developing new ways to boost propulsion, such as sails for merchant or fishing vessels aiming to lower fuel needs, and which also lower sound emissions.

New measures

MMN 11-01-01. Determine recommendations to limit the impacts of acoustic emissions during work at sea and seismic research surveys and operations.
MMN 11-01-03. Implement a monitoring of acoustic emissions from human activities which may affect the marine environment.

Supranational recommendation

Propose, after consulting other Member States, that European laws indicating technical standards related to fittings and motorisation of recreational power boats and watercraft be revised to take the issue of underwater noise into account.

Cross-cutting themes

This chapter lists the operational targets which are common to all descriptors.

Ecological challenges

All the professional and recreational activities done at sea have been analysed in the frame of each descriptor with respect to the pressures of varying intensity that they exert on the marine environment. Cross-cutting measures involve training, awareness raising, information and decision-making aids and make it possible to improve these practices to take better account of the marine environment.

Thus, the stakes for safeguarding the marine environment could be taught more thoroughly in training courses dealing with practising activities at sea. Raising the awareness of the general public is also a high-priority stake.

The increased number of activities at sea can lead to cumulative effects which can be more or less localized. Cumulative effects are direct and indirect effects generated over time and space by a project or several projects and activities. Impact studies and assessment processes take this concept into account, but cumulative impacts are still often poorly appraised in these studies. Moreover, in order to ensure the rational and sustainable development of coastal territories, it is crucial that coastal and marine challenges be integrated in when decisions are taken.

Operational targets

MMN OT-01. Take better account of marine environmental protection challenges in training courses for instructors, seafarers and other sea-related occupations.
MMN OT-02. Raise awareness of users of the sea about the challenges of marine environmental protection.
MMN OT-03. Take better account of marine environmental protection challenges in informing and raising awareness of the general public.
MMN OT-04. Safeguard and/or protect species and habitats by setting tools for decision-making and knowledge.

Existing measures

Many organisations for environmental education conduct actions to train and raise the awareness of various groups and audiences. But the funding allocated for awareness-raising actions on the seafront and scope of actions can vary. Environmental education has been reasserted as a priority for the national education system, and should be developed in primary and secondary school programmes.

The State draws up the curricula for numerous vocational training courses (aquaculture, fisherman, merchant navy, water sports instructor, etc.), which may also be regulated by international conventions like the STCW (Convention on Standards of Training, Certification and Watch keeping for Seafarers) and European directives. However, these training courses hardly address all of the

impacts of these activities on the marine environment. For instance, aquaculture training course take the marine environment into account due to the need for compliance with health standards. However the topic of waste and litter is not developed much.

In France, impact studies and assessment approaches, especially those performed under the Water Act (n°2006-1172) and the "Habitats" (92/43/EEC) and "Birds" (2009/147/EC) Directives, provide relevant tools for drawing up new projects. The taking account of cumulative effects was introduced by the so called "Grenelle 2" law (n°2010-788) providing national commitment to the environment, and this can supplement the above-mentioned analyses by incorporating spatial-temporal inputs.

At the land-sea interface, coastal and maritime strands of territorial coherence schemes (SCOT) determine what zones are mainly used for and the principles of compatibility that are applicable to maritime uses. The SMVM sea enhancement scheme was created by the 23 February 2005 law of the development of rural territories. It is a non-compulsory coastal strand which complements SCOT plans and is set out in the urban planning code. Currently, there is one scheme within the English Channel-North Sea marine subregion's perimeter. Other tools for decision-making, the procedure to inform the State, informing local authorities in terms of town planning, especially about existing environmental protection and risk prevention plans.

New measures

MMN OT-01-01. Incorporate or reinforce marine environmental challenges and protection measures in reference systems and examinations for maritime vocational training course, water sports training courses and acquisition of a motorboat licence.
MMN OT-03-01. Set up an overarching strategy to raise awareness about marine environmental challenges and protection in keeping with targets (raising awareness of different groups, supporting the dynamic deployment of Action plans for the marine environment (PAMMs), modifying stakeholders' behaviour).
MMN OT-03-02. Informing and raising awareness of students and schoolchildren (primary and secondary schools) about the stakes for marine environmental protection.
MMN OT-03-03. Better train local policy-makers about marine environmental protection.
MMN OT-04-01. Draw up an atlas of environmental challenges taking into account the sensitivity of species and habitats to the pressures exerted.
MMN OT-04-02. Take better account of cumulative effects of human activities on the marine subregion scale, especially projects, plans and programmes subjected to environmental assessments, impact studies and assessment of effects.
MMN OT-04-03. National guidelines to implement individual territorial coherence schemes (SCOT) plan chapters serving as sea enhancement schemes.
MMN OT-04-04. Ensure that marine and coastal environmental challenges are taken into account, and brought to the attention of the State through the PAC procedure (a communication for the State to local stakeholders), in coastal town planning documents and territorial coherence schemes (SCOT).

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The programme of measures for the English Channel and North Sea marine subregion is approved
by order of the Maritime Prefect for the English Channel and North Sea
and the Prefect for the Haute-Normandie Region

Information on the programme of measures can be obtained
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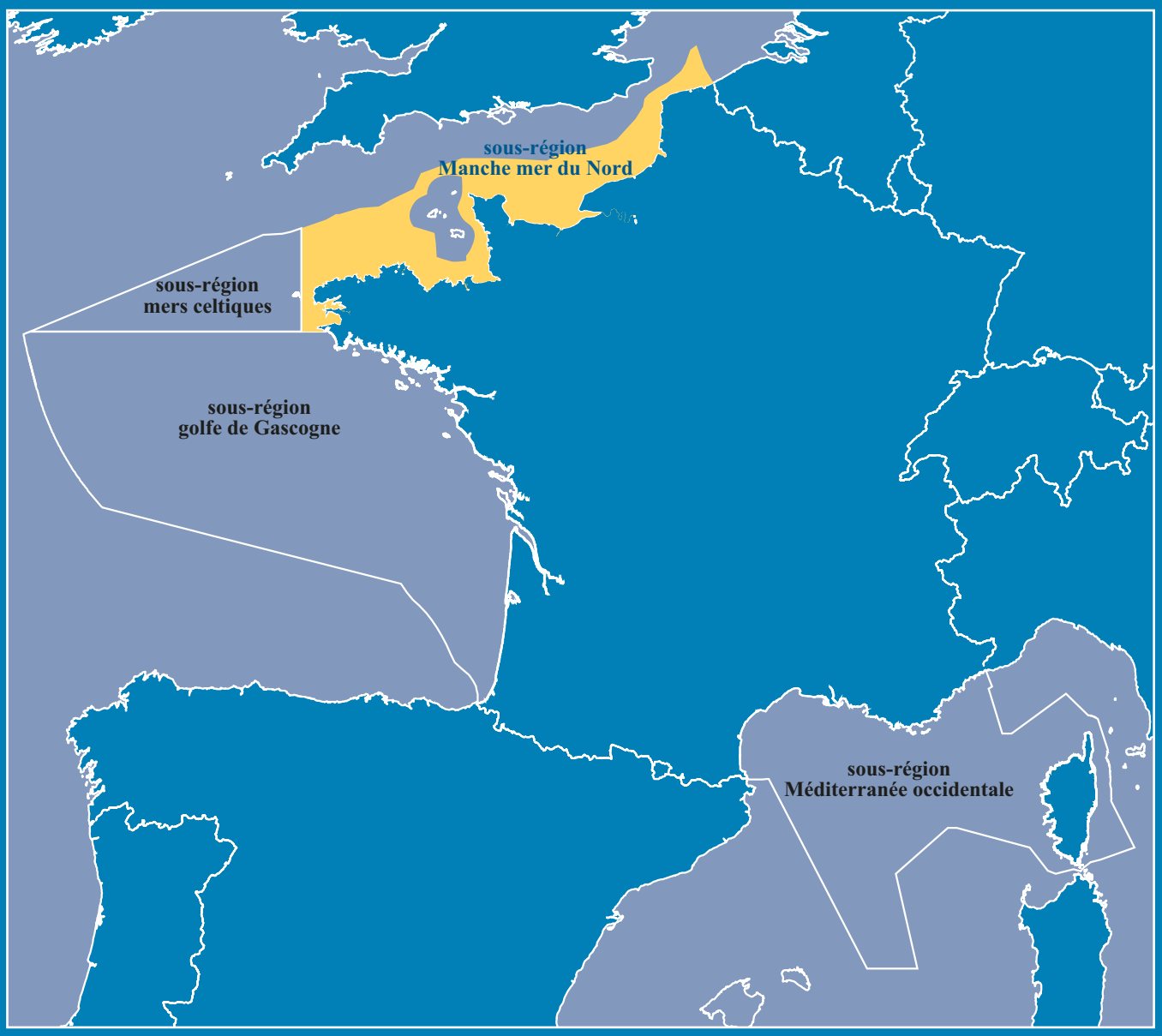

Maquette : Dynamo + - Photo couverture : Banc de bars ou loups de mer (Dicentrarchus labrax) - Yves Gladu / Agence des aires marines protégées