

# Developments in North Sea policy and their impact on the offshore oil and gas industry

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# Summary

Until recently North Sea management was mainly based on national policy, in line with international agreements (such as OSPAR and IMO). European policy and legislation seemed to be limited to land and inland waters. However, during the last years, Europe has focused more on its marine environment.

The Water Framework Directive (WFD) has been adopted in 2000 and is aimed to protect all waters and reaches up to 12 miles from the coast. Objectives are set within River Basin plans, to ensure all waters meet 'good status' by 2015. This year (2007), is the first official monitoring year of the WFD.

In 2005, the Marine Strategy Directive (MSD) has been proposed. The objective is to protect, conserve and improve the quality of the marine environment in the European marine waters, through the achievement of good environmental status within a defined time period. The planning and implementation of the MSD takes place on a regional level using an ecosystem based approach. It is generally expected that OSPAR is the forum through which regional implementation of the MSD will be arranged.

In 2006, a Green Paper on a Future Maritime Policy for the European Union has been adopted. The aim of the green paper is to launch a debate about a future Maritime Policy for the EU that treats the oceans and seas in a holistic way. It seeks to strike the right balance between the economic, social and environmental dimensions of sustainable development.

The Birds Directive (1979) requires the establishment of Special Protection Areas (SPAs) for birds. The Habitats Directive (1992) similarly requires Special Areas of Conservation (SACs) to be designated for other species, and for habitats. Together, SPAs and SACs make up the Natura 2000 series. The Dutch special areas submitted for Natura 2000 are currently in progress towards an official status.

Furthermore, on a national level, in 2005 the Integrated Management Plan for the North Sea 2015 (IMPNS 2015) has been published. In keeping up with international policy developments, it is based on the three themes: a healthy, safe and profitable sea. It introduces new management instruments: the integral assessment framework for permits and the specific assessment framework for the protection of areas containing special ecological features.

The main impact for the offshore oil and gas industry on the DCS is expected to be restrictions on activities in sensitive areas with the formal classification as Natura 2000 site of four areas (the Coastal Sea, Frisian Front, Cleaverbank and Dogger Bank) in 2008 and other (future) proposed areas within Natura 2000 and OSPAR (Marine Protected Areas). Although banning of oil and gas production from these areas is not likely because of overriding public interest, there will be more requirements for environmental impact statements and additional mitigating measures for activities in Natura 2000 area's.

The first action planned for implementation of the MSD is the initial assessment of the regions. It is recommended that NOGEPA gets involved within the initial assessment of the North east Atlantic, which is likely to be organised by OSPAR.



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# 1 Introduction

Until recently North Sea management was mainly based on national policy, in line with international agreements. International meetings and agreements took place within OSPAR and IMO frameworks. European policy and legislation (for example, the EU Water Framework Directive that was adopted in 2000) seemed to be limited to land and inland waters. However, during the last years Europe has focused more on the marine waters.

In 2005, the European Commission had agreed on a proposal for a Directive of the European Parliament and of the Council establishing a Framework for Community Action in the field of Marine Environmental Policy (Marine Strategy Directive). On 7 June 2006, the European Commission adopted a Green Paper on a Future Maritime Policy for the European Union.

While these developments are in progress, it is difficult to get a clear view on relevant upcoming policies and its interaction with existing and other future policies. To get insight into the impact of the future European policy for the (Dutch) offshore oil and gas industry a quickscan has been performed on recent developments within (inter)national policy. Relevant Ministries have also been consulted (see Annex 1).

This report is the results of the quickscan. It provides a short summary of relevant policies and developments within these policies. This includes: Green paper on a Future Maritime Policy; Marine Strategy Directive; Water Framework Directive; Natura 2000; and the Integrated Management Plan for the North Sea 2015. Based on these developments, the impact for the offshore oil and gas industry is described, from the industry's perspective.





## 2 Developments in North Sea policy

### 2.1 Introduction

The last few years, there have been national and international developments in North Sea policy, see Table 1. In the following sub-sections these policies are described, including relevant developments within OSPAR. Figure 1 shows a schematic view of the scope of the North Sea policy developments.

*Table 1 Overview of recent policy developments relevant for the North Sea*

<b>Policy</b>	<b>Scope</b>	<b>Authority</b>	<b>Adoption</b>	<b>Status</b>
Maritime Policy Green Paper	European seas and coastal waters	Ministry of V&W <sup>1</sup>	2006	Consultation process
Marine Strategy Directive	European seas and coastal waters	Ministry of V&W	2005	Proposal
Water Framework Directive	All EU inland surface waters, transitional waters, coastal waters and groundwater. In respect of chemical status it also includes territorial waters	Ministry of VROM <sup>2</sup>	2000	Valid
Natura 2000	European Union	Ministry of LNV <sup>3</sup>	2004	Valid
Integrated Management Plan for the North Sea 2015	EEZ (Exclusive Economic Zone) and Territorial Sea	Ministry of V&W	2005	Valid

<sup>1)</sup> Ministry of Transport, Public Works and Water Management

<sup>2)</sup> Ministry of Housing, Spatial Planning and the Environment

<sup>3)</sup> Ministry of Agriculture, Nature and Food Quality

There are two major policy developments within the European Union at the moment, which are considered to be of interest for the Dutch offshore oil and gas industry. Firstly DG Fish and Maritime Affairs has produced a so-called Green Paper Maritime Policy<sup>1</sup> (European Commission, 2006a) with the title 'towards a future Maritime Policy for the Union: A European Vision for the Oceans and Seas'. Secondly the Council of the European Union has proposed a Marine Strategy Directive<sup>2</sup> (European Commission, 2005a) with the title 'Establishing a Framework for Community Action in the field of Marine Environmental Policy'. In this chapter the status, major elements and recent developments with respect to these two initiatives are described. An overall assessment of the consequences of these EU policy developments for the Dutch Offshore Oil and Gas Industry is presented in Chapter 3.

<sup>1</sup> Extensive information can be found on <http://ec.europa.eu/maritimeaffairs>

<sup>2</sup> Extensive information can be found on <http://ec.europa.eu/environment/water/marine.htm>

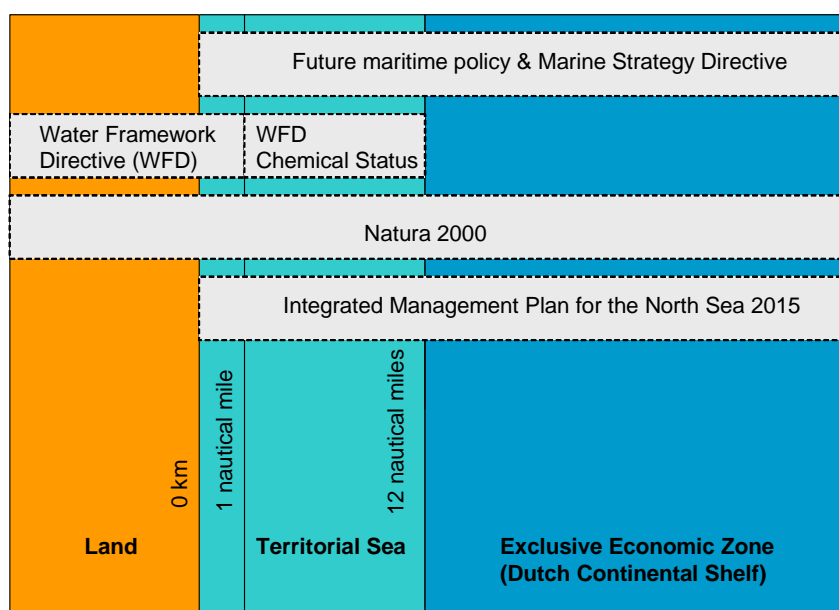


Figure 1 Schematic view of the scope of North Sea policy developments

## 2.2 Green Paper on a future maritime policy

Policy	Green Paper on a Future Maritime Policy for the EU
Scope	European seas and coastal waters (EEZ, Territorial Sea)
Dutch authority	Ministry of Transport, Public Works and Water Management
Adoption	07-06-2006
Status	Consultation process
Further information	<a href="http://ec.europa.eu/maritimeaffairs/">http://ec.europa.eu/maritimeaffairs/</a>

### Objective, Status and process

Basically the Green Paper Maritime Policy (in short: Green Paper) is a discussion document put forward by the European Commission, specifically the Directorate General for Fisheries and Maritime Affairs. The background for the Green Paper is the “particular need for an all-embracing maritime policy in Europe aimed at developing a thriving maritime economy and the full potential of sea-based activity in an environmentally sustainable manner.” This was one of the Strategic Objectives for 2005-2009 of the European Commission. The Green Paper is the first step in the process of developing this ‘all-embracing maritime policy’ and will be used to stimulate a debate about this issue between all relevant stakeholders and at all levels of governance.

All Member States have been asked to start a national consultation process based on the Green Paper. This consultation process is supposed to end on the 30<sup>th</sup> of June 2007. Based on the results of this consultation process the European Commission will decide about the follow up.

### Brief outline of the Green Paper

The Green Paper is a very extensive document which brings forward a lot of issues and ideas about the possibilities of a future European maritime policy. In this section these issues are summarized. Another outline of the Green Paper (European Commission, 2006a) can be found at: [http://ec.europa.eu/maritimeaffairs/communication\\_en.html](http://ec.europa.eu/maritimeaffairs/communication_en.html).

The Green Paper consists of the following topics:

- Sustainable maritime development
  - A competitive marine industry
  - The marine environment and sustainable use of marine resources
  - Knowledge and technology
  - Innovation
  - Maritime skills and employment
  - Clustering
  - Regulatory framework
- Quality of life in coastal regions
  - A place to live and work
  - Adapting to coastal risks
  - Tourism
  - Managing the land/sea interface
- Management tools
  - Data
  - Spatial planning
  - Financial support
- Maritime Governance
  - Policy making within the EU
  - Offshore activities of governments
  - International rules for global activities
  - Taking account of geographical realities
- Europe's maritime heritage and identity

In Annex 2, these main topics are described with the focus on offshore oil and gas industry.

### **Results Dutch Consultation Process**

The Dutch stakeholder consultation about the Green Paper has been coordinated by the 'Overlegorganen Verkeer en Waterstaat' (OVW) and was completed in January 2007. The results were reported (OVW, 2007<sup>3</sup>) and presented to the Minister of Transport, Public Works and Water Management. NOGEPA has also been involved in this consultation process. In summary the results of the Dutch consultation process were:

- The Green Paper should lead to improved legislation and not to additional legislation;
- There are some doubts about the added value of a European Maritime policy because of the good experience with regulations by OSPAR and IMO;
- Some stakeholders are worried that Dutch maritime interests will be traded against other interests within the European political process;
- Parties emphasize to safeguard the level playing field between and within the different maritime industries, but embrace the benefits of European funds for innovation, research and development;
- Many stakeholders state that a holistic European maritime policy provides good opportunities to implement a sustainable use of marine ecosystems, with 'ecosystem-based management' as the guiding principle;
- The stakeholders see a lot of opportunities within the framework of the maritime policy to develop a sustainable energy industry via the storage of CO<sub>2</sub> in empty oil and gas fields in the North Sea;
- The stakeholders also see the need and opportunities for a transition into sustainable fisheries;

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<sup>3</sup> The report can be downloaded at <http://www.overlegvenw.nl>

- More attention should be given to maritime safety in Europe because of the increasing use of the sea by different industries. Enhanced maritime safety will have a lot of economic benefits;
- The stakeholders had several opinions about a European spatial planning system. For example, some stakeholders state that spatial planning at sea is not very efficient, while others state that spatial planning should be the responsibility of the Member State itself;
- More attention should be given to the social and cultural aspects of the maritime industry which are much less emphasized within the Green Paper than the economic aspects;
- The Dutch contribution to this EU policy process should be well coordinated and sufficient attention should be given to stakeholder involvement.

### Timetable

- Adoption of a Green Paper on a Future Maritime Policy for the EU: June 2006;
- Consultation process: June 2006 until June 2007;
- Feedback on the results of the consultation process and proposing the way forward: end of 2007.

## 2.3 Marine Strategy Directive

Policy	Marine Strategy Directive
Scope	European seas and coastal waters (EEZ, Territorial Sea)
Dutch authority	Ministry of Transport, Public Works and Water Management
Adoption	24-10-2005
Status	Proposal
Further information	<a href="http://ec.europa.eu/environment/water/marine.htm">http://ec.europa.eu/environment/water/marine.htm</a>

### Backgrounds

The Marine Strategy Directive (MSD) aims at one protection regime for all European seas (European Commission, 2005a; European Commission, 2006b). It should be used to strengthen the enforcement of all environmental regulations which are in place for all European seas. The MSD will also aim at streamlining all monitoring and assessments present and future. This will be done by developing a European standard for monitoring and assessment. Furthermore, the MSD will be used to tackle cross-border environmental issues. Another purpose of the MSD is the consistency in the implementation of 'Programmes of Measures'. Finally, by looking closely to the relation with the Water Framework Directive and Natura 2000, the MSD aims at uniformity within the EU environmental policy regarding the oceans and seas.

### Key-elements

The key-elements of the Marine Strategy Directive are:

- A dual EU/Regional approach;
- A knowledge-based approach;
- An ecosystem-based approach;
- A cooperative approach.

The dual EU/Regional approach is reflected in Figure 2.

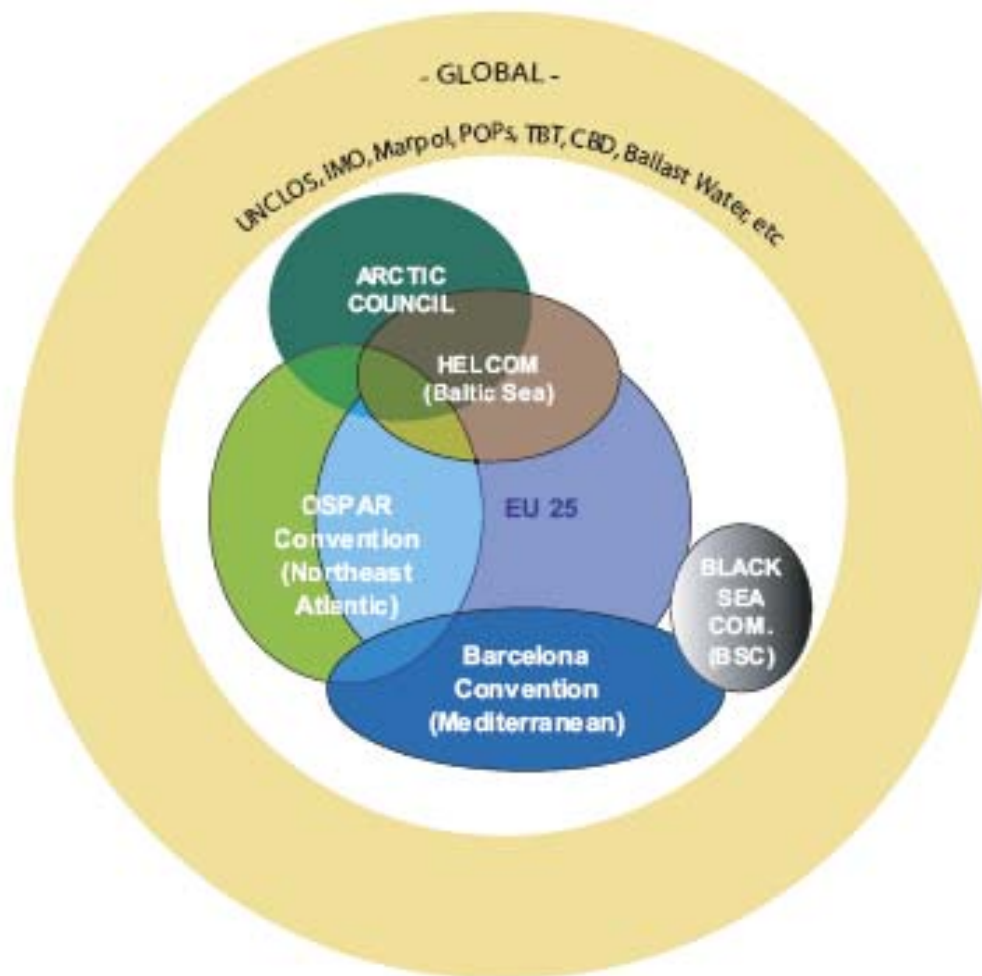


Figure 2 The institutional framework for the protection of Europe's seas and oceans (EC, 2006b).

There are several regional conventions within the European marine waters and also global conventions and laws, like the International Maritime Organization (IMO) and the United Nations Convention for the Law of the Sea (UNCLOS), that are relevant. The MSD is aiming to make maximum use of regional organizations, for example OSPAR, in implementing the Directive.

### Status

The Marine Strategy Directive is a Directive and therefore a legal instrument within EU legislation. It has been approved by the European Council on the 18<sup>th</sup> of December 2006 but it is still a proposal. It is part of a so-called co-decision procedure, which means that the European Parliament will debate on the MSD in the autumn of 2007. One of the basic disputes between the Council and the EU concerns the status of the MSD. The council wants the MSD to be an 'effort obligation' while there are factions within the Parliament that are aiming at a 'result obligation'. The basic objective of the MSD as it is proposed now by the Council says 'Marine Strategies shall be developed and implemented **with the aim of achieving or maintaining good environmental status** in the marine environment by the year 2021 at the latest'. Especially the text in bold is relevant in this case. If this text is replaced by 'to achieve' the MSD will have a 'result obligation'. The latter means that Member States can be prosecuted by the European Commission and every European citizen when they don't achieve 'good environmental status' in 2021.

## Objectives

There are three objectives of the European Marine Strategy Directive:

- Marine Strategies shall be developed and implemented with the aim of achieving or maintaining good environmental status in the marine environment by the year 2021 at the latest.
- The Marine Strategy Directive applies an ecosystem-based approach to the management of human activities while enabling the sustainable use of marine goods and services.
- The Marine Strategy Directive contributes to coherence between, and shall aim to ensure the integration of environmental concerns into the different policies, agreements and legislative measures which have an impact on the marine environment.

Ecosystem-based management of human activities is best reflected in Figure 3.

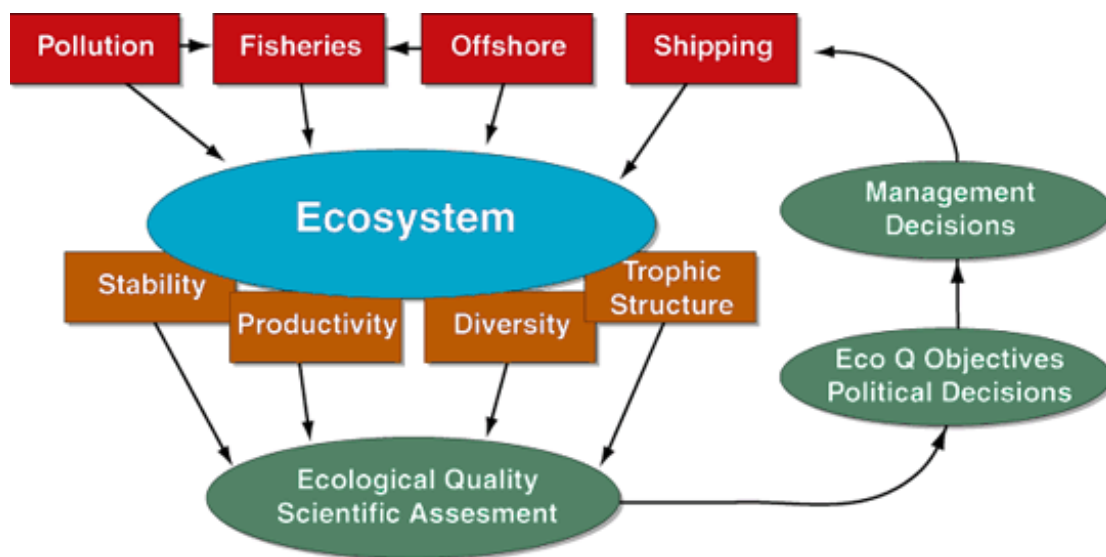


Figure 3 Schematic representation of Ecosystem-based Management.

Ecosystem-based management means the assessment of the effects of human use on relevant features of the marine ecosystem. The next step will be taking political decisions, making use of indicators like for example the EcoQO's, about the ecological quality objectives. The third step will be taking management decisions with respect to human use in order to reach the ecological objectives. Finally, based on monitoring, the effects will be evaluated and assessed again and, if necessary, the procedure will be repeated.

'Good-environmental status' (GES) will play a central role within the MSD. The details of what is meant with 'GES' are not yet known. However, the MSD presents some general definitions for GES:

- Ecologically diverse and dynamic oceans and seas;
- Sustainable use of the marine environment;
- Fully functional and resilient ecosystems;
- Protection of species and habitats;
- No human induced decline of biodiversity;
- Hydro-morphological, physical and chemical properties support clean, healthy and productive ecosystems;
- Anthropogenic inputs of substances and energy do not cause pollution effects.

Furthermore the MSD presents in two of its annexes (Annex II and annex VI) some detailed descriptions of GES. The detailed development of GES is part of the implementation process of the MSD.

### Marine (sub)regions

The Marine Strategy Directive discriminates several marine regions in Europe (Figure 4). Of relevance for NOGEPA are the region 'North East Atlantic' and the sub region 'Greater North Sea'. The latter means the North Sea including the Kattegat and the English Channel. It will be not surprising that these regions coincide with the area that falls under the OSPAR Convention and the sub regions that are discriminated within OSPAR. The next logical step will be that OSPAR will be formally responsible for establishing the regional cooperation that is necessary for implementing the MSD in the future. Of course one has to realize that some parties within OSPAR are not an EU Member State and that formally the implementation of the MSD is a responsibility for each EU Member State.

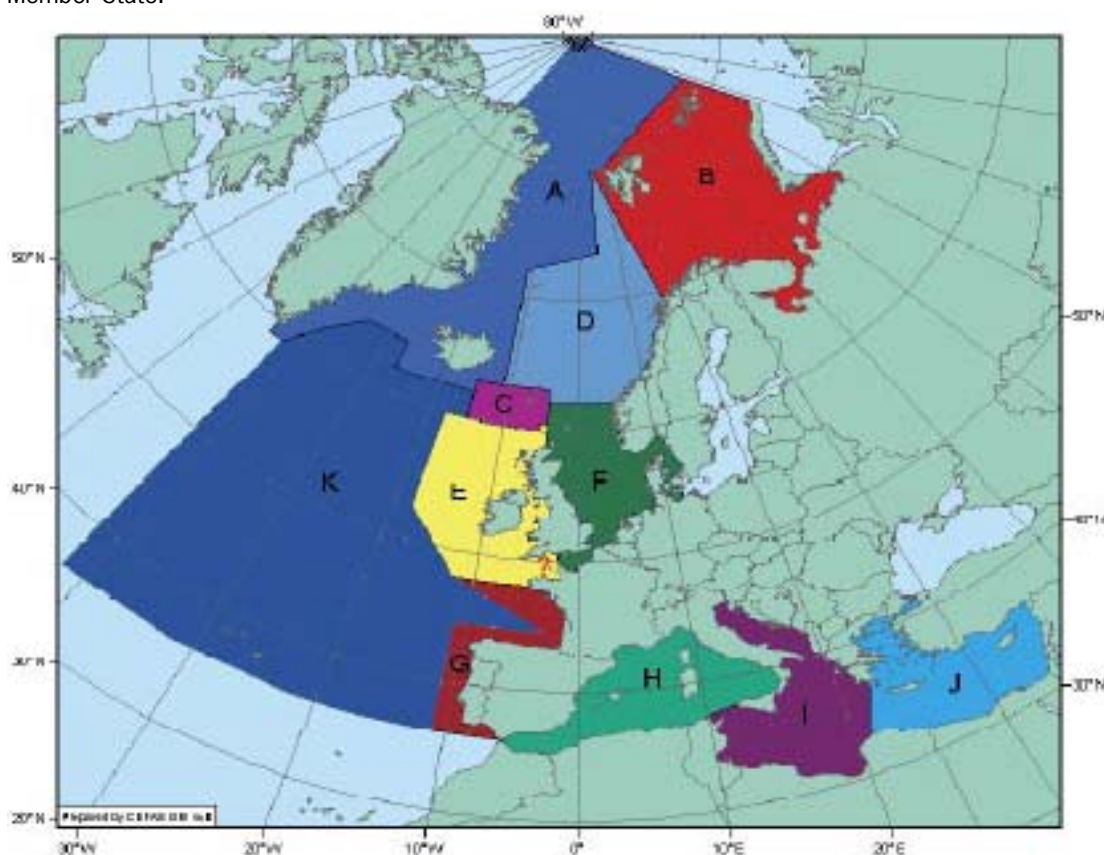


Figure 4 Marine eco-regions proposed by ICES for implementation of the ecosystem approach in European waters (EC, 2006b): Greenland and Iceland Seas (A), Barents Sea (B), Faroes (C), Norwegian Sea (D), Celtic Seas (E), North Sea (F), South European Atlantic Shelf (G), Western Mediterranean Sea (H), Adriatic-Ionian Seas (I), Aegean-Levantine Seas (J) and Oceanic Northeast Atlantic (K). The Baltic and Black Seas are not listed on this map but would of course also constitute single marine eco-regions.

### Marine Strategies

The basic requirement of the Marine Strategy Directive is the development of so-called 'marine strategies' (see general objectives in this paragraph). In order to develop these strategies several activities can be distinguished in this process and these are described in the MSD. The MSD discriminates a 'preparation phase' and a 'programmes of measures phase'.

### Amendments on proposed MSD

After adoption of the proposed MSD by the EC in 2005, the proposal has been transmitted to the European Parliament (EP). The EP has approved the proposed directive with amendments on 1<sup>st</sup> reading (EP, 2006). Relevant amendments on the draft MSD for the offshore industry refer to the conditions of GES. An annex is added (Annex I) to describe the conditions that should be met to achieve GES. These amendments could have great impact on the offshore industry. One of these conditions is, for example, 'the regulated release of oil from platforms and pipelines and the use of harmful drilling muds have been stopped'. Two other important conditions are: 'the regulated operational discharges from platforms and pipelines and the use of drilling muds present no significant risk to the marine environment' and 'the disposal of any liquid or gas into the water column or the seabed/subsoil has been prohibited and the disposal of solid materials into the water column or the seabed/subsoil is prohibited unless authorisation is granted subject to international law and a prior environmental impact assessment has been performed'. Regarding the amendments of the EP, the Council reached political agreement on a draft directive on 18 December 2006 (Council of the EU, 2006). This document does not include the conditions as mentioned above (Annex I). Instead, a new annex has been added to the MSD (Annex VI), providing generic qualitative descriptors to be considered when determining GES. It is however possible, that during discussions with the European Parliament, (some of) these conditions will be re-introduced.

### Preparation

The preparation of the marine strategies will require four activities:

- An initial Assessment of the environmental status and the impact of human activities (within 4 years, probably 2011);
- Determination of good environmental status (within 4 years, probably 2011);
- Establishment of environmental targets and associated indicators (within 5 years, probably 2012);
- Establishment and implementation of a monitoring programme (within 6 years, probably 2013).

### Programmes of measures

This phase of the MSD will constitute:

- The development of a programme of measures by 2016 designed to achieve good environmental status. (The MSD states that a new measure should only be introduced if it is cost-effective and technically feasible);
- Entry into operation of the programme of measures by 2018.

## 2.4 Water Framework Directive

Policy	Water Framework Directive
Scope	All EU inland surface waters, transitional waters, coastal waters and groundwater. In respect of chemical status it also includes territorial waters.
Dutch authority	Ministry of Housing, Spatial Planning and the Environment
Adoption	23-10-2000
Status	Valid
Further information	<a href="http://ec.europa.eu/environment/water/water-framework/index_en.html">http://ec.europa.eu/environment/water/water-framework/index_en.html</a> and <a href="http://www.kaderrichtlijnwater.nl/">http://www.kaderrichtlijnwater.nl/</a>

In the year 2000, the European Commission established a framework for water policy, Directive 2000/60/EC, also called the Water Framework Directive (WFD) (EC, 2000).



The purpose of the WFD, as laid down in Article 1, is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater which:

- a. prevents further deterioration and protects and enhances the status of aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems;
- b. promotes sustainable water use based on a long-term protection of available water resources;
- c. aims at enhanced protection and improvement of the aquatic environment, inter alia, through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing-out of discharges, emissions and losses of the priority hazardous substances;
- d. ensures the progressive reduction of pollution of groundwater and prevents its further pollution, and
- e. contributes to mitigating the effects of floods and droughts.

The objective of the WFD is to achieve:

- Good chemical status for all European waters;
- Good ecological status for natural water bodies;
- Good ecological potential for artificial or heavily modified water bodies.

### **Borders of the WFD**

The WFD is applicable to all EU waters: rivers, lakes, coastal waters, and groundwaters. According to art.2.7 of the WFD (Directive 2000/60/EC), coastal water means 'surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters'. However, considering the chemical status, the territorial waters (up to 12 miles of the coast) outside the one mile border, are included in the WFD (according to art.2.1: 'Surface water' means inland waters, except groundwater; transitional waters and coastal waters, except in respect of chemical status for which it shall also include territorial waters).

### **The key elements of the WFD**

- Protection of all waters - rivers, lakes, coastal waters, and groundwaters;
- Setting objectives to ensure that all waters meet "good status" by 2015;
- River basin management plans;
- Cross border co-operation between countries and all involved parties;
- Active participation of all stakeholders, including NGOs and local communities, in water management activities;
- Reduction and control of pollution from all sources like agriculture, industrial activity, and urban areas, etc;
- Water pricing policies and ensuring that the polluter pays;
- Balancing the interests of the environment with those who depend on it.

### **Approach**

Two pollution control approaches are combined to ensure that the objectives of "good ecological quality" of water are met by 2015:

- The best possible reduction of emissions  
Emission control measures are being prepared which will range from reduction to phase out of releases into the aquatic environment within a period of 20 years for the "priority hazardous substances";

- A minimum quality threshold

A proposal on environmental quality standards is presented by the Commission in 2006 (EC, 2006c).

Objectives for the protection of water quality:

- General protection of the aquatic ecology  
Introduction of "good ecological status" (defined in Annex V of the Water Framework Proposal, in terms of the quality of the biological community, the hydrological characteristics and the chemical characteristics) and "good chemical status" (defined in terms of compliance with all the quality standards established for chemical substances at European level);
- Specific protection of unique and valuable habitats;
- Protection of drinking water resources;
- Protection of bathing water.

All these objectives must be integrated for each river basin.

#### Chemical status

The chemical status is defined in terms of compliance with all the quality standards established for chemical substances at European level. The Commission presented a proposal for a Directive of the European Parliament and of the council on environmental quality standards in the field of water policy and amending Directive 2000/60/EC (COM(2006) 398 final). This Directive includes the environmental quality standards (EQS) for priority and other substances and the obligation for member states to comply with these standards. There are 33 priority substances and 8 other pollutants listed. The priority substances are listed in Annex 3. The other pollutants include pesticides and some chlorinated hydrocarbons. The Directive also states that concentrations of these substances do not increase in sediment and biota. Furthermore, the Member States shall establish an inventory of emissions, discharges and losses of priority substances and other pollutants for each river basin or its part within their territory. Reference period for this shall be one year between 2007 and 2009. The Commission shall ensure that (art 4.5): emissions, discharges and losses comply by 2025 with the reduction or cessation obligations laid down in Article 4(1)(a)(iv)<sup>4</sup> of Directive 2000/60/EC. It is stated (Art. 4.1 a. (iv)) that: "Member States shall implement the necessary measures in accordance with Article 16(1) and (8), with the aim of progressively reducing pollution from priority substances and ceasing or phasing out emissions, discharges and losses of priority hazardous substances without prejudice to the relevant international agreements referred to in Article 1 for the parties concerned". Art.16 (8) lays down controls on the principal sources of discharges of priority substances, inter alia, on consideration of all technical reduction options. Member States shall take such action five years after the date of inclusion in the list.

#### Ecological status

The Water Framework Directive classifies surface waters based on the status a number of "quality elements" for transitional and coastal waters:

- Physical-chemical elements (transparency, thermal conditions, oxygen conditions, salinity and nutrient conditions). Specific pollutants are also considered;
- Biological elements (the composition, abundance and biomass of phytoplankton; the composition and abundance of other aquatic flora; the composition and abundance on benthic invertebrate fauna; and the composition and abundance of fish fauna);
- Hydromorphological elements (depth variation; quantity, structure and substrate of the bed; structure of the intertidal zone; freshwater flow; and wave exposure)

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<sup>4</sup> Art. 4.1.(a) of Directive 2000/60/EC lays down how to make operational the programmes of measures specified in the river basin management plans for surface waters.

The Dutch west coastal water is considered as heavily modified water body and the Wadden coastal water is considered as natural water body. These coastal waters should achieve by the year 2015 good ecological potential and good ecological status, respectively. The Dutch coastal water is classified in two different types “beschut kustwater” (Waddenzee, K2) and “open zee” (K3). Within the WFD, the ecological status of coastal waters is assessed. The characteristics and assessment of the Rhine basin has been reported in 2005 (Min. V&W, 2005).

### **Monitoring**

There are three different types of monitoring within the WFD:

- Status and trend monitoring
- Operational monitoring
- Further research monitoring

There are several monitoring sites for physical-chemical elements in the territorial sea and coastal area and several monitoring sites for biological and hydromorphological elements in the coastal area. The first year of WFD monitoring will be from January until December 2007.

### **Timetable**

- National and regional water laws to be adapted to the WFD. River Basin co-operation to be made operational (2003);
- An analysis of pressures and impacts on our waters has to be completed including an economic analysis (2004);
- Monitoring programmes have to be operational as a basis for the water management (2006);
- River Basin Management plans presented to the public (2008);
- Publishing first River Basin Management Plans (2009);
- Waters to meet “good status” (2015).

The River Basins relevant for the Netherlands are shown in Figure 5.



Figure 5 River basins for the Netherlands.

## 2.5 Natura 2000

Policy	Natura 2000
Scope	European Union (EEZ, Territorial Sea)
Dutch authority	Ministry of Agriculture, Nature and Food Quality
Adoption	2004
Status	Valid
Further information	<a href="http://www.natura.org/">http://www.natura.org/</a>

In May 1992 European Union governments adopted legislation designed to protect the most seriously threatened habitats and species across Europe. This legislation is called the Habitats Directive and complements the Birds Directive adopted in 1979. At the heart of both these Directives is the creation of a network of sites called Natura 2000. The Birds Directive requires the establishment of Special Protection Areas (SPAs) for birds. The Habitats Directive similarly requires Special Areas of Conservation (SACs) to be designated for other species, and for habitats. Together, SPAs and SACs make up the Natura 2000 series. All EU Member States contribute to the network of sites in a Europe-wide partnership (<http://www.natura.org/>).

Special Protection Areas (SPAs) are classified under the Birds Directive to help protect and manage areas which are important for rare and vulnerable birds because they use them for breeding, feeding, wintering or migration.

Special Areas of Conservation (SACs) are classified under the Habitats Directive and provide rare and vulnerable animals, plants and habitats with increased protection and management.

In Table 2 an overview of Natura 2000 habitats and species relevant for the offshore oil and gas industry is presented. In Figure 6 the proposed areas with special ecological features are presented. The Coastal Sea, Frisian Front, Cleaverbank and Dogger Bank all meet the criteria of the Birds Directive and/or the Habitats Directive and the OSPAR Convention and are laid down in the IMPNS 2015 (IDON, 2005). Each of the proposed areas meets criteria of at least two of the three treaties. The Central Oyster Grounds was also considered (Lindeboom *et al.*, 2005) as it meets OSPAR criteria (high benthic biodiversity and remaining population of *Arctica islandica*) and would qualify for one seabird species under the Birds Directive. However the bird species concerned, the Northern Fulmar, is by far the most numerous bird in the North Sea at large and has its main centre of distribution further north. Protecting the Central Oyster Grounds for this seabird would make little difference and the area may therefore not be proposed to become a Natura 2000 site. It is expected that the proposed areas will be formally classified under the Birds- or Habitats Directive in the year 2008, based on the national 'Natuurbeschermingswet 1998'. In line with this, these areas will probably be submitted as MPA (Marine Protected Area) within the OSPAR framework. Several other areas will be kept under review as they possibly meet criteria of one of the treaties (Lindeboom *et al.*, 2005):

- An area with gas seeps (Habitat Directive) in the north;
- The Borkumse Stenen (possible reef, Habitat Directive) in the east;
- An area in the offshore Southern Bight (Bruine Bank; Bird Directive)
- The Zeeuwse Banken (sandbanks; Habitat Directive) in the south.

A special case is the central Coastal Sea. In contrast to the northern and southern parts, the central part is not likely to become a Natura 2000 site, even though it meets the same Habitats and Birds Directive as do the proposed northern and southern parts. The rationale is, that only 60% of a given habitat that qualifies for designation needs to be made a Natura 2000 site.

Table 2 Overview of the Habitats- and Birds Directive relevant to the offshore oil and gas industry

Directive	Aim	Potentially relevant to the offshore industry
Habitats Directive	To protect certain habitats	Shallow sandbanks Sub-marine structures (pockmarks/gas seeps) Reefs
	To protect certain species	Certain migratory fish (area specific: ANNEX II) Seals, Cetaceans (anywhere: ANNEX IV)
Birds Directive	To protect certain bird species	Coastal: Divers, Terns, Little Gull Offshore: none relevant

Specific management plans must be drafted for the special areas of conservation (SAC) under the Birds and Habitats Directives and for the Marine Protected Areas (MPA) to be designated under OSPAR. These plans describe:

- conservation objectives and the measures necessary to achieve them;
- the anticipated results regarding the conservation and recovery of natural habitats and species;
- existing activities within and around the area that are not in conflict with the conservation objectives. For these activities a permit based on the Nature Conservation Act of 1998 (Natuurbeschermingswet 1998) is not required. Other activities have to be assessed according to this act (see paragraph 2.6);
- an overview of necessary measures and an overview of the financial-economic consequences.

To the extent necessary, these management plans will also contain measures for activities that do not require a permit. Activities that were taking place in the specific area prior to the designation as an MPA/SPA/SAP will be allowed under the conditions they were. However, any modification (character, magnitude, type etc) of the activity has to be tested against the new rules as they are in place with the new status.

The so called “externe werking” (external impact) of an MPA/SPA/SAP does not exist in a way the term might suggest. The particular area has a defined border with a management plan in place for this specific area. Outside the area is outside world, with no other regulations. Activities however that **are able** to possibly have an impact on the protected area by the nature of their activities are due to perform a “passende beoordeling” (assessment framework), which can be an integrated part of the EIA (see also section 2.6).

Within three years after the area has been granted SAC status, the management plans needs to come into force. A draft management plan will be formalized by the Ministry of V&W, with stakeholder involvement. During an official consultation process of 6 weeks the draft management plan and related documents are open to the public. After ending the consultation process the government lays down the final management plan, with another six weeks for objection.

For the already designated areas (the Voordelta and the coastal waters north of Petten), the management plans will be completed in 2008 (IDON, 2005). The draft management plan of the Voordelta has already been published (February 2007) and a consultation process has been finalised. Oil and gas activities do not take place within this area, neither are these expected in future (Min. V&W *et al.*, 2007). The management plan of the Voordelta and related information can be found at the website of the North Sea Directorate of the Ministry of V&W (<http://www.noordzee.org/>).

The plans for the areas in the EEZ are expected to be ready in 2011. It is noted in the IMPNS 2015, that a single plan might suffice for all areas within the EEZ. For OSPAR, 2010 is the target year for achieving a functioning network of MPAs.

### Timetable

1992	Habitats Directive adopted
1994	Transposition of Directive into national legislation
1995	Submission of national list of candidate sites and cost estimates for conservation of sites harbouring priority habitat types and species
1995 – 1998	Selection by the Community of Sites of Community Importance (SCIs) according to biogeographical region
1998	Adoption of list of SCIs by Commission
1997 - 2004	Designation by Member States of SCIs as SACs
2004	Completion of Natura 2000 network, containing SACs and SPAs
2004 onwards	Member States to monitor conservation status of habitats types and species for which sites have been designed; Commission reviews Natura 2000's contribution towards achieving objectives of Directive.
~ 2008	Expected formal classification of four areas with special ecological features on the DCS (by the EC under the Habitat- and Birds Directive and by OPSAR under the MPAs) Completion of the specific management plans for the Voordelta and the coastal waters north of Petten
2011	Completion management plans for the EEZ areas

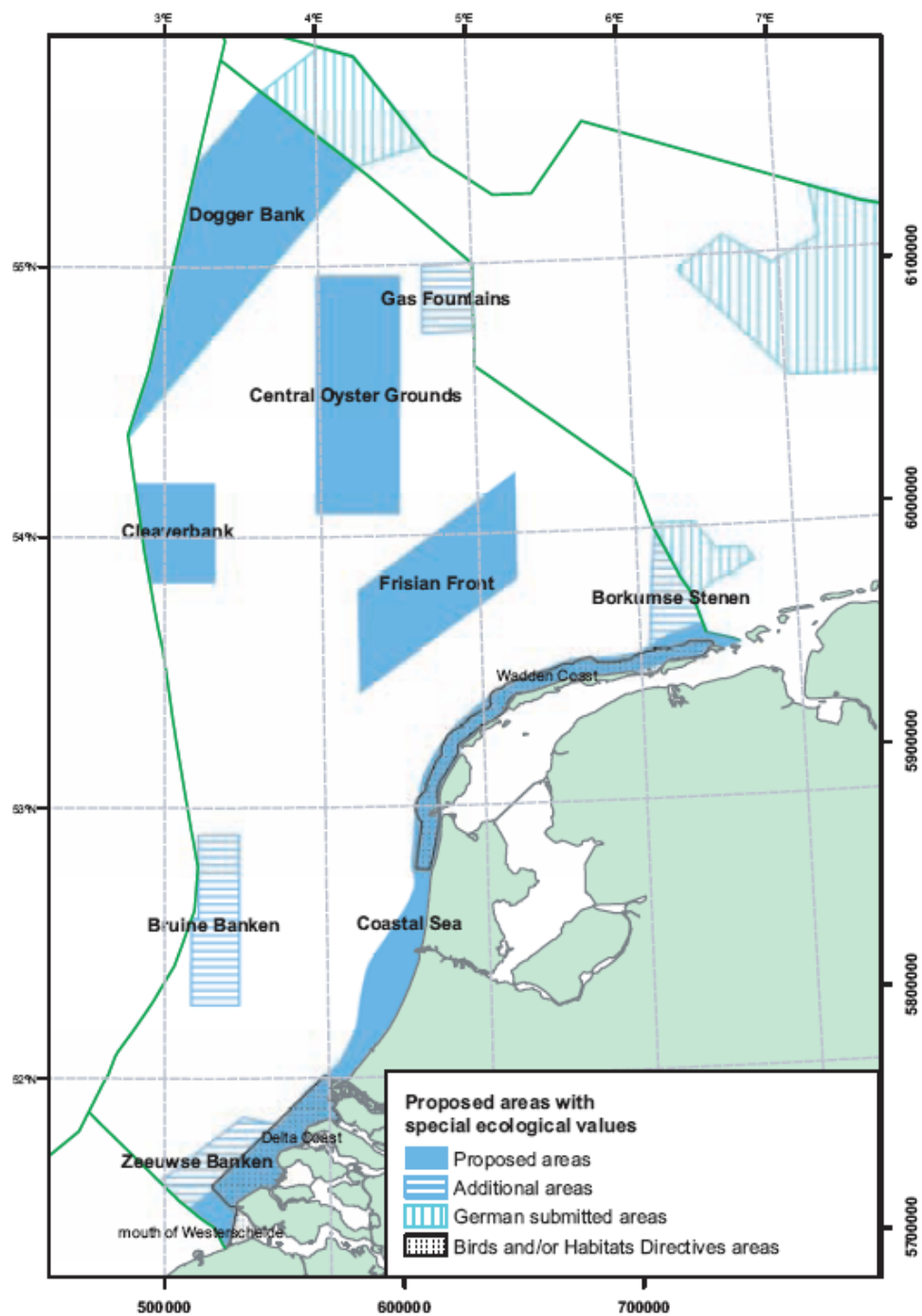


Figure 6 Proposed areas with special ecological features (Lindeboom et al., 2005).

## 2.6 Integrated Management Plan for the North Sea 2015

Policy	Integrated Management Plan for the North Sea 2015 (Integraal Beheerplan Noordzee 2015)
Scope	EEZ (Exclusive Economic Zone), Territorial Sea
Authority	Ministry of Transport, Public Works and Water Management
Adoption	08-07-2005
Status	Valid
Further information	<a href="http://www.noordzeeloket.nl/">http://www.noordzeeloket.nl/</a>

The Minister of Transport, Public Works and Water Management coordinates North Sea policy and has published the Integrated Management Plan for the North Sea 2015 in 2005 with the approval of the Minister of Housing, Spatial Planning and the Environment (VROM), the Minister of Economic Affairs (EZ) and the Minister of Agriculture, Nature and Food Quality (LNV).

The Spatial Planning Policy Document - *Nota Ruimte* - contains the following integral primary objective, as described in the North Sea paragraph: "To enhance the economic importance of the North Sea and maintain and develop the international ecological and landscape features by developing and harmonizing sustainable spatial-economic activities in the North Sea, taking into account the ecological and landscape features of the North Sea." With this objective, the Integrated Management Plan for the North Sea 2015 (IMPNS 2015) - *Integraal Beheerplan Noordzee 2015 (IBN 2015)* – has been developed. It sets out how the North Sea will be managed in the coming ten years.

The essence and the primary objective of IMPNS 2015 is to integrate the numerous policy documents and international conventions and translate into a management strategy so that the entire spectrum of North Sea policy can be fully realised in the most effective and efficient way possible.

IMPNS 2015 describes the policy comprehensively in context and outlines the scope for new initiatives as referred to in the Spatial Planning Policy Document. The plan is therefore process-oriented and defines the parameters of policy.

IMPNS 2015 includes an analysis of the existing management instruments and developments that have already been initiated. This analysis was carried out on the basis of the three identified themes – a healthy, safe and profitable sea – which is in keeping with the integral primary objective of the Spatial Planning Policy Document and the European Marine Strategy that is currently in development. The integral assessment framework for permits and the specific assessment framework for the protection of areas containing special ecological features provide new management instruments. They also give users more clarity regarding the conditions in which activities are permitted in the North Sea.

The IMPNS 2015 contains the following elements:

1. Vision of spatial management: controlled freedom for the market:  
There is an area of tension between the freedom allotted to market players and management by the government. Spatial management is a means to promote sustainable use of the North Sea in that area of tension.
2. Integrated assessment framework: spatial management through permitting:  
The integrated assessment framework applies to all activities for which a permit is required, as well as



for prolongation and expansion of existing activities. It consists of the following five assessments, the first of which is descriptive in nature.

- Definition of the spatial claim.
- Precaution. *Preventive measures should be taken when the marine environment, human health or other legitimate uses could be damaged by the activity.*
- Usefulness and necessity. *Not required for offshore oil and gas extraction because this sector is explicitly permitted or encouraged in national policy.*
- Choice of location and use of space.
- Restriction of effects and compensation *A number of additional protective provisions apply for sites where there are special ecological features. The assessment framework of the amended Nature Conservation Act of 1998 (Natuurbeschermingswet 1998) applies in the areas designated within the framework of the Birds and Habitats Directive (BHD).*

3. Boundaries of four areas that contain special ecological features:

IMPNS 2015 sets out the boundaries of four areas in the North Sea in which the ecological features are to receive extra protection: part of the Kustzee, Friese Front, Klaverbank and Doggersbank. The areas all meet the criteria of the Birds Directive and/or the Habitats Directive and the OSPAR Convention.

4. Coordinated management focusing on effectiveness, efficiency and better customer service:

Establishment of the North Sea Management Network (Beheerdersnetwerk Noordzee - BNN). Goal is to strengthen the cooperation between government organizations in regulating usage of the North Sea. The North Sea Management Network's main tasks are enhancing knowledge and information management thus reducing the burden for users.

The IMPNS 2015 has a specific policy choice for the extraction of oil and natural gas: "Oil and natural gas exploration and extraction are matters of overriding public interest and will be considered as such in individual assessments within the framework of spatial conservation in areas of special ecological features."

### **Integrated assessment framework**

As laid down in the IMPNS 2015, in principle offshore mining activities are permitted throughout the North Sea, including in areas of special ecological features and SACs (Birds and Habitats Directives). The EIA requirements for offshore oil and gas activities are listed in Table 3. The EIA is regulated in chapter 7 of the Dutch Environmental Management Act (Wm) and in the Environmental Impact Assessment Decree 1994 (Besluit milieueffectrapportage 1994). The Environmental Impact Assessment Decree 1994 states when an EIA should be carried out. The IMPNS framework applies the same threshold values as those to which the Environmental Impact Report Decree applies. If the EIA shows that the activity will affect the natural characteristics of the area, the integrated assessment framework must be applied for the drilling platform concerned. In principle, the usefulness and necessity of these activities in the North Sea, in the areas of special ecological features and in the SACs (Birds and Habitats Directives) do not have to be substantiated case by case because oil and gas extraction is carried out for reasons of overriding public interest and it is assessed as such in the assessment framework. The Government weighs the reasons of overriding public interest against the importance of the natural characteristics of the area.

For impact mitigation the IMPNS 2015 refers to the Oil and Gas Environmental Covenant (Milieuconvenant Olie en Gas), which contains agreements concerning, for example, phased replacement of harmful auxiliary substances used in mining. Whether or not compensatory measures in the North Sea are needed in addition to mitigation is determined by the extent to which significant effects occur.

Table 3 EIA requirements for offshore oil and gas activities according to the IMPNS 2015

Activity or decision	Case	EIA requirements
Oil and natural gas exploration	According to the IMPNS 2015, exploration in a sensitive area up to 3 nautical miles from the coast requires an EIA. However, according to the revised EIA Decree (MER-besluit 2005-7), the 3 nautical mile border for SACs is no longer in force. This decision results in a uniform EIA regime within the SACs.	EIA required
Alteration or expansion of oil or natural gas extraction	For already existing installations, in a sensitive area up to 3 nautical miles from the coast and: 1 <sup>o</sup> . an expansion of the surface area by at least 5 ha, or 2 <sup>o</sup> the addition or alteration of a nitrogen separation or a desulphurization installation	EIA requirement to be assessed
Extraction of oil or natural gas	Extracted amounts of: 1 <sup>o</sup> . > 500 tonnes of oil per day 2 <sup>o</sup> . > 500,000 m <sup>3</sup> of natural gas per day	EIA required
Laying, changing or expanding a pipeline for the transport of gas, oil or chemicals	Pipeline with a diameter of > 80 centimetres and a length of > 40 kilometres Pipeline with a length of > 1 kilometres (oil and chemicals) or a length of > 5 kilometres (natural gas) through a sensitive area	EIA required * EIA requirement to be assessed

\*) For pipelines on the continental shelf of this size, a new decree has been implemented in article 70a of the Mining Regulation (Mijnreglement Continentaal Plat). For these pipelines a permit of the Minister of Economic Affairs is required. The EIA is linked to this application.

### Economic function

The IMPNS 2015 describes the policy on the economic function of the North Sea concerning oil and natural gas exploration and extraction. It is recognized that oil and natural gas exploration and extraction is carried out for the benefit of the Dutch economy, security of supply and the transition to sustainable energy management. In accordance with the Spatial Planning Policy Document, oil and gas extraction is carried out for reasons of overriding public interest. The Government's policy is aimed at extracting as much oil and natural gas from the small Dutch fields as possible in order to use the full potential of the reserves.

### Rules and regulations

Use is regulated primarily by means of providing permits. The Mining Act (including the Mining Decree (Mijnbouwbesluit) and the Mining Regulations (Mijnbouwregeling)) form the framework for providing permits for oil

and gas extraction. The pipelines necessary for oil and gas extraction also fall under the Mining Act. The Public Works Management Act (Wbr) also applies to these activities if they take place within the 12-mile zone. The procedures for providing permits under the Mining Act (Ministry of Economic Affairs) and the Wbr (Ministry of Transport, Public Works and Water Management) are coordinated with each other.

## Enforcements

The State Supervision of Mines (SSM) (Staatstoezicht op de Mijnen) has an important role in preparing permits under the Mining Act. SSM is responsible for enforcement and inspection of the conditions described in the permits, which, besides aspects relating to safety, health and efficiency, primarily cover environmental and working conditions. The SSM also supervises the removal of platforms after the activity is terminated.

## Areas that contain special ecological features

Additional protective provisions apply for sites where there are special ecological features. The assessment framework of the amended Nature Conservation Act of 1998 (Natuurbeschermingswet 1998) applies in the areas designated within the framework of the Birds and Habitats Directive (BHD). Activities that normally are free from permitting obligations can be subject to permitting if they impact a BHD area under the terms of the Nature Conservation Act. Activities that are free from permitting obligations can also be regulated in the management plans to be drafted for BHD sites (see Natura 2000, paragraph 2.5). The assessment framework is presented in Figure 7.

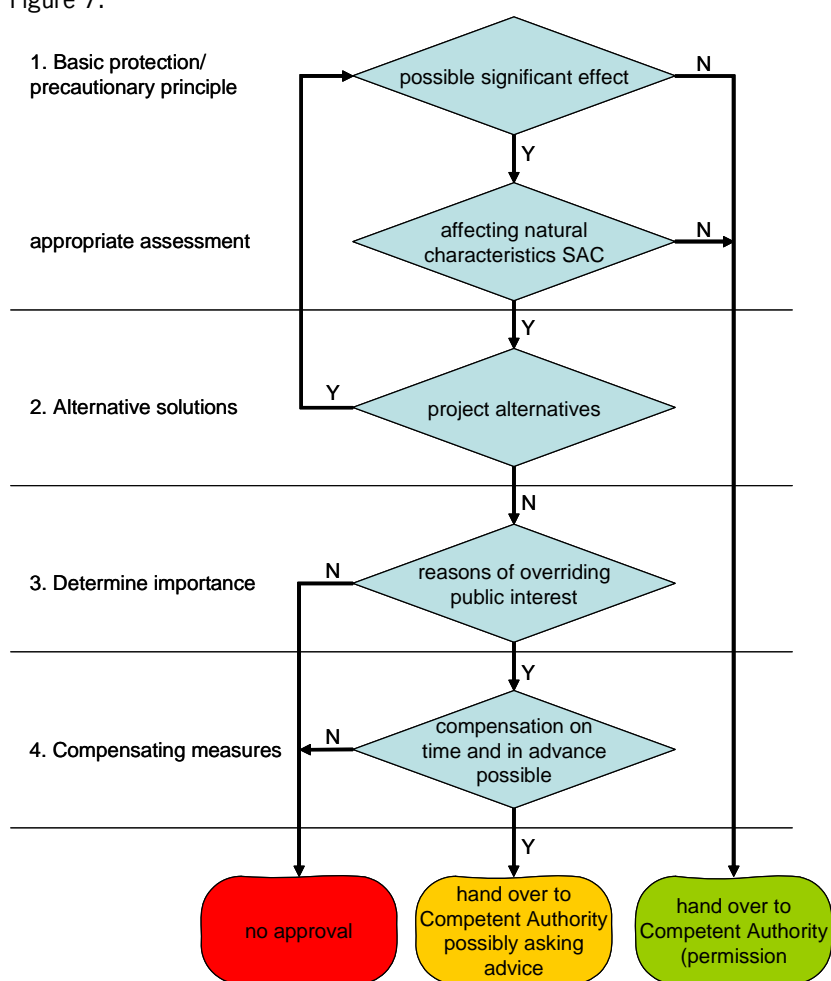


Figure 7 Assessment framework of the revised Nature conservation act 1998 for a plan or project in a SAC area (IDON, 2005).

## 2.7 OSPAR

Convention	OSPAR Convention for the protection of the Marine Environment of the North-East Atlantic
Scope	North East Atlantic (EEZ, Territorial Sea)
Dutch authorities	Ministry of Transport, Public Works and Water Management, the Ministry of Agriculture, Nature and Food Quality and the Ministry of Housing, Spatial Planning and the Environment
Adoption	1992 (Dutch adoption in 1998)
Status	Valid
Further information	<a href="http://www.ospar.org/">http://www.ospar.org/</a>

Within OSPAR ecological quality objectives (EcoQO's) have been developed as a means of applying the ecosystem approach to the management of human activities. There are similarities between the EcoQO system and the GES (good environmental status) of the MSD in that both systems aim to assess the quality of the marine environment and to set targets and objectives for different components of the ecosystem. The EcoQO system is therefore a natural starting point for any North Sea regional implementation of the MSD (BDC 07/12/1-E). A report on the North Sea Pilot Project on Ecological Quality Objectives has been published by OSPAR in 2006 (OSPAR, 2006). It is stated that the human activities relevant to the OSPAR Offshore Oil and Gas Industries Strategy will in general be adequately covered by the EcoQOs related to the discharges, emissions and losses of hazardous substances. No further EcoQOs specifically reflecting the human activities covered by this strategy are needed, except for possible noise pollution from activities (especially seismic surveys) relating to exploration for offshore mineral resources. Exposure of fish and marine mammals to noise 'pollution' is an issue that has not been substantially considered by OSPAR. A draft overview on impacts of underwater noise in the marine environment is currently in preparation by Germany. It is expected to be adopted by OSPAR this year.

OSPAR has developed a network of marine protected areas (MPAs). The network should be fully functioning by the year 2010. The aims set out for the OSPAR network of MPAs are (BDC 07/12/1-E):

- the size of the OSPAR network of MPAs needs to be increased substantially;
- sites further offshore and especially in the Contracting Parties' EEZs should be selected;
- to fully address the OSPAR selection criteria for MPAs, Contracting Parties should begin the process of identifying and selecting sites beyond existing Natura 2000 areas;
- OSPAR should intensify its efforts to identify sites in need of protection in areas beyond national jurisdiction.

Four sensitive areas on the DCS, as laid down by the IMPNS 2015 and to be proposed as Natura 2000 areas, will also be submitted to OSPAR to be classified as MPA. Besides the future proposed Natura 2000 areas, the Central Oyster Grounds will probably be submitted to OSPAR.

Recent agreements and recommendations from the OIC (Offshore Industry Committee) that are relevant considering European policy developments are as follows:

- OIC agreed to recommend to OSPAR 2006 the following goal for discharges of offshore chemicals into the sea (OIC 06/13/1-E): 'As soon as practicable and not later than 1 January 2017, Contracting Parties should have phased out the discharge into the sea of offshore chemicals that are, or which contain substances, identified as candidate for substitution (with exception for those demonstrated to be not feasible)'. The Netherlands should present to OIC 2008 a draft First OSPAR List of Candidates for Substitution (OIC 07/15/1-E).

- Contracting Parties should report on compliance with the goal of reduction of dispersed oil discharges by a minimum of 15% compared to the equivalent discharge in 2000 from all offshore installations under its jurisdiction at that time. The report should include an evaluation where appropriate of the BAT and BEP for their installations or other relevant factors. Offshore installations which fail to meet the performance standard for dispersed oil of 30 mg/l for produced water discharged into the sea by 1 January 2007 should be reported.



## 3 Policy impact on offshore oil and gas activities

### 3.1 Introduction

The future of the oil and gas sector is based on its ability to access new fields and to install new infrastructure to exploit them. This ability is conditioned by the sector's ability to demonstrate high levels of environmental performance and integration of environmental concerns. In this respect, the oil and gas sector could benefit from the current policy developments (EC, 2005b). The example of the Irish Sea Pilot Project<sup>5</sup> shows that improved integration of environmental concerns by oil and gas industry would have advantages in encouraging sustainable economic development of the sector (see Table 4).

*Table 4 UK oil and gas sector objectives versus conservation objectives (JNCC, 2004)*

<b>Objectives for the environment relevant to the proposed conservation objectives</b>	<b>Dependency of objectives upon services provided by the marine ecosystem</b>	<b>Interaction of objectives with the proposed conservation objectives</b>
To achieve continual improvement in the industry's offshore environmental performance and to develop continually our knowledge of the environmental impact of our operations.	<p>The industry requires access to hydrocarbon and gas fields for prospecting, exploration and production. The industry also needs to construct infrastructure including pipelines.</p> <p>Access to fields and to install infrastructure is dependent upon the ability of the industry to demonstrate that it achieves high levels of environmental performance and minimises the impacts of its operations on the environment.</p>	There should be a high level of common interest in integrating sectoral objectives for the environment with the proposed conservation objectives. The industry is subject to strong environmental protection measures and has a high level of compliance.

The future maritime policy requires regional spatial planning as a tool to achieve economic expansion in a sustainable manner. It should build on the approach of the Marine Strategy Directive, but should also include licensing, promoting and restricting. Spatial planning is an important issue in the current policy developments that could affect the oil and gas industry both positively and negatively. For example, the GHK study<sup>6</sup> on marine spatial planning shows that better marine environment planning (e.g., through strategic environmental impact assessment) could contribute to a reduction of the costs of assessments of the ecological quality and environmental impacts of future developments of the industry. While all new developments require detailed assessments, this process tends to be carried out in an ad hoc manner, with duplications of research

<sup>5</sup> The UK Government Review of Marine Nature Conservation set up the Irish Sea Pilot project in 2002 to test the potential for an ecosystem approach to managing the marine environment at a regional sea scale. The project has completed its research and published its final report in 2004 (JNCC, 2004). More information available at: <http://www.jncc.gov.uk/page-1541>

<sup>6</sup> GHK Consulting Ltd & Wilson, S. (2004): Potential benefits of marine spatial planning to economic activity in the UK. Final report to the RSPB. December 2004.

commissioned by companies into the same geographical areas. The development of Marine Strategies, which would include detailed assessments of marine regions, could lead to cost reductions for the industry. The drawback of spatial planning for the oil and gas industry is that it may also lead to restrictions on activities or structures (such as platforms and pipelines), or a delay of (juridical) processes in certain areas. Because oil and gas exploration and developments are location specific, depending on the location prospects and reservoirs, area restriction would have great impact on the oil and gas industry. However, since oil and natural gas exploration and extraction are considered matters of overriding public interest, important restrictions are not expected. If a certain area of interest is restricted from activities by regional spatial planning, a request for exception could be required. This involves additional (paper) work and a potential delay of processes and increase of costs.

The following paragraphs describe the potential policy impact on offshore oil and gas activities. In order to provide a broad view, the impact is described in three different ways:

1. Existing legislation relevant for the oil and gas industry is listed. Developments influencing existing legislation are identified and described.
2. Oil and gas activities are listed, identifying the most relevant policy developments per activity.
3. For the most relevant (potential) effects of offshore oil and gas activities a description is given of how these are considered in the various policy developments.

### 3.2 Relation with existing legislation

The table below (Table 5) provides a cross-index of the policy developments and their influence on existing policies and legislation. Wherever there is any interaction expected, this has been marked with a character (A-M), referring to the explanation below. If there is no expected interaction, this will be marked with a –.

*Table 5 Policy developments and their interference with existing policies and legislation*

Existing policies and legislation	Policy developments		
	WFD	MSD	Natura 2000
<b>International</b>			
WFD	-	A	B
UNCLOS	-	-	-
London Dumping Convention	-	-	C
OSPAR	D	D	D
Bonn Agreement	-	-	-
Bern Convention	-	-	E
Rio Convention on Biological Diversity	-	F	F
MARPOL	-	G	-
IPPC	-	-	-
Bird and Habitat Directive (BHD)	-	-	H



Existing policies and legislation	Policy developments		
	WFD	MSD	Natura 2000
<b>National</b>			
Mijnwet / Mining law	I	I	-
Environmental Covenant (up to 2010)	J	J	-
MJA-2 (Meerjaren Afspraak-2 / Long-term Agreement-2)	-	-	-
WVZ (Wet Verontreiniging Zeewater / Marine Pollution Act)	K	K	-
NeR (Nederlandse emissie Richtlijn / Dutch emission Directive) <sup>1</sup>	-	-	-
Wms (Wet milieugevaarlijke stoffen / Act regarding Environmental Hazardous Substances)	-	-	-
BEES (Besluit Emissie-Eisen Stookinstallaties / Combustion plant emissions requirements) <sup>1</sup>	-	-	-
PKB (Planologische Kernbeslissing / Key Planning Decision)	-	-	-
Wm (Wet Milieubeheer / Environmental Management Act)	-	-	L
Nbw (Natuurbeschermingswet / Nature Conservation Act)	-	-	L
Ffw (Flora- en fauna wet / Flora- and fauna law)	-	-	M

1) Regarding emissions to air

#### A. The WFD versus the MSD

The WFD reaches up to 1 nautical mile from the coast for the ecological status and 12 nautical miles for the chemical status. As both zones are within the scope of the MSD, there is an overlap between the MSD and WFD for the territorial water considering the chemical status and the ecological status. The WFD is in force since 2000 but the MSD is still in proposal. The WFD is therewith far ahead of the MSD. Because the MSD is expected to stay in consistency with the WFD, no conflicts are expected for the territorial water. Since the coastal area is for as yet considered an integral part of the river catchment areas it is not clear whether WFD or MSD will be leading for the coastal zone.

#### B. The WFD versus Natura 2000

As mentioned previously, the WFD reaches up to 1 nautical mile from the coast for the ecological status. The Natura 2000 network has no such boundaries. There might be interference within this 1 mile zone; especially when a sensitive area, as part of the Natura 2000 network, requires special conservation measures beyond the WFD measures.

#### C. The London Dumping Convention versus Natura 2000

The objective of the London Dumping Convention (1975) is to promote the effective control of all sources of marine pollution and to take all practicable steps to prevent pollution of the sea by dumping of wastes and other matter. In 1996, the "London Protocol" was established to further modernize the Convention and, eventually, replace it. Under the Protocol, which entered in to force on 24 March 2006, all dumping is prohibited, except for possibly acceptable wastes on the so-called "reverse list". Natura 2000 might put restrictions on disposal of those substances in protected areas.

#### D. OSPAR versus WFD, MSD and Natura 2000

The influence of OSPAR on the WFD and vice versa is very limited. The Netherlands, as contracting party of OSPAR, is already committed to reduce pollution to background values for naturally occurring substances and close to zero for synthetic compounds, however, the WFD adds a legal obligation to

achieve good chemical status. The WFD however, applies only to the territorial waters. The MSD also includes the EEZ and, besides the chemical status, the ecological status is included. The MSD will be implemented on a regional level. OSPAR is expected to provide a substantial input for the North Sea regional implementation of the MSD. Considering the protection of species and habitats, OSPAR has developed the MPA network. The MPA network is comparable to the Natura 2000 network. Managements plans for both network areas are expected around 2010/11. It is expected that more areas on the DCS are granted the MPA status than Natura 2000 status (e.g. Central Oystergrounds). All marine Natura 2000 areas will probably be submitted as MPA. Natura 2000 areas have international (EU) legal protection whereas the protection of the MPAs, although agreed in OSPAR, is based on the member state's commitment.

#### **E. The Bern Convention versus Natura 2000**

The Bern convention (1979) aims to ensure the conservation of flora and fauna and it's natural environment, with special attention for migratory species. It is a binding international legal instrument and covers the whole European continent. The Natura 2000 contributes to the conservation objectives of the Bern Convention by assigning SPAs and SACs. The influence of Natura 2000 on the Bern Convention is therefore expected to be supplemental.

#### **F. The Rio Convention versus the MSD and Natura 2000**

The Rio Convention (1992), also referred to as the Convention on Biological Diversity, is dedicated to promoting sustainable development. One of the objectives is to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level. The MSD and Natura 2000 both carry out the Rio Convention. It is therefore expected that they contribute to achieving the objectives of the Convention.

#### **G. MARPOL versus the MSD**

The MARPOL Convention is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. MARPOL is part of the International Maritime Organisation (IMO). The MSD complies to the IMO regulations. Additional regulations or measures for preventing pollution from ships could follow (on a regional EU level) from implementation of the MSD.

#### **H. The Bird and Habitat Directive versus Natura 2000**

The BHD are being implemented by means of the Natura 2000. SPAs (for birds) and SACs (for other species and for habitats) form together the Natura 2000 series.

#### **I. Mining law versus the WFD and the MSD**

Objectives following the implementation of the WFD and MSD, affecting the oil and gas industry, might be stricter than those within the Mining law. If this is the case, the Mining law might need to be adjusted in order to comply with the regulations as formulated by the WFD and MSD.

#### **J. Environmental Covenant versus the WFD and the MSD**

The objectives in the covenant between the government and the Dutch oil and gas industry might need to be adjusted according to the WFD and MSD. The covenant however, is due to expire in 2010, hence allowing the industry to actively participate in outlining a new version (or new approach) that complies to the WFD and MSD objectives. Focus in this process should be on the MSD, as the WFD only reaches the territorial sea.

**K. WVZ versus the WFD and the MSD**

The WVZ is the basis for discharge permits and might be adjusted to reflect the WFD and the MSD criteria for e.g. priority (hazardous) substances and emissions.

**L. The Wm and the Nbw versus Natura 2000**

For the Wm and Nbw, their sphere of influence will be enlarged. The Wm regulates the EIA, together with the EIA Decree, see Figure 8. The EIA will show whether the activity is expected to affect the natural characteristics of the area. The Government weighs the reasons of overriding public interest against the importance of the natural characteristics of the area. In future, with the ongoing implementation of Natura 2000, the natural characteristics of certain areas could potentially outweigh the reasons of overriding public interest. The Nbw is revised in 2005 to implement Natura 2000 in the Netherlands (Figure 8). The assessment framework of the Nbw applies in the Natura 2000 areas. With the future growth of the Natura 2000 network, the Nbw applicability also grows.

**M. Flora- and fauna law versus Natura 2000**

The Ffw (2002) is a Dutch legal framework for the protection of plants and animals in the wild. It includes the Bird and Habitat Directive and CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). It currently reaches up to the territorial sea but is expected to include the EEZ in the future. The main difference between Natura 2000 and the Ffw is that Natura 2000 is focussed on protection of habitats and only applies for certain areas. The Ffw is focussed on protection of species and is applicable to all species that are protected under this law, regardless of the location (up to the 12 mile border, see Figure 8). If inconsistencies occur between Natura 2000 and the Ffw, the latter is expected to adapt to the European policy.

**Overview of assessment frameworks for nature conservation of the North Sea**

Figure 8 shows the existing national legislative framework for nature conservation of the North Sea, including the influence of Natura 2000 and the North Sea national policy (IMPNS 2015). Note that the specific conditions that apply, such as EIA required for production of more than 500 tonnes oil or 500,000 m<sup>3</sup> gas per day, are not included in the figure. The EIA requirements are described in section 2.6.

The international Natura 2000 network is implemented in the Netherlands by the Nbw. Although Natura 2000 applies for the whole North Sea, the Nbw currently reaches only up to the 12 mile border. Revision of the Nbw is in progress to include the EEZ. The Ffw is also expected to include the EEZ in future, but it is for as yet unknown when this could happen. Extending the Ffw will result in even more paper work and potential limitations when protected species under the Ffw inhabit an area of interest for offshore oil and gas activities. As a sector, it is possible to draw up a 'code of standards' for submission to the ministry of LNV. Activities included in the code of standards do not require a permit under the Ffw. A code of standards describes how to prevent or minimize damage to protected species. It should contain a concrete description of careful handling during activities. Careful handling means that no significant effect on protected species occurs and damage to these species is minimized. Compensating measures could also be part of the code of standards. At this stage it would be premature to draw up and submit a code of standards for the offshore oil and gas industry since the Ffw is not yet applicable for the EEZ. However, in future, it could be beneficial for the sector to follow this procedure.

The assessments as presented in Figure 8 are all individual processes. It could therefore be possible, that a proposed activity in a certain area requires three assessments under three different laws. For example, this is the case for drilling in a sensitive area within the territorial waters that is part of the Natura 2000 network and

inhabits a species that is protected under the Ffw. Furthermore, if the EIA shows that the activity will affect the natural characteristics of the area, the integrated assessment framework must also be applied.

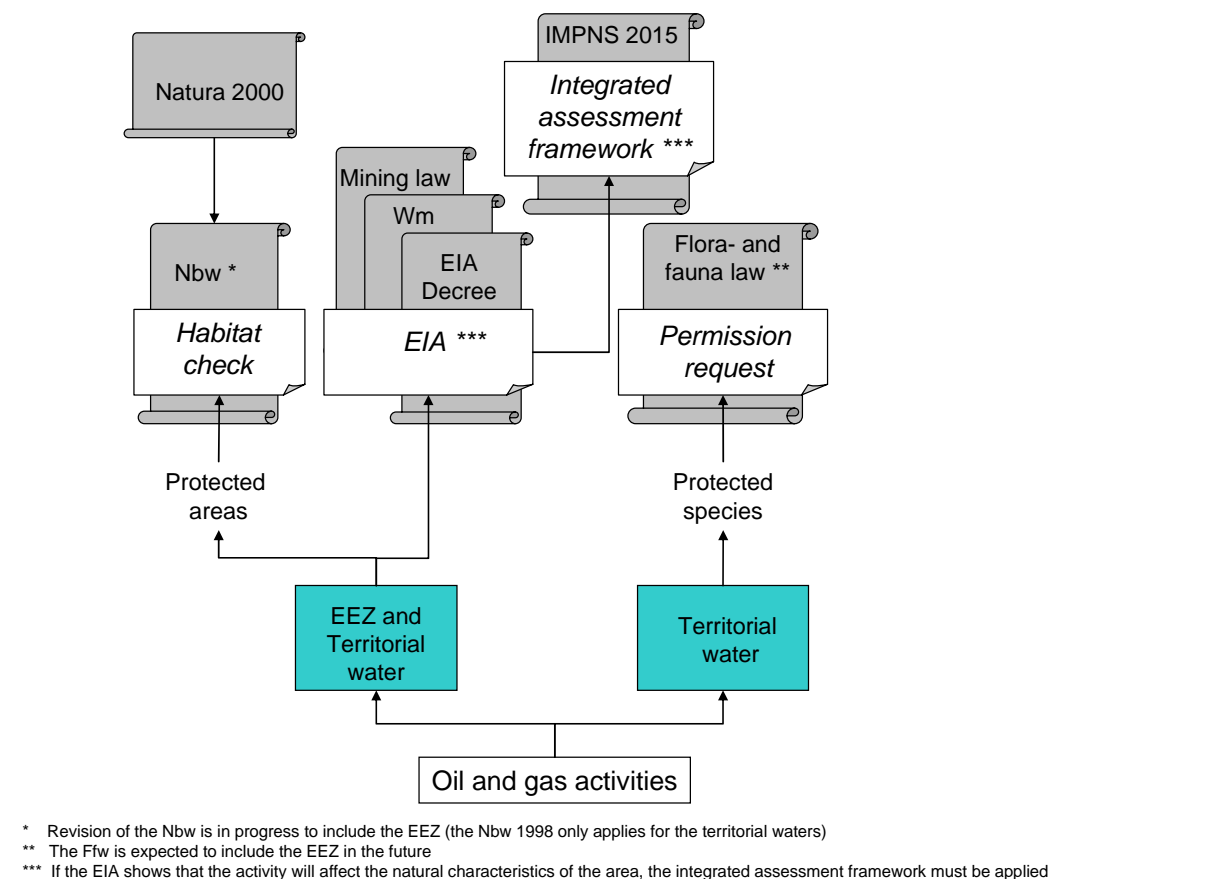


Figure 8 Schematic view of the (inter)national laws and regulations on nature conservation of the North Sea. Various assessments may be required, depending of the area in which an activity takes place (see also explanation in text above). Specific conditions that apply are not shown in this figure.

### 3.3 Relation with activities

This paragraph describes the relevant developments that might influence the various offshore oil and gas activities. Table 6 presents the policy developments per activity, differentiated between the WFD, the MSD and Natura 2000. Wherever there is any influence expected, this has been marked with a character (A-F), referring to the explanation below. If there is no expected influence, this will be marked with a '–'.

As shown in the table, the main developments are related to Natura 2000. As described in chapter 2.5 (Natura 2000), these areas are at least the Coastal Sea, Frisian Front, Cleaverbank and Dogger Bank and possibly several other areas will be proposed. The formal classification is expected in 2008 and the management plans for these areas should be completed within 3 years. The expected specific conditions, as mentioned in the table below, will result from these management plans and are thus expected in 2011. However, the specific management plans for the Voordelta and the coastal waters north of Petten are already in preparation and are expected in 2008.

Generic developments that could be expected for the North Sea result from the implementation of the WFD and the MSD. The WFD implementation could result in emission reduction obligations. These will be based upon the monitoring results and the means to achieve good chemical status. The WFD monitoring results are expected in 2008 (see section 3.4.3). The MSD is expected to focus more on non-toxic disturbances, i.e. noise and visual disturbance, compared to existing legislation. Annex VI of the MSD provides generic qualitative descriptors to be considered when determining GES. Meeting these quality descriptors is not expected to have a significant impact on offshore oil and gas activities, except for underwater noise. One of the quality descriptors is that introduction of energy, including underwater noise, does not adversely affect the marine environment. Therefore, additional requirements could be expected for certain activities, such as mitigation measures for seismic surveys to minimise effects of noise. The EP 1<sup>st</sup> reading amendments on the MSD include conditions of GES, see paragraph 2.3. Implementation of these conditions could seriously affect the offshore oil and gas industry. The political agreement on the MSD reached by the Council on 18 December 2006, does not include these conditions.

*Table 6 Expected policy developments per activity. The letters marked in the table refer to the text below.*

Activity	Policy developments		
	WFD	MSD	Natura 2000 / OSPAR MPA's
Exploration	-	A	B
Installation	-	C	B
Drilling	D	D	B
Production	E	E	B
Decommissioning	-	-	B
Transport	-	-	B
Pipelines and cables	-	C	B, F

#### **A. MSD influence on exploration activities**

The influence of the MSD on exploration activities is mainly related to seismic surveys, i.e. emissions of (underwater) noise. Implementation of the MSD involves an initial assessment of the North Sea status that also includes the impact of noise. A programme of measures will follow to achieve a good environmental status. These could include mitigating measures for seismic surveys to minimise effects of noise.

#### **B. Natura 2000 and OSPAR MPA's influence on oil and gas activities**

(Additional) site specific conditions could be expected for activities within protected areas, such as:

- a. minimising activities during sensitive periods;
- b. more extensive EIA;
- c. the prohibition of cuttings and mud discharge in certain habitat protected areas;
- d. the re-use of jackets as artificial reef.

#### **C. MSD influence on installation activities and pipelines and cables**

The location choice for structures and installations could be subject to regional spatial planning. Because oil and gas exploration and extraction is considered as matters of overriding public interest, prohibition of activities in certain areas is not expected (although not impossible). It most likely results in, for example, alternative routes for pipelines or alternative surface locations in combination with deviated drilling.

#### **D. WFD and MSD influence on drilling activities**

The WFD and MSD will regulate the emission of toxic substances from drilling discharges up to 12 miles (WFD and MSD) and beyond (MSD). Emission reduction targets for drilling discharges could be expected. The EP has described conditions of GES (EP, 2006). Main conditions referring to drilling activities are: "The use of drilling muds present no significant risk" and "the use of harmful drilling muds have been stopped". These conditions have not (yet) been adopted by the EC. Implementation of these conditions could involve additional EIA requirements.

Eutrophication is also part of the WFD and MSD. In the unlikely event that drilling installations are considered as a significant source of nutrients, a reduction or prohibition of sewage water discharges could be expected.

#### **E. WFD and MSD influence on production activities**

The WFD and MSD will regulate the emission of toxic substances from produced water discharges up to 12 miles (WFD and MSD) and beyond (MSD). The EP has described conditions of GES (EP, 2006). Main conditions referring to production activities are: "the regulated release of oil from platforms and pipelines have been stopped", "the regulated operational discharges from platforms and pipelines present no significant risk to the marine environment". Furthermore, re-injection is prohibited "unless authorisation is granted subject to international law and a prior environmental impact assessment has been performed". These conditions have not (yet) been adopted by the EC. Implementation of these conditions could involve prohibition of produced water discharge and additional EIA requirements.

Eutrophication is also part of the WFD and MSD. In the unlikely event that oil and gas installations are considered as a significant source of nutrients, a reduction or prohibition of sewage water discharges could be expected.

#### **F. Natura 2000 influence on pipelines and cables**

EIA requirements for pipelines within sensitive areas are assessed case by case. More cases could be subjected to EIA, or a more extensive assessment could be required, if the pressure on sensitive areas increases.

### **3.4 Relation with environmental pressures**

#### **3.4.1 Introduction**

As the WFD only reaches up to 1 and 12 nautical miles (for ecological and chemical status, respectively), the MSD will be the main policy for the North Sea. According to the MSD, the environmental status of the marine waters shall be assessed (initial assessment). The MSD provides a set of characteristics, pressures and impacts on which the assessment of the environmental status should be based. The Initial Assessment is the first activity to be carried out within the framework of the MSD. It constitutes an 'analysis of the predominant pressures and impacts, including human activity, on the characteristics and environmental status of marine waters'. This assessment has to be finished within four years after entry into force of the MSD, probably 2011. The results will be the basis for the future programme of measures. The assessment is expected to be carried out by OSPAR. Because the effects of oil and gas exploration and exploitation will be part of this assessment, it is recommended that NOGEP (or OGP) is involved in the development process. The Ministry of Transport, Public Works and Water Management, responsible for implementation of the MSD in the Netherlands, and/or OSPAR could probably advice on the possibilities of participation. Effects that will be studied are provided by the MSD in annex III, table 2 (see Annex 4) and are at least:

- Sealing;
- Smothering (e.g. disposal of dredge spoil);
- Noise (e.g. seismic research);
- Contamination (in line with Water Framework Directive).

For some main (potential) effects of offshore oil and gas activities the policy developments are described:

- Disturbance of sediment and benthos / habitat loss (section 3.4.2);
- Contamination (section 3.4.3);
- Noise and visual disturbances (section 3.4.4).

Emissions to air are not included in this report, since these are not specifically included in policy developments. The IMPNS 2015 however, applies additional specifications to the geographical boundaries of the air column: "The air column is part of the North Sea with respect to flight paths of birds, approach paths of aircraft in military exercise zones, and the air quality as a result of emissions reduction measures for shipping. Commercial aviation and helicopter flights to offshore platforms are not explicitly taken into account. The air column is also important for the height of visible permanent projects, which are prohibited within the 12-mile zone in order to keep the horizon clear." Furthermore, emissions to air are part of an EIA.

Groundwater is included within the WFD. The offshore oil and gas industry is considered as the only activity with a potential effect on groundwater of the North Sea (Min. V&W, 2005). Because the well is covered by a cement casing, contact with groundwater would be very limited. Production chemicals are used that could potentially come in contact with groundwater. Measures to prevent this are:

- the use of casing;
- selection of chemicals with the lowest environmental impact (use of CHARM).

No additional measures are expected necessary. From one kilometre to twelve nautical miles of the coast the government is responsible for the groundwater. The quality control of groundwater is regulated by the 'Wet Bodembescherming' under control of the Ministry of VROM. The Ministry of V&W and therewith DNZ is not responsible for management of groundwater.

### 3.4.2 Disturbance of sediment and benthos

Disturbance of sediment and benthos is included in all policy developments. Related activities are the installation of platforms and pipelines and discharge of drilling waste. Habitat loss due to sealing and smothering will be very local and small scale and will probably create not a big environmental problem. In general, there is no impact of policy developments expected on these effects and related activities. However, the implementation of Natura 2000 results in specific conservation values for specific areas. These are:

- The Coastal Sea: the habitat "shallow sandbanks" with associated (rich) benthic fauna, particularly in areas with rich shellfish banks; dense concentrations of wintering and migrating seabirds; high densities of Annex 1 seabird species; high densities of seals; high biodiversity of fish, particularly 0-group fish ("nursery function").
- Frisian Front: high benthic biodiversity, high numbers and densities of migrating and moulting seabirds, particularly Common Guillemots with still growing chicks in summer and Great Skuas in summer and autumn.
- Cleaverbank: high benthic biodiversity; high diversity of seabirds; possible concentrated presence of feeding Minke Whales in summer.

- Dogger Bank: the habitat “shallow sandbanks” with associated (rich) benthic fauna; presence of thornback rays; high densities of Common Guillemots in late summer.
- Anywhere in Dutch marine waters: presence of cetaceans (particularly harbour porpoises) and seals (both common seals and grey seals).

### 3.4.3 Contamination

Contamination is included in all policy developments. Related activities are mainly the emissions of (water based) muds and produced water. Emission reduction is laid down in an agreement between industry and Dutch government (Milieuconvenant Olie en Gas). Additional measures due to policy developments are therefore not expected. The agreement is valid until 2010. A possible follow-up of the agreement should be in line with the WFD and the MSD. The approaches of these directives and the relation to the offshore industry are therefore described below:

An objective of the MSD is to phase out pollution by:

- Reducing emissions to reach concentrations near background values for naturally occurring substances and close to zero for man-made synthetic substances;
- Preventing pollution from ionizing radiation;
- Putting in place measures to control all sources of nutrients required to reduce human induced eutrophication to acceptable levels;
- Reducing pollution derived from shipping and maritime transport and reducing discharges of marine debris.

The implementation of the MSD for the region of the North east Atlantic is expected to be in close cooperation with the OSPAR Commission. The actions as listed above are in line with OSPAR objectives and therefore no new developments are expected with the implementation of the MSD.

Specific pollutants are an ecological quality element for classifying and assessing the status of coastal waters within the WFD. Emission of pollutants by discharge of produced water is assessed within River Basin Plans up to 12 nautical miles from the coast. For the Rhine basin discharges from offshore installations are considered significant<sup>7</sup>. A total of 225 significant industrial point sources have been identified, of which 5 are located in the territorial waters. Emissions, discharges and losses should comply by 2025 with the reduction or cessation obligations (laid down in Article 4(1)(a)(iv) of the WFD).

A number of priority substances are identified within the WFD, see Annex 2. This list includes the proposed Environmental Quality Standards (EQS) for these substances. Some relevant priority substances and their (inter)national standards are listed in Table 7. A WFD monitoring programme has been developed and the monitoring is now in progress. Results are expected in 2008 (Min. V&W, 2006).

In a study of van Duynhoven & van de Ven (2006) the chemical status of the Dutch waters is assessed, based on data of 2004 and 2005. For salt waters it was concluded that none of the EQS were exceeded. However, for a number of substances no data was available, for example benzene and other relevant organic priority substances. The monitoring locations are shown in Figure 9.

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<sup>7</sup> Industrial discharges are considered significant within the WFD if the load could potentially lead to concentrations exceeding the limit (Min. V&W, 2005).





Figure 9 Monitoring priority substances (van Duynhoven & van de Ven, 2006).

Table 7 Overview of some relevant priority substances and their quality standards

Priority substance	AA-EQS <sup>1</sup> (µg/l)	MAC-EQS <sup>2</sup> (µg/l)	MTR <sup>3</sup> (Dutch standard) (µg/l)	Target value <sup>3</sup> (Dutch standard) (µg/l)
Anthracene <sup>4</sup>	0.1	0.4	0.08	0.0008
Benzene	8	50	240	2
Fluoranthene	0.1	1	0.5	0.005
Naphthalene	1.2	n.a.	1.2	0.01

n.a.: not available

1) AA-EQS: Annual Average - Environmental Quality Standard (COM(2006) 397)

2) MAC-EQS: Maximum Allowable Concentration - Environmental Quality Standard (COM(2006) 397)

3) As published in the Dutch Staatscourant 16 juni 2000, nr. 114/pag.8

4) Identified as priority hazardous substance

To some extent<sup>8</sup>, transitional areas of exceedance are allowed, where the concentrations of one or more pollutants may exceed the relevant environmental quality standards as far as they do not affect the compliance of the rest of the surface water body with those standards. A description of each delimitation must be included in the river basin management plan. The extent of each transitional area of exceedance should be progressively reduced (by means of permit reviews).

A review of the objectives as laid down in the covenant (IMT-2010<sup>9</sup>) concludes that for heavy metals no reduction objectives have been formalized (FO-Industrie, 2006). The reduction is based on state of the art (Stand der Techniek). The objective related to the amount of oil in produced water (15% reduction compared to 2000) is achieved. The IMT-2010 for benzene is not yet achieved. The objective of the 'Benzeenreductieprogramma' (benzene reduction program) is also not yet achieved.

For benzene, the WFD quality standards, are substantially lower than the existing national maximum standard MTR of 240 µg/l. However, the Dutch target value ('Streefwaarde') of 2 µg/l, is lower than the AA-EQS. Furthermore, with the introduction of the Benzene Agreement in 2000, the Dutch authorities and offshore industry have made an effort in the reduction of benzene discharges in the North Sea. Therefore, there are no additional measures expected from the WFD policy developments on priority substances. The derivation of the different quality standards for benzene is described in Annex 5.

#### 3.4.4 Noise and visual disturbance

Noise and visual disturbance are both included in the Marine Strategy Directive, Natura 2000 and IMPNS 2015.

The effect of noise is unknown at the moment for the Dutch situation, because little research has been carried out. However, in the United Kingdom measures are already in place with respect to seismic research.

Disturbance by shipping and helicopters is also related to noise. These effects are hardly studied, but could become relevant in areas with high numbers of birds or marine mammals.

Migrating birds can be negatively impacted when disorientated by platform lighting. Impact mitigation is to a certain extent laid down in the Oil and Gas Environmental Covenant (Milieuconvenant Olie en Gas). Whether or not compensatory measures in the North Sea are needed in addition to mitigation is determined by the extent to which significant effects occur.

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<sup>8</sup> The Commission may, in accordance with the procedure referred to in Article 21(2) of Directive 2000/60/EC, set up the method to be used by the Member States for the identification of the transitional area of exceedance.

<sup>9</sup> IMT-2010 (Integrale Milieu Taakstelling 2010) is part of the covenant between the Dutch government and the offshore oil and gas industry and lays down the emission reduction objectives

## 4 Conclusions and recommendations

### 4.1 Conclusions

It can be concluded that all European policy developments, as described in this report, are relevant for the offshore oil and gas industry. By looking at the possibilities of a European approach to marine and maritime issues, some developments could benefit the industry. However, these benefits can be considered marginal. The main policy developments and expected restrictions are listed below:

#### **Natura 2000 and Marine Protected Areas**

The main restrictions are expected from the implementation of protected areas within Natura 2000 and OSPAR (MPA). Four areas (Coastal Sea, Frisian Front, Cleaverbank and Dogger Bank) are to be formally classified as Natura 2000 site and specific management plans are expected for these areas within the next few years. Several other areas (gas seeps in the north, the Borkumse Stenen in the east, the offshore Southern Bight, and the Zeeuwse Banken in the south) will be kept under review as they possibly meet criteria of one of the treaties. Although offshore oil and gas activities are allowed in the protected areas, special conditions could apply.

#### **Water Framework Directive**

Implementation of the WFD is based on river basins and reaches up to 12 nautical miles from shore. After the first official WFD monitoring results are published (~2008), the measures to achieve good chemical status are formalized. Emission reduction within a defined time period could be expected for activities affecting the chemical status of the territorial waters. Offshore oil and gas production could potentially be one of such activities.

#### **Marine Strategy Directive**

As the WFD has a limited reach for marine waters, the MSD will be the main policy for the North Sea. The MSD is implemented on a regional level and, as the EEZ is part of the Marine Region 'the North East Atlantic Ocean', it is expected to develop in line with the OSPAR framework. Part of the initial assessment within the MSD (expected completion in 2011) is an assessment of the effects of oil and gas exploration and exploitation. The results of this assessment will be the basis for the future programme of measures. Non-physical disturbances (e.g. noise and visual) are also part of the assessment. In future (~2018), it could be expected that additional measures are implemented, especially for non-physical disturbances.

### 4.2 Recommendations

The main recommendations, based on the current available information as described in this report, are listed below. These recommendations can be used for further actions by NOGEPA.

#### **Water Framework Directive**

Considering the WFD the possibility for influence by NOGEPA is limited. It is recommended to focus on the publication of the monitoring data (expected in 2008), because the future measures will be based upon these results. Furthermore, the actions following the implementation of the WFD could be leading in the development of a follow up for the current covenant. This should be subject in the various existing levels of communication between the industry and the Dutch authorities. Recommendations on the environmental covenant are further discussed below.

### **Environmental covenant**

The environmental covenant between the Dutch government and the Dutch oil and gas industry is due to expire in 2010. How to proceed after ending the covenant should therefore be considered. Following the international trend to move from prescriptive to goal based regulation, it seems logical to draw up a follow-up of the covenant that is in line with the EU policy developments. This should be discussed with the relevant authorities. The start of such a discussion is contributing to the pro-active approach of the industry. It is recommended to involve the Ministry of V&W, the Ministry of VROM, the Ministry of EZ as well as the Ministry of LNV<sup>10</sup>. In line with international policy developments, a follow-up of the covenant should include contamination as well as physical and non-physical disturbance (e.g. noise and light).

### **Marine Strategy Directive**

The MSD has not yet been finalised at the time of reporting this study. Regional implementation will start after official publication of the MSD, which is expected in 2007. Involvement in this process is therefore recommended. It is for as yet not clear how the MSD will exactly be implemented, although it appears that OSPAR will be playing a leading role. It must be considered that the European Parliament has proposed several conditions that could seriously affect the offshore oil and gas industry. The industry could therefore benefit from an open dialogue with the Dutch representatives in OSPAR and EU (V&W-DGW and V&W-DNZ). It is important to provide the ministries with up to date and accurate information on offshore oil and gas activities and its impact on the environment. It is further recommended that the industry starts preparing a North Sea wide vision (through OGP) on their role in the MSD, which OGP can bring to OSPAR (OIC, 2008) in her role as observer.

### **Natura 2000 and Marine Protected Areas**

As laid down in the IMPNS 2015, activities that are normally free from permitting could be subjected to permitting according to the Nbw that applies for Natura 2000 areas. The management plan of the area could include activities that are free from permitting obligations. It would be beneficial if oil and gas activities are included in Natura 2000 management plans. The first plans (Voordelta and coastal waters north of Petten) are still in preparation by the Ministry of V&W under approval by the Ministry of LNV<sup>10</sup> (expected completion in 2008). An official 6 weeks consultation process starts when a draft plan is published. The consultation process of the Voordelta management plan has already ended. This area is considered not of interest for the oil and gas industry. Further information can be found at [www.noordzee.org](http://www.noordzee.org), or by contacting the North Sea Directorate of the Ministry of V&W. Other plans have not yet been formalised, giving possibility for the industry to provide input. This can best be achieved by requesting an open dialogue. This way, for areas of concern, the industry can contribute to the development of a draft plan.

Finally, it is recommended to stay informed on the plans of the Ministry of LNV to also include the EEZ for the Ffw. When the Ffw applies for the whole North Sea it could be beneficial to draw up a 'code of standards' for the oil and gas industry.

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<sup>10</sup> Responsible authority under the Nbw and therewith responsible for the achievement of the conservation goals of Natura 2000

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## 6 Abbreviations

AA	Annual Average
BEES	Besluit Emissie-Eisen Stookinstallaties
BHD	Birds and Habitat Directive
BNN	North Sea Management Network (within IMPNS 2015)
DCS	Dutch Continental Shelf
DGW	Directoraat-Generaal Water (part of the Ministry of V&W)
DNZ	Directie Noordzee (part of the Ministry of V&W)
EcoQO	Ecological Quality Objective (within OSPAR)
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EQS	Ecological Quality Standard (within WFD)
EP	European Parliament
EU	European Union
EZ	Economic Affairs
Ffw	Flora- en fauna wet / Flora- and Fauna law
GES	Good Environmental Status
ICES	International Council for the Exploration of the Sea
IDON	Interdepartementaal Directeuren Overleg Noordzee
IMO	International Maritime Organisation
IMPNS 2015	Integrated Management Plan for the North Sea 2015
IMT	Integrale Milieu Taakstelling (Covenant)
IPPC	Integrated Pollution Prevention and Control
LNv	Agriculture, Nature and Food Quality
MAC	Maximum Allowable Concentration
MARPOL	International convention covering prevention of pollution of the marine environment by ships (IMO)
MJA-2	Meer Jarenafspraak 2 (energy-efficiency)
MPA	Marine Protected Area (within OSPAR)
MSD	Marine Strategy Directive
MTR	Maximum Tolerable Risk
Nbw	Natuurbeschermingswet / Nature Conservation Act
NeR	Nederlandse Emissie Richtlijn
NGO	Non Governmental Organisation
NOGEPa	Netherlands Oil and Gas Exploration and Production Association
OGP	International Association of Oil & Gas Producers
OSPAR	OSPAR Convention
OVW	Overlegorganen Verkeer en Waterstaat
PKB	Planologische Kernbeslissing
SAC	Special Areas of Conservation (Habitat Directive)
SCI	Sites of Community Importance (Natura 2000)
SPA	Special Protection Area (Birds Directive)
SSM	State Supervision of Mines
UNCLOS	United Nations Convention for the Law of the Sea
VROM	Housing, Spatial Planning and the Environment

VW	Transport, Public Works and Water Management
Wbr	Public Works Management Act
WFD	Water Framework Directive
Wm	Dutch Environmental Management Act
Wm	Wet Milieubeheer / Environmental Management Act
Wms	Wet Milieugevaarlijke Stoffen
WVZ	Marine Pollution Act



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## Annex 1 Overview of interviews

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## Annex 2 Summary of the Green Paper

### **Europe's Leadership in Sustainable Maritime Development**

#### **A Competitive Marine Industry**

- Key objectives for energy supply are competitiveness, sustainability and security.
- The increasing importance of liquefied natural gas requires the construction of new terminals.
- To boost competitiveness sound policy and programmes are recommended.
- The introduction of new technologies to ensure environmental sustainability creates business and export opportunities

#### **The Importance of the Marine Environment for the Sustainable Use of our Marine Resources**

- The environmental pillar of a future maritime policy will be the Marine Strategy Directive. The key aim is to achieve good status of the marine environment in the EU by 2021. It introduces the principle of ecosystem based spatial planning.
- It is essential to use the full potential of risk assessment as a tool for policy development.
- Reduce uncertainties in the impact and scale of environmentally unfriendly practices through risk assessment.

#### **Remaining at the Cutting Edge of Knowledge and Technology**

- The contribution of marine industries towards achieving the Lisbon objectives and the role of marine science and technology is described in FP7<sup>11</sup>.
- Special attention for areas which cut across themes.
- Work towards coordinating national programmes within a truly pan-European research area has begun with the ERA net scheme<sup>12</sup>.

#### **Innovation under Changing Circumstances**

- Significant economic opportunities are seen in new offshore technologies, such as carbon capture and geological storage or new offshore installations built to resist higher impacts in cases of extreme weather events.
- Since easily accessible offshore oil and gas resources get depleted and producers start considering less accessible reserves, such as the deep sea, some questions arise:
  - o what could be done to facilitate exploitation of such resources without compromising environmental and economic concerns;
  - o what new technologies are necessary to reach such resources and;
  - o what innovative business models and regulations would be appropriate in this context?
- Methane hydrates is recognised as an emerging area.
- Sea transport of energy (pipelines or tankers) could be addressed in guidelines for a dedicated Trans-European Network (TEN) for hydrocarbons, covering all infrastructure elements.

#### **Developing Europe's Maritime Skills and Expanding Sustainable Maritime Employment**

- Current maritime education and training curricula, for shipping and related sectors, but also for marine engineering, and for fisheries, should be reviewed.

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<sup>11</sup> the seventh EU Framework Programme for Research and Technological Development

<sup>12</sup> Examples: ERA-NET's MARINERA, MARIFISH, AMPERA and BONUS.

- EU actions should continue to address minimum training requirements, working conditions and enforcement and should also identify and promote the implementation of best practices.

### **Clustering**

- The cluster concept is the development of a common understanding of the interrelationships between the maritime sectors in order to enhance their image, increase their attractiveness and strengthen their productivity.
- Exploiting the potential of clustering is relevant in sectors with complex supply chains involving manufacturing and services and a large number of small and medium sized enterprises.
- The Maritime Industries Forum (MIF) brings together European representatives of maritime industries. Recently a European Maritime Cluster Network was set up.

### **The Regulatory Framework**

- For the offshore oil and gas industry, a stable regulatory environment is important. This is particularly true for rules affecting the location of economic activity. This is another reason why a comprehensive system of spatial planning should be put into place as soon as possible for European coastal waters.
- The exclusion of maritime sectors from European labour and social legislation on a number of issues, e.g. the Directive on collective redundancies or the Directive on transfer of undertakings, should be reassessed in close cooperation with social partners.
- The Commission appeals to stakeholders to identify cases where legislation developed for the needs and objectives of one policy, may have unintended and contradictory impacts on other maritime goals in the overall context of sustainable development. Amendments to Community legislation in question should be considered.
- Self regulation and Corporate Social Responsibility (CSR) may have important and complementary roles to play.
- Establishing linkages between different policy areas should reduce the often-expressed concern of the fisheries sector that it bears an unfair share of responsibility for improvement of the marine environment because it is easier to identify and to regulate than many other contributors to environmental damage.

### **Maximizing Quality of Life in Coastal Regions**

#### **Adapting to Coastal Risks**

- The monitoring of EU waters involves considerable resources: surface, air and satellite surveillance and vessel tracking systems. It would benefit from further integration.
- To support coordination and promote best practice in risk management, an inventory of risk reduction policies and responses at EU level is needed, including coastal defense mechanisms and plans that exist in Member States and at EU level. In this respect, the enhancement of civil/military cooperation for disaster relief should be considered.
- The European Maritime Safety Agency (EMSA) assists Member States in the event of pollution incidents. The Commission has also proposed the establishment of a legal framework for the designation by the Member States of the most appropriate places of refuge for ships in distress. With the aim to prevent, and respond to, accidents at sea and risks from pollution.

#### **Managing the Land/Sea Interface**

- As ecosystem-based management of coastal waters develops on the basis of the Thematic Strategy for the Marine Environment, it is likely that land-based measures to be taken will be identified if its objectives

are to be achieved. Much of the pollution affecting the marine environment comes from land-based sources: nutrients from farming, urban and industrial effluents, pesticides, hydrocarbons and chemicals.

### **Providing the tools to manage our relations with the oceans**

#### **Data at the Service of Multiple Activities**

- There are still major problems of harmonization and reliability of data, as well as insufficient and geographically imbalanced monitoring in EU marine regions. These gaps must be addressed.
- The EU could consider setting up a European Marine Observation and Data Network. Creating such a network would require the EU to take legislative, institutional and financial steps.
- Consideration should also be given to setting up European programmes to develop the comprehensive mapping of European coastal waters for purposes of spatial planning, security and safety. To the extent that new data collection programmes are required, the opportunity should be used to give industry the chance to propose the use of more robust, efficient data sensors, in order to reduce the unit cost of data collection.
- It is suggested that the mapping process be subject to geographic and seasonal restrictions to protect the mammals during particularly sensitive periods of the year.
- Real time information on the movements of vessels needs to be improved.
- The idea is to move towards an integration of existing systems that combines information from different in situ sources for a particular stretch of coastline and from new sources such as Galileo and space Earth observation systems.
- In EU waters an additional requirement would be full interoperability between different Member State systems, sectors and developed in cooperation with some of the EU neighbours.

#### **Spatial Planning for a Growing Maritime Economy**

- A system of spatial planning for maritime activities on the waters should be created under the jurisdiction of or controlled by the Member States.
- It should build on the ecosystem-based approach laid down in the Thematic Strategy for the Marine Environment, but should also deal with licensing, promoting or placing restrictions on maritime activities.
- A spatial planning system should:
  - o Be designed with the participation of all relevant stakeholders
  - o Be provided with extensive spatial data, cumulative environmental impact assessment (EIAs) and marine protected areas (MPAs).
- As economic activity moves further offshore it will increasingly take place in waters which are subject to the right of innocent passage. The EU and its Member States will need to take the lead in ensuring that multilateral rules evolve to allow for reconciling this right with the need for offshore spatial planning.

### **Maritime Governance**

#### **Policy Making within the EU**

- The Commission intends to conduct a review of existing EC legislation affecting maritime sectors and coastal regions, to identify possible policy contradictions or potential synergies. Stakeholders, including social partners, are invited to identify and explain their concerns and suggestions for improvements in this respect.
- The Commission has indicated in its Thematic Strategy for the protection of the Marine Environment that marine spatial planning should be introduced in regional ecosystems. It has called upon the Member States to set up the appropriate planning processes, by using existing regional conventions whose activities impact on maritime activities (such as OSPAR).

- The EU role in a marine spatial planning process would be to:
  - o Lay down parameters,
  - o Define the geographic extent of the regions involved (as has already been done in the Thematic Strategy),
  - o Define the elements of planning which are in the common interest.
  - o Provide the tools to make these processes work.
  - o Monitoring compliance with the rules laid down in the common interest.

#### **International Rules for Global Activities**

- Much of maritime policy is best regulated on the basis of international rules. The European Community and its Member States are contracting parties of UNCLOS.
- Protecting the marine environment and biodiversity in waters beyond national jurisdiction has become an important priority for the international community. In this context, the relationship between UNCLOS and the Convention on Biological Diversity needs clarification. The EC and its Member States should participate actively in developing the UN global marine assessment.
- A future EU maritime policy should support initiatives at international level to achieve binding minimum standards on ship recycling and promote the establishment of clean recycling facilities.

#### **Taking Account of Geographical Realities**

- A European maritime policy needs a general framework, but its implementation will need to take account of the realities of Europe's geographical situation.
- The ecological characteristics of Europe's coastal waters and the structure and intensity of the maritime activities which take place on them vary widely between the Baltic, the Mediterranean, the Atlantic and the North Sea, and the Black Sea. Therefore, the Thematic Strategy for the Marine Environment proposes that ecosystem-based management be based on regional planning. For ecological and economic reasons, the sort of spatial planning proposed in Chapter IV also needs to be implemented separately for these regions.

#### **Maritime Heritage and Maritime Identity**

##### **Maritime Heritage**

- Research should be carried out to examine how Maritime heritage activities should be encouraged and linked to other maritime sectors and how education can contribute to the common vision of the role of oceans in our lives;

##### **Maritime identity**

- An enhanced maritime identity in the European Union can lead to a favorable image for maritime professions and help enhance the performance of maritime sectors.

## Annex 3 Environmental Quality Standards of the WFD

Source: European Commission (2006c).

### **ANNEX I: ENVIRONMENTAL QUALITY STANDARDS FOR PRIORITY SUBSTANCES AND CERTAIN OTHER POLLUTANTS**

#### **PART A: Environmental Quality Standards (EQS) for Priority Substances in surface water**

AA: annual average;

MAC: maximum allowable concentration.

Unit: [µg/l].

(1)	(2)	(3)	(4)	(5)	(6)	(7)
N°	Name of substance	CAS number	AA-EQS <sup>21</sup>  Inland surface waters	AA-EQS <sup>21</sup>  Other surface waters	MAC- EQS <sup>22</sup>  Inland surface waters	MAC-EQS <sup>22</sup>  Other surface waters
(1)	Alachlor	15972-60-8	0.3	0.3	0.7	0.7
(2)	Anthracene	120-12-7	0.1	0.1	0.4	0.4
(3)	Atrazine	1912-24-9	0.6	0.6	2.0	2.0
(4)	Benzene	71-43-2	10	8	50	50
(5)	Pentabromodiphenylether <sup>23</sup>	32534-81-9	0.0005	0.0002	<i>not applicable</i>	<i>not applicable</i>
(6)	Cadmium and its compounds  <i>(depending on water hardness classes<sup>24</sup>)</i>	7440-43-9	≤ 0.08 (Class 1) 0.08 (Class 2) 0.09 (Class 3) 0.15 (Class 4) 0.25 (Class 5)	0.2	≤ 0.45 (Class 1) 0.45 (Class 2) 0.6 (Class 3) 0.9 (Class 4) 1.5 (Class 5)	
(7)	C10-13 Chloroalkanes	85535-84-8	0.4	0.4	1.4	1.4
(8)	Chlorfenvinphos	470-90-6	0.1	0.1	0.3	0.3

<sup>21</sup> This parameter is the Environmental Quality Standard expressed as an annual average value (EQS-AA).

<sup>22</sup> This parameter is the Environmental Quality Standard expressed as a maximum allowable concentration (EQS-MAC). Where the MAC-EQS are marked as "not applicable", the AA-EQS values are also protective against short-term pollution peaks since they are significantly lower than the values derived on the basis of acute toxicity.

<sup>23</sup> For the group of priority substances covered by brominated diphenylethers (No. 5) listed in Decision 2455/2001/EC, an EQS is established only for pentabromodiphenylether.

<sup>24</sup> For Cadmium and its compounds (No. 6) the EQS values vary dependent upon the hardness of the water as specified in five class categories (Class 1: <40 mg CaCO<sub>3</sub>/l, Class 2: 40 to <50 mg CaCO<sub>3</sub>/l, Class 3: 50 to <100 mg CaCO<sub>3</sub>/l, Class 4: 100 to <200 mg CaCO<sub>3</sub>/l and Class 5: ≥200 mg CaCO<sub>3</sub>/l).



(1)	(2)	(3)	(4)	(5)	(6)	(7)
Nº	Name of substance	CAS number	AA-EQS <sup>21</sup> Inland surface waters	AA-EQS <sup>21</sup> Other surface waters	MAC-EQS <sup>22</sup> Inland surface waters	MAC-EQS <sup>22</sup> Other surface waters
(9)	Chlorpyrifos	2921-88-2	0.03	0.03	0.1	0.1
(10)	1,2-Dichloroethane	107-06-2	10	10	<i>not applicable</i>	<i>not applicable</i>
(11)	Dichloromethane	75-09-2	20	20	<i>not applicable</i>	<i>not applicable</i>
(12)	Di(2-ethylhexyl)phthalate (DEHP)	117-81-7	1.3	1.3	<i>not applicable</i>	<i>not applicable</i>
(13)	Diuron	330-54-1	0.2	0.2	1.8	1.8
(14)	Endosulfan	115-29-7	0.005	0.0005	0.01	0.004
(15)	Fluoranthene	206-44-0	0.1	0.1	1	1
(16)	Hexachlorobenzene	118-74-1	0.01	0.01	0.05	0.05
(17)	Hexachlorobutadiene	87-68-3	0.1	0.1	0.6	0.6
(18)	Hexachlorocyclohexane	608-73-1	0.02	0.002	0.04	0.02
(19)	Isoproturon	34123-59-6	0.3	0.3	1.0	1.0
(20)	Lead and its compounds	7439-92-1	7.2	7.2	<i>not applicable</i>	<i>not applicable</i>
(21)	Mercury and its compounds	7439-97-6	0.05	0.05	0.07	0.07
(22)	Naphthalene	91-20-3	2.4	1.2	<i>not applicable</i>	<i>not applicable</i>
(23)	Nickel and its compounds	7440-02-0	20	20	<i>not applicable</i>	<i>not applicable</i>
(24)	Nonylphenol	25154-52-3	0.3	0.3	2.0	2.0
(25)	Octylphenol	1806-26-4	0.1	0.01	<i>not applicable</i>	<i>not applicable</i>

(1)	(2)	(3)	(4)	(5)	(6)	(7)
N°	Name of substance	CAS number	AA-EQS <sup>21</sup> Inland surface waters	AA-EQS <sup>21</sup> Other surface waters	MAC-EQS <sup>22</sup> Inland surface waters	MAC-EQS <sup>22</sup> Other surface waters
(26)	Pentachlorobenzene	608-93-5	0.007	0.0007	<i>not applicable</i>	<i>not applicable</i>
(27)	Pentachlorophenol	87-86-5	0.4	0.4	1	1
(28)	Polycyclic aromatic hydrocarbons (PAH) <sup>25</sup>	<i>not applicable</i>	<i>not applicable</i>	<i>not applicable</i>	<i>not applicable</i>	<i>not applicable</i>
	Benzo(a)pyrene	50-32-8	0.05	0.05	0.1	0.1
	Benzo(b)fluoranthene	205-99-2	Σ=0.03	Σ=0.03	<i>not applicable</i>	<i>not applicable</i>
	Benzo(k)fluoranthene	207-08-9				
	Benzo(g,h,i)perylene	191-24-2	Σ=0.002	Σ=0.002	<i>not applicable</i>	<i>not applicable</i>
	Indeno(1,2,3-cd)pyrene	193-39-5				
(29)	Simazine	122-34-9	1	1	4	4
(30)	Tributyltin compounds	688-73-3	0.0002	0.0002	0.0015	0.0015
(31)	Trichlorobenzenes (all isomers)	12002-48-1	0.4	0.4	<i>not applicable</i>	<i>not applicable</i>
(32)	Trichloromethane	67-66-3	2.5	2.5	<i>not applicable</i>	<i>not applicable</i>
(33)	Trifluralin	1582-09-8	0.03	0.03	<i>not applicable</i>	<i>not applicable</i>

# Annex 4 List of characteristics, pressures and impacts of the MSD

Source: European Commission (2005a).

**Annex II**  
**Articles 7(1), 8(1) and 10(1)**

Table 1 – Characteristics	
Physical and chemical features.	<ul style="list-style-type: none"> <li>- bathymetric features;</li> <li>- annual and seasonal temperature regime;</li> <li>- predominant currents and estimated re-cycling/replacement times;</li> <li>- salinity including trends and gradients across the region.</li> </ul>
Habitat types	<ul style="list-style-type: none"> <li>- The predominant habitat type(s) with a description of the characteristic physical and chemical features-depth, temperature regime, currents, salinity, structure and substrate of the bed;</li> <li>- Identification and mapping of special habitat types especially those recognised or identified under EU legislation (habitats and birds directives) or international conventions as being of special scientific or biodiversity interest;</li> <li>- Other special areas which by virtue of their characteristics, location, or strategic importance merit a particular reference. This may include areas subject to intense or specific pressures or areas which merit a specific protection regime.</li> </ul>
Biological Elements	<ul style="list-style-type: none"> <li>- A description of the biological communities associated with the predominant habitats. This would include information of the typical phytoplankton and zooplankton communities including the typical species, seasonal and geographical variability and estimates of primary and secondary productivity. Information on the invertebrate bottom fauna including species composition, biomass, productivity and annual/seasonal variability should also be provided. Finally, information on the structure of fish populations including the abundance, distribution and age/size structure of the populations should be presented.</li> <li>- A description of the population dynamics, natural and actual range and status of all species of marine mammal occurring in the region/sub-region. For species covered by EU legislation (habitats directive) or international agreements, a description of the main threats and protection/management measures in place should also be provided;</li> </ul>
	<ul style="list-style-type: none"> <li>- A description of the population dynamics, natural and actual range and status of all species of seabirds occurring in the region/sub-region. For species covered by EU legislation (birds directive) or international agreements, a description of the main threats and protection/management measures in place shall also be provided;</li> <li>- A description of the population dynamics, natural and actual range and status of all other species occurring in the region/sub-region which are the subject of EU legislation or international agreements including a description of the main threats and protection/management measures in place.</li> <li>- An inventory of the occurrence, abundance and distribution of non-indigenous, exotic species which are present in the region/sub-region.</li> </ul>
Other Features	<ul style="list-style-type: none"> <li>- A description of incidences of nutrient enrichment-inputs, nutrient cycling (currents and sediment/water interactions), spatial distribution, consequences;</li> <li>- A description of the general state of chemical pollution including problem chemicals, sediment contamination, hot spots, health issues (contamination of fish flesh);</li> <li>- Any other features, characteristics typical/peculiar to the region/sub-region ( e.g. dumped munitions)</li> </ul>

**Table 2 - Pressures and Impacts**

General

Pollution in the form of the direct or indirect introduction, as a result of human activity, of substances or energy, including human-induced marine underwater noise, into the marine environment which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing, tourism and recreation and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.

Physical loss	Smothering (e.g. by artificial structures, disposal of dredge spoil)  Sealing (e.g. by permanent constructions)
Physical damage	Siltation (e.g. run-off, dredging, outfalls)  Abrasion (e.g. boating, anchoring, )  Selective extraction (e.g. aggregate dredging, entanglement)
Non-physical disturbance	Noise (e.g. boat activity, seismic)  Visual (e.g. recreational activity)
Toxic contamination	Introduction of synthetic compounds (e.g. pesticides, antifoulants, PCBs)  Introduction of non-synthetic compounds (e.g. heavy metals, hydrocarbons)  Introduction of radio nuclides
Non-toxic contamination	Nutrient enrichment (e.g. agricultural run-off, outfalls)  Organic enrichment (e.g. mariculture, outfalls)  Changes in thermal regime (e.g. outfalls, power stations)  Changes in turbidity (e.g. run-off, dredging)  Changes in salinity (e.g. water abstraction, outfalls)
Biological disturbance	Introduction of microbial pathogens  Introduction of non-native species and translocations  Selective extraction of species (e.g. commercial & recreational fishing)

## Annex 5 Quality standard derivation of benzene

The derivation of the EQS is described in the Substance Data Sheets of the priority substances. For the derivation of annual average standards chronic toxicity values are used. As described in the Substance Data Sheet of Benzene (Final Version of 15.01. 2005), the lowest available NOEC from long-term tests with species from three trophic levels is used as basic value for the PNECaqua derivation, for which an assessment factor of 10 is applied. The PNECaqua is calculated at 0.08 mg/l. As no acute or long term tests for additional marine taxonomic groups (beside fish, crustaceans, algae) are available in the risk assessment, an assessment factor of 100 is applied to the most sensitive species in long term studies (*Pimephales promelas* ELS, NOEC 0.8 mg/l). The EQS<sub>saltwater</sub> = 8 µg/l. The MAC is based on acute toxicity values. The lowest acute toxicity value for benzene obtained in a standard test is a 96 hr LC50 of 4.9 mg/l derived with *Oncorhynchus necra* in a static system (seawater). The MAC-QS is derived based on the LC50 for *Oncorhynchus necra* and the standard assessment factor of 100 is applied to derive the MAC-QS of 49 µg/l.

The derivation of Dutch standards is based on a study of de Bruijn *et al.* (1999). The lowest NOEC for benzene in the data evaluation for derivation of the Dutch standards is 180 µg/l for crustaceans. The derivation of the MTR and NC for benzene is not based on this toxicity value, but on the QSAR approach. This approach is selected because benzene is acting by narcosis and more data are available. The calculated MPC (Maximum Permissible Concentration) and NC in surface water is 2400 and 24 µg/l, respectively. Because emission to surface water results in an equilibrium concentration in air higher than the MPC in air, the MPC in surface water is adjusted downwards. Using an adjustment factor of 10 the harmonised MPC is calculated to be 240 µg/l and the harmonised NC is 2.4 µg/l. The use of the harmonisation factor in the national policy standards to account for water- air equilibrium of benzene thus results in a relatively lower value than the WFD value of 8 µg/l.