



**OSPAR**  
**COMMISSION**

## **OSPAR Coordinates Monitoring in the North-East Atlantic**

Contracting Parties coordinate their regional marine  
monitoring and assessment for the Marine Strategy  
Framework Directive



## EXECUTIVE SUMMARY

**T**his report describes the monitoring coordination provided by the OSPAR Commission in relation to the requirements of the EU Marine Strategy Framework Directive (MSFD). This publication describes the collective elements of how Contracting Parties / EU Member States in the North-East Atlantic undertake the EU-wide recommendations on monitoring that were agreed in May 2013, and is intended to serve as a monitoring 'roof report'.

Coherence and compatibility of marine monitoring (and assessment) are at the heart of the work of the OSPAR Commission. A process of identifying 'common indicators and associated monitoring needs' for MSFD purposes was carried out in various OSPAR groups, focusing in particular on the assessment requirements as perceived by the Contracting Parties. The OSPAR Committees and their supporting groups continue to (1) document and discuss the existing relevant monitoring efforts; (2) discuss scope for enhancing compatibility and consistency. Where coordinated monitoring is not yet in place, as is the case for many biodiversity features or newly recognised pressures such as underwater noise, OSPAR Contracting Parties are endeavouring to hasten the transition from 'data collection for scientific research' to 'routine monitoring and assessment'.

## Récapitulatif

**L**e présent rapport décrit la coordination de la surveillance réalisée par la Commission OSPAR dans le cadre des impératifs de la Directive cadre "stratégie pour le milieu marin" (MSFD). Il détermine les points communs que présentent les processus permettant aux Parties contractantes / Etats membres de l'UE dans l'Atlantique du Nord-Est de donner suite aux recommandations à l'échelle de l'UE, dans le domaine de la surveillance, qui ont été convenues en mai 2013 et il servira de « rapport faîtière » pour la surveillance.

La cohérence et la compatibilité de la surveillance (et de l'évaluation) marine sont au centre des travaux de la Commission OSPAR. Divers groupes OSPAR ont lancé un processus de détermination « d'indicateurs communs et de besoins en surveillance correspondants » aux fins de la MSFD, en se focalisant en particulier sur les exigences des évaluations perçues par les Parties contractantes. Les Comités OSPAR et leurs groupes sous-jacents continuent (1) à documenter et à s'entretenir des efforts de surveillance pertinents; (2) à s'entretenir des possibilités de promouvoir la compatibilité et la cohérence. Lorsqu'une surveillance coordonnée n'est pas encore en place, comme c'est le cas pour de nombreuses caractéristiques de la biodiversité ou pour des pressions reconnues récemment, telles que celles exercées par les bruits sous-marins, les Parties contractantes OSPAR veillent à précipiter la transition entre « le recueil des données aux fins de la recherche scientifique » et « la surveillance et l'évaluation de routine ».

## 1. Introduction

**M**arine environmental monitoring and assessment work best when undertaken in an internationally coordinated way (see sections 1 and 2 in OSPAR, 2012 ). This third OSPAR publication on the Marine Strategy Framework Directive (MSFD) details the OSPAR Commission's role in providing a platform for cooperation and coordination of monitoring and assessment activities in line with MSFD articles 6 and 11.

OSPAR Contracting Parties intend to organise future OSPAR monitoring using the identified 'common indicators'. These have been chosen on the basis of the information provided by Contracting Parties' implementation of Articles 8, 9 and 10 which reflect their Assessment of Art. 8, the determination of Good Environmental Status (Art.9) and the way in which they wish to track progress towards it ('targets and associated indicators', Art. 10).

This document aims to provide a regional overview of the OSPAR application of the basic monitoring principles for the establishment of monitoring programmes under the MSFD as set out in the Marine Strategy Coordination Group (MSCG) Recommendations of May 2013 (see **Annex 1**).

The OSPAR maritime area largely encompasses the MSFD 'North-East Atlantic Ocean' Region, and in particular its sub-regions 'Greater North Sea', 'Celtic Seas', 'Bay of Biscay and 'Iberian Coast'. A process of identifying 'common indicators and associated monitoring needs' for MSFD purposes was carried out in various OSPAR groups, focusing in particular on the assessment requirements as perceived by the Contracting Parties with waters in those three sub-regions . To fulfil the requirements of the

MSFD the 'common indicators' were identified to cover the Criteria and Indicators of the Commission Decision (2010/477/EU), the Characteristics, Pressures and Impacts of Annex III of the MSFD and the targets and associated indicators of Art. 10 of the MSFD. After a main initial agreement in 2013 and further updating in 2014, this process is still ongoing. The results presented here are based on the work undertaken in the period 2012 – 2014. **Annex 2** gives an overview of the agreed common indicators, and (priority) candidate indicators.

>> 'Joint documentation' on OSPAR coordinated monitoring is available in fact sheets for the common indicators for which coordinated OSPAR monitoring already exists in 2014:

[http://www.ospar.org/content/content.asp?menu=01520838000000\\_000000\\_000000](http://www.ospar.org/content/content.asp?menu=01520838000000_000000_000000)

>> Further developments of OSPAR coordination on monitoring are taking place for the other agreed common indicators. For these indicators, in particular the OSPAR Biodiversity Committee (BDC) and the Environmental Impacts of Human Activities Committee (EIHA) are taking forward the development of monitoring and assessment tools so that these indicators can become operational at the earliest opportunity and used to inform the updating, in 2018, of the MSFD Art. 8 assessments. OSPAR intends to publish an Intermediate Assessment 2017 to support this.

<sup>1</sup>OSPAR, 2012. *Finding Common Ground - Towards regional coherence in implementing the Marine Strategy Framework Directive*.

<sup>2</sup> Norway was voluntarily associated with the work on indicators for the Greater North Sea. The Portuguese involvement was mainly focused on the coastal waters of mainland Portugal in the 'Bay of Biscay and Iberian Coast' sub-region. Waters of the OSPAR Regions 'Arctic Waters' (OSPAR Region I) and 'Wider Atlantic' (OSPAR Region V) were not directly concerned by this process on 'common indicators and associated monitoring needs'.

## The Marine Strategy Framework Directive

The MSFD (2008) outlines a transparent, legislative framework for an ecosystem-based approach to the management of human activities which supports the sustainable use of marine goods and services. The overarching goal of the Directive is to achieve 'Good Environmental Status' (GES) by 2020 across Europe's marine environment.

In order to achieve GES in a coherent and strategic manner, the MSFD establishes four European Marine Regions, based on geographical and environmental criteria. The North East Atlantic Marine Region is divided into four subregions. Each Member State is required to develop a marine strategy for their waters, in coordination with other countries within the same marine region or subregion. This coordination is to be achieved through the Regional Seas Conventions, of which the OSPAR Convention is one.

Member States needed to determine by 2012 what GES means for their waters in a (sub-)regional context on the basis of eleven high-level descriptors (see simplified schematic). Member States are formulating their monitoring programmes (2014), followed by programmes of measures to achieve GES (2015).



Based on a diagram by STAGES

## 2. How the requirements of the Directive are being addressed in the North-East Atlantic Region

The OSPAR Convention 1992 already required Contracting Parties to undertake and publish regular assessments of the status of the North-East Atlantic, on the basis of monitoring programmes they had developed (see OSPAR 2012, sections 1 and 2). Furthermore, considerable progress has already been made in developing common programmes and assessment tools which provide robust assessments of regional status for several of the MSFD descriptors. The MSFD has provided further impetus for cooperation and coordination, in particular for the ‘biodiversity and ecosystems’ descriptors, and for issues beyond the traditional contaminants and eutrophication monitoring.

Coherence and compatibility of marine monitoring (and assessment) is at the heart of the work of the OSPAR Commission. The regular preparation of assessment reports acts as the ‘feedback loop’ to the organisation of

monitoring. In the context of the ‘common indicator’ process, the OSPAR Commission has instructed its Committees and their supporting groups to (1) document and discuss the existing relevant monitoring efforts; (2) discuss scope for enhancing compatibility and consistency.

OSPAR Contracting Parties have coordinated their efforts to ‘reconfigure’ their existing monitoring programmes, and have identified common monitoring development needs. The international coordination provided by the OSPAR Commission gives Member States an opportunity to jointly develop monitoring and reporting tools and to adapt them to progress in a cost-effective way.

OSPAR helps to facilitate the project for a Joint Monitoring Programme for the North Sea and Celtic Sea (JMP NS/CS) - see **Text Box** (pg 6).



## **Pilot Project Towards a Joint Monitoring Programme for the North Sea and Celtic Sea (JMP NS/CS; reference EU PP/ENV/SEA 2012)**

The main objective of this EU co-funded project is to develop options for joint monitoring in the North Sea and the Celtic Sea. It will investigate whether joint monitoring results in increased efficiency and reduced costs. It thereby contributes to better integration and coherence across disciplines and countries. The project is undertaken by a consortium of 18 institutes that are responsible for marine monitoring in all countries bordering the North Sea and Celtic Sea. It runs from 1 October 2013 to 31 March 2015.

The project started with an inventory of existing monitoring programmes (metadata) and monitoring needs, using the Marine Strategy Framework Directive as a starting point and taking into account other policy frameworks as well. A database and web portal were developed, based on the structure of WG DIKE (Working Group for Data, Information and Knowledge Exchange) reports on monitoring. This database enables updating after the project has ended and has the potential to contribute to the OSPAR Information Strategy.

In the next phase current monitoring platforms (e.g. ships, planes, satellites, buoys) and options for multiple use of platforms will be investigated. Operational experience with fish surveys carrying out monitoring for additional indicators is brought into the project through the JPI Oceans Pilot Initiative “Multi use of Infrastructure for Monitoring in the North Sea”. Lessons learnt from other integrated surveys will also be taken into account.

For selected OSPAR common indicators in-depth analyses of current monitoring programmes versus options for joint monitoring will be carried out, including an evaluation of the resulting outcome of monitoring with regard to the assessment of Good Environmental Status. These case studies are:

1. *Eutrophication: chlorophyll*  
Investigates current monitoring methods and develops a ‘standardised approach’ for chlorophyll sampling and analysis to improve consistency of Descriptor 5 Good Environmental Status outcomes. Investigates potential incorporation of innovative sampling techniques. Investigates background of the current situation. Compares current situation against ‘standardised approach’ and estimates costs and benefits. In consultation with OSPAR ICG-EUT (Intersessional Correspondence Group – Eutrophication).
2. *Fish indicators for Biodiversity (D1)*  
Focus on demersal elasmobranch fish species with reference to the IUCN list of threatened and declining species and the development of OSPAR biodiversity indicators. Data scarcity is the main issue. Optimal use of national and international survey data, taking into account various monitoring platforms, is the main challenge. In consultation with ICG-COBAM (ICG -Coordination of Biodiversity Assessment and Monitoring).
3. *Benthos multi-metric indices*  
Investigates ways to improve effectiveness and efficiency of monitoring programmes on benthos indicators and, taking account of national and international surveys. Evaluates the potential of complementarity of monitoring designs (cross-boundary) throughout the North Sea (and Celtic Sea, if data become available). Explores the possibilities to integrate the sampling effort (minimally) needed into multidisciplinary monitoring campaigns. In consultation with ICG-COBAM and ICES BEWG (Bentos Ecology Working Group).

Opportunities and challenges for sub-regional co-operation will be discussed in workshops involving experts and managers in monitoring, and policy makers. The project aims to create a constructive network between institutions responsible for fisheries and environmental monitoring that will last after the project has ended. The consortium will actively seek options for knowledge transfer of the project outcomes to other (sub) regions. OSPAR offers a platform for exchange with Contracting Parties in the wider OSPAR area. Furthermore, working relationships with the other projects under the same EU funding scheme (BALSAM in the Baltic Sea and IRIS-SES in the Mediterranean and Black Sea) provide opportunities for comparison and shared outcomes.

The OSPAR monitoring programmes in existence prior to 2012 mainly address sub-programmes related to determinants relevant for GES Descriptors (5) eutrophication; (8) hazardous substances in marine matrices; and (10) litter. Intensive efforts are resulting in further monitoring coordination for determinants relevant to (11) Noise where work has focused on the development of common monitoring for the impulsive noise indicator to ensure it can

deliver an assessment for the next initial assessment. Significant progress is being made for the biodiversity related descriptors (D1, 2, 4 and 6) where opportunities for coordinating monitoring are being examined to ensure the timely and effective delivery of assessments.

OSPAR welcomes the MSFD impetus to the broadening of coordinated monitoring programmes.



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### 3. OSPAR countries collectively act on the 2013 recommendations from the Marine Strategy Coordination Group on monitoring programmes

#### Recommendation 1:

*the establishment and implementation of coordinated monitoring programmes*

This Recommendation reflects the OSPAR Convention requirement that “the Contracting Parties shall, (...): (a) undertake and publish at regular intervals joint assessments of the quality status of the marine environment and of its development, for the maritime area or for regions or sub-regions thereof; (b) include in such assessments both an evaluation of the effectiveness of the measures taken and planned for the protection of the marine environment and the identification of priorities for action.” and that: “the Contracting Parties shall: (a) cooperate in carrying out monitoring programmes and submit the resulting data to the Commission.” Wherever the OSPAR Commission has organised monitoring programmes, the availability of suitable ‘assessment criteria’ has been one of the factors determining the status of the monitoring.

OSPAR has considerable experience in assessing progress towards fulfilling its vision of achieving a clean, healthy and biologically diverse North-East Atlantic Ocean, used sustainably. Periodic assessments are published every few years (see the landmark ‘Quality Status Reports’ (OSPAR 2000, OSPAR 2010) and further updates are planned through more regular assessments and assessment sheets for some indicators. Most of the Contracting Parties / Member States referred to the relevant components of the Joint Assessment and Monitoring Programme (JAMP) in their MSFD initial assessments.

OSPAR Contracting Parties are now endeavouring to speed up the transition from ‘data collection for scientific research’ to ‘routine monitoring and assessment’. It was clear in 2012 when Member States were determining the ‘good environmental status’ that the ability to monitor and assess a number of environmental features varies across the range of Descriptors, and that there were large gaps for ‘biodiversity’ assessment. It has been acknowledged therefore that swift testing of new approaches would be required to improve this situation.

The OSPAR work on common and candidate indicators (especially for biodiversity) is intended to progress through ‘testing of indicators’ with ‘trial assessment of available data’ before these can become based on routine agreed monitoring. This allows the proper prior preparation of all monitoring and assessment tools and associated QA/QC procedures so that the resource requirements of actual monitoring can be optimised. In practice, this will imply that for some indicators, commitment to routine monitoring will not be made until the results of the ‘trial assessment’ are known.

The OSPAR monitoring programmes are well coordinated, reflect the state of the art for the indicators involved, take account of regional differences where necessary and have robust internationally recognised QA and QC procedures which provide confidence in the results. However, some monitoring programmes are more developed than others, particularly those where there are well-understood 'cause-effect' pathways (contaminants, eutrophication, selective extraction etc.), and where monitoring has been established for many years. More challenging are the programmes needed to assess the features and systemic properties related to overall 'biodiversity' (e.g., 'food webs') which have to be determined from a combination of monitoring data. This is recognised by the fact that a number of the common and candidate indicators for Descriptors 1, 4 and 6 which OSPAR has agreed to take forward are still not yet operational, and for some, a considerable amount of further development work will be needed both within OSPAR and in the research community.

The OSPAR Commission is providing the fora for collaboration between the Contracting Parties' experts with a view to bringing the relevant indicators and monitoring to maturity at the earliest opportunity. Also, the OSPAR QSR 2010 recognised that in order to give a holistic assessment of progress towards its vision, the cumulative effects of pressures also need to be considered in the context of sustainable use. OSPAR is working to develop this issue particularly in its Environmental Impact of Human Activities Committee through an Intercessional Correspondence Group on Cumulative Effects.

## Recommendation 2:

*Monitoring programmes have to be "coordinated", "compatible", "coherent", "consistent" and "comparable"*

OSPAR has been providing its Contracting Parties with active, hands-on support for their monitoring coordination since the establishment of a 'joint monitoring programme' (joint between the Contracting Parties and between the Oslo Convention and the Paris Convention) in 1978.

Thematic monitoring programmes were agreed within an umbrella 'Joint Assessment and Monitoring Programme' (JAMP) that also described the assessment process and the target assessments. A key function of the JAMP is to ensure that the monitoring programmes which Contracting Parties use are coordinated, compatible, coherent, consistent and comparable. In this respect, monitoring programmes are underpinned by agreed methodologies (JAMP Guidelines, Guidance notes, assessment tools etc.) and require an adequate provision of QA/QC.

Whilst consistency and comparability are key aims, experience has shown that, due to the different characteristics of the ecosystems in marine waters in the North-East Atlantic, it has sometimes been necessary to develop region-specific assessment criteria for some indicators. The implementation of agreed monitoring is reviewed by specialist groups which are usually also in charge of the assessment of the resulting data. The cooperation is thus organised in a very efficient and effective way.



The main OSPAR monitoring programmes and the overall JAMP are kept under regular review. One of the main reasons for their current (2013-2014) review is to take account of Contracting Parties' MSFD requirements and check that they are coordinated, compatible, coherent, consistent and comparable as far as possible. After a thorough review, OSPAR 2014 agreed to the Joint Assessment and Monitoring Programme for 2014-2021.

The main operational objectives of the OSPAR Joint Assessment and Monitoring Programme for the period 2014-2021 are:

- a. the implementation and further development of existing OSPAR monitoring programmes and, where necessary, the development of additional coordinated monitoring programmes. OSPAR monitoring needs to respond to relevant assessment requirements (see Annex 1). These requirements include the MSFD criteria, methodological standards and indicators used by Contracting Parties for the assessment of environmental status and the pressures and impacts of human activities.
- b. the development of tools and the collection of further data and information required for the delivery of integrated environmental assessments of the marine environment in the OSPAR maritime area or its regions;
- c. the development of new tools to support the development of an understanding of emerging issues in the marine environment;
- d. the publication of an Intermediate Assessment in 2017;
- e. the publication of a Quality Status Report in 2021.

The long-term objectives of the JAMP are to provide the strategic direction to: (1) the preparation of integrated environmental assessments of the status of the marine

environment of the OSPAR maritime area or its regions, including the exploration of new or emerging problems in the marine environment of the North-East Atlantic, and (2) the preparation of assessments of the implementation of the North-East Atlantic Environment Strategy, based on the assessment of the effects of relevant measures, including OSPAR measures, on the improvement of the quality of the marine environment. These assessments will help inform the development and implementation of further measures to protect the marine environment where required.

### **Recommendation 3:**

*Build upon and integrate as much as possible, existing well-established monitoring programmes and relevant guidance under Habitats and Birds Directives, the Water Framework Directive and other relevant EU legislation as well as under Regional Sea Conventions and other international agreements*

In respect of the 3rd MSCG recommendation, OSPAR's main focus has been building on and integrating work on the monitoring programmes it has developed over the years and on the identification of common indicators which have been identified as being of particular relevance to the 11 MSFD Descriptors. However, as part of this process, consideration has also been given to monitoring programmes used by Member States for relevant EU legislation. Several of the recently revised OSPAR monitoring guidelines refer to the relevant EU legislation (e.g. monitoring of contaminants and eutrophication).

<sup>3</sup> *The term integrated environmental assessment refers to assessments that link human activities, their pressures, the state of the marine environment and management responses with the inclusion of the relevant physics, chemistry and/or biology.*

**Recommendation 4:**

*Data and information resulting from the monitoring programmes should be made available in a comparable format and for interoperable use taking into account the “Marine Knowledge 2020” process*

The OSPAR Commission has long recognised the necessity for collecting data provided by Contracting Parties from its various monitoring programmes and storing it in accessible databases to increase transparency and make assessments more straightforward. OSPAR recently endorsed the data and information management strategy which builds on current work and aims to establish a long-term strategy for the management of OSPAR data and information to ensure its availability and accessibility. OSPAR Secretariat staff actively engage with the development of data management and sharing arrangements as under development in WG DIKE. The OSPAR Commission and the European Environment Agency (EEA) are working together to arrange use of OSPAR data streams for the purpose of the MSFD. The EEA has in the past already relied on OSPAR monitoring data and assessment results, such as for contaminants assessment, for its indicator “Hazardous substances in marine organisms (MAR 001)”.

OSPAR has also provided its views on the Marine Knowledge 2020 initiative, the results of which were published in Spring 2013, “welcoming the EC efforts to maximise the synergies between EMODnet and the reporting and data sharing arrangements for the MSFD. OSPAR is in the process of revising its data and information management and is examining options for elaborating a new OSPAR Information System that would be adequate for present and future needs and that would take account of, and if possible contribute to, the EU data and information exchange developments. Modifying reporting procedures of OSPAR is done by consensual agreement of the Contracting Parties involved, and the aspiration of the Marine Directors (harmonising reporting under MSFD with that of other EU Directives and policies

(e.g. for Regional Sea Conventions) to both avoid duplication of reporting and to maximise synergies between different policy instruments) necessitates clarification on how we can engage with the EU process (WISE-Marine development including EMODnet for data sharing and assembly of data layers). As the EU is a Contracting Party to OSPAR, we would welcome interaction from the EU and EEA in the OSPAR Information System development so that changes of arrangements in OSPAR are fully informed of the EU developments. We invite the European Commission services and the EEA to share information inside OSPAR on ongoing developments and where they see implications for OSPAR reporting procedures.”



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<sup>4</sup> Green Paper: Marine Knowledge 2020: from seabed mapping to ocean forecasting COM(2012)473

<sup>5</sup> See OSPAR 2013 Summary Record (OSPAR 13/21/1, § 9.12 and Annex 10).

<sup>6</sup> <http://dome.ices.dk/osparmime/main.html>

<sup>7</sup> <http://www.eea.europa.eu/data-and-maps/indicators/hazardous-substances-in-marine-organisms/hazardous-substances-in-marine-organisms-3>

<sup>8</sup> Through a coordinated contribution at the level of the OSPAR Coordination Group (November 2012), included in: [http://ec.europa.eu/maritimeaffairs/mk2020\\_consultation/replies\\_to\\_questions.htm](http://ec.europa.eu/maritimeaffairs/mk2020_consultation/replies_to_questions.htm) (compilation; find term: ‘OSPAR’)

## OSPAR data and information management

OSPAR have endorsed a data and information management strategy in order to establish a long term strategic approach to the management of OSPAR data and information, ensuring discoverability, accessibility and usefulness. A key stage of the delivery of this strategy is the development of an online interface to facilitate access to data and information – the OSPAR Data and Information Management System (ODIMS).

The two-year project for the development and implementation of ODIMS began in May 2014. The OSPAR Commission endorsed the data and information management strategy which aims to establish a long term strategy for the management of OSPAR data and information to ensure its availability and accessibility.

### Developing a shared data and information system between the EU and the Regional Sea Conventions

The European Commission contribution to the development of an OSPAR Data and Information Management System is through the service request “Development of a shared data and information system between the EU and the Regional Sea Conventions”, undertaken by a consortium led by Deltares and including SYKE, AZTI and HCMR. This 18-month project, which began in January 2014, falls under the agreement of the “framework contract for services related to development of methodological standards in relation to good environmental status of the seas under MSFD”. The overall aim of the project is to support data and information management for the European Seas at the regional level within the Regional Seas Conventions and to support the reporting requirements of Member States; this will be achieved through a number of objectives.

The initial objectives i.e. to review the existing and anticipated data and information flows from Contracting Parties to OSPAR and the potential contribution of these data to MSFD implementation requirements, and review of the processes and systems for acquiring, managing and making available these data and information and to identify where these could be improved, including streamlining and harmonisation between Contracting Parties, RSCs and the EU/EEA in the MSFD and other relevant marine policy context have begun. An initial overview of D5 (Eutrophication) and D8 (Hazardous Substances) parameters has been compiled and tabulated alongside data available from OSPAR on an individual Contracting Party level and the frequency of reporting. The project will include a pilot study to test the proposed model for improving data flows. The details of this pilot study will be elaborated collaboratively between OSPAR and the contractors.

**Recommendation 5:**

*Monitoring programmes need to be adaptive to enable appropriate reaction on e.g. changes in the marine environment, new understanding and emerging issues*

One of the principles of the OSPAR JAMP is that it is responsive to new knowledge and understanding regarding the marine ecosystem and emerging pressures that could affect the status of the North-East Atlantic. OSPAR has generally encouraged its Contracting Parties to work together to develop robust monitoring methods (guidelines, quality assurance procedures) and assessment criteria before making more binding commitments to joint monitoring in its Coordinated Environmental Monitoring Programme ('pre-CEMP' preceding 'CEMP' monitoring). For example, OSPAR and ICES are developing guidance on monitoring and assessment for ocean acidification, starting with a phase building on measurements already being taken by Contracting Parties. Where risk assessment indicates that a particular type of monitoring is no longer useful, OSPAR allows that monitoring efforts are reduced or stopped (for example in the monitoring programme for quantifying the annual inputs of chemicals to the North-East Atlantic, Contracting Parties will decide to stop monitoring particular chemicals if the concentrations are consistently less than the detection limit).

The adoption of the Joint Assessment and Monitoring Programme 2014-2020 also signals OSPAR's intention to develop further coordinated monitoring for the parameters that underpin the agreed common indicators, taking account of the monitoring that is already in place.

**Recommendation 6:**

*Linking monitoring to assessment needs, including the use of risk-based approach and the precautionary principle, as the basis of a flexible monitoring design*

The OSPAR Commission approach to the environmental monitoring coordination takes account of the large geographic differences, and differences in scientific understanding of

the issues affecting the marine environment across the OSPAR maritime area, reflecting that the assessment needs, and hence the monitoring, are different in the different OSPAR Regions.

OSPAR uses the risk-based approach as one of the principles in the development of its monitoring programmes. For example there are a number of instances in the North-East Atlantic Environment Strategies where risk is specifically mentioned e.g. in the Hazardous Substances and the Eutrophication Strategy principles: "the scientific assessment of risks should be used as a tool for setting priorities and developing action programmes." Examples of this are the development of the OSPAR Lists of Priority Hazardous Substances (OSPAR Agreement 2004-12) and List of Substances of Possible Concern (OSPAR Agreement 2002-17) which, through looking at the toxicity, persistence and bioaccumulation potential of the whole universe of chemicals, and through the examination of use patterns and exposure routes to the marine environment, was able to develop a priority list on which OSPAR measures and monitoring work could focus. Also, screening exercises have been carried out as part of the development of particular monitoring programmes in order to focus effort on those areas which are demonstrating problems and where monitoring needs to be done with a higher intensity.

The precautionary principle is a guiding principle in the OSPAR Convention and in the North-East Atlantic Environment Strategy. It is one of the drivers to enhance understanding and the ability to improve monitoring and assessment, and experience e.g. in one OSPAR Region can help in setting up arrangements in other Regions.

Information on OSPAR methods and approaches has been made available for the drafting of the (JRC-led) Guidance document on monitoring.

<sup>9</sup> See COM (2000) 1 on the precautionary principle <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2000:0001:FIN:en:PDF>

### **Recommendation 7:**

*Take account of the differences in scientific understanding for each descriptor in the monitoring programmes*

The OSPAR JAMP is designed to take account of the differences in understanding of the various MSFD descriptors. For example, for some of the indicators which OSPAR has identified as being relevant for MSFD monitoring, the degree of knowledge and understanding is less developed, and they have been given the status of “candidate indicator”. This means that more work, and in some cases, further research is needed before they can become operational. This is particularly relevant to descriptors 1, 2, 4, 6 and 11 on biodiversity and habitats, non-indigenous species, food webs and noise, which are relatively new in terms of scientific understanding compared to the more mature indicators associated with contaminants, litter and eutrophication.

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## Seven European recommendations on monitoring programmes

*Issued by the Marine Strategy Coordination Group in May 2013*

**Recommendation 1:** The core purpose for the establishment and implementation of coordinated monitoring programmes is the “ongoing assessment of the environmental status” and related environmental targets in accordance with the MSFD strategies and management cycles. All other elements of Article 11 (1) and (2) and Annex V are detailed specifications or conditions.

**Recommendation 2:** The monitoring programmes have to be “coordinated”, “compatible”, “coherent”, “consistent” and “comparable”

**Recommendation 3:** Build upon and integrate as much as possible, existing well-established monitoring programmes and relevant guidance under Habitats and Birds Directives, the Water Framework Directive and other relevant EU legislation as well as under Regional Sea Conventions and other international agreements.

**Recommendation 4:** Data and information resulting from the monitoring programmes should be made available in a comparable format and for interoperable use taking into account the “Marine Knowledge 2020” process.

**Recommendation 5:** Monitoring programmes need to be adaptive to enable appropriate reaction on e.g. changes in the marine environment, new understanding and emerging issues.

**Recommendation 6:** Linking monitoring to assessment needs, including the use of risk-based approach and the precautionary principle, as the basis of a flexible monitoring design.

**Recommendation 7:** Take account of the differences in scientific understanding for each descriptor in the monitoring programmes.

<sup>10</sup> Green Paper: *Marine Knowledge 2020: from seabed mapping to ocean forecasting* COM(2012)473

<sup>11</sup> See COM (2000) 1 on the precautionary principle <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2000:0001:FIN:en:PDF>

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## Annex 2

### COMMON INDICATORS AND CANDIDATE INDICATORS

'OSPAR-wide' common indicators	
D1/6 BentHab2	Multi-metric indices
D5 nutr conc	Winter nutrient concentrations
D5 chlorophyll	Chlorophyll concentration
D5 oxygen	Oxygen
D8 metals (biota)	Metal (Hg, Cd, Pb) concentrations in biota
D8 metals (sedim)	Metal (Hg, Cd, Pb) concentrations in sediment
D8 PCBs (biota)	PCB concentrations in biota
D8 PCBs (sedim)	PCB concentrations in sediments
D8 PAHs (sedim)	PAHs concentrations in sediments
D8 PAHs (biota)	PAHs concentrations in biota other than fish
D8 Organotin (sedim)	Organotin concentrations in sediments
D8 PBDE (biota)	PBDE concentrations in biota
D8 PBDE (sedim)	PBDE concentrations in sediments
D8 imposex	Imposex/intersex
D10 on beach	Beach litter
D10 on seabed	Litter on the seabed
D11 impulsive noise	Impulsive noise

#### Additional OSPAR common indicators for Regions

##### Region IV – Bay of Biscay and Iberian Coast

D4 FoodWeb 4	Changes in average trophic level of marine predators (cf MTI)
D1 PelHab 1	Changes of plankton functional types (life form) index Ratio
D1 PelHab 3	Changes in biodiversity index (s)
D5 input water	Waterborne nutrient inputs

##### Region III – Celtic Seas

D1 Birds 1	Species-specific trends in relative abundance of non-breeding and breeding marine bird species
D1 Fish Ceph 1	Population abundance/biomass of a suite of selected species
D1 Fish Ceph 2	OSPAR EcoQO for proportion of large fish (LFI)
D1 Fish Ceph 8	Distributional pattern within range of a suite of selected species
D1 PelHab 1	Changes of plankton functional types (life form) index Ratio
D4 FoodWeb 3	Size composition in fish communities (LFI)

##### Region II – Greater North Sea

D1 Mammals 3	Abundance of grey and harbour seal at haul-out sites & within breeding colonies
D1 Mammals 4 <sup>1</sup>	Abundance at the relevant temporal scale of cetacean species regularly present (incorporating previous D1 M2 “Distributional range and pattern of cetaceans species regularly present”)
D1 Mammals 5	Harbour seal and Grey seal pup production
D1 Mammals 6	Numbers of individuals within species being bycaught in relation to population
D1 Birds 1	Species-specific trends in relative abundance of non-breeding and breeding marine bird species
D1/6 Birds3	Breeding success/failure of marine birds
D1 Fish Ceph 1	Population abundance/biomass of a suite of selected species
D1 Fish Ceph 2	OSPAR EcoQO for proportion of large fish (LFI)
D1 PelHab 2	Plankton biomass and/or abundance
D5 input water	Waterborne nutrient inputs
D5 input air	Atmospheric nutrient inputs
D5 Phaeocystis	Species shift/indicator species: Nuisance species Phaeocystis
D8 input metal	Inputs of Hg, Cd and Pb via water and air
D10 in Fulmar	Fulmar litter ingestion (impact and floating litter)



OSPAR Commission  
Victoria House  
37-63 Southampton Row  
London WC1B 4DA

t: +44 (0)20 7430 5200  
f: +44 (0)20 7430 5225  
e: [secretariat@ospar.org](mailto:secretariat@ospar.org)  
[www.ospar.org](http://www.ospar.org)

OSPAR's vision is of a clean, healthy and biologically diverse  
North-East Atlantic used sustainably

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