



**OSPAR**  
**COMMISSION**

## OSPAR Science Agenda

### **OSPAR Convention**

The Convention for the Protection of the Marine Environment of the North-East Atlantic (the “OSPAR Convention”) was opened for signature at the Ministerial Meeting of the former Oslo and Paris Commissions in Paris on 22 September 1992. The Convention entered into force on 25 March 1998. The Contracting Parties are: Belgium, Denmark, the European Union, Finland, France, Germany, Iceland, Ireland, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

### **Convention OSPAR**

La Convention pour la protection du milieu marin de l'Atlantique du Nord-Est, dite Convention OSPAR, a été ouverte à la signature à la réunion ministérielle des anciennes Commissions d'Oslo et de Paris, à Paris le 22 septembre 1992. La Convention est entrée en vigueur le 25 mars 1998. Les Parties Contractantes sont : l'Allemagne, la Belgique, le Danemark, l'Espagne, la Finlande, la France, l'Irlande, l'Islande, le Luxembourg, la Norvège, les Pays-Bas, le Portugal, le Royaume-Uni de Grande Bretagne et d'Irlande du Nord, la Suède, la Suisse et l'Union européenne.

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# OSPAR Science Agenda

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## 1. Introduction

### Implementing the ecosystem approach requires a strong knowledge base

Ecosystem approach: *“The comprehensive integrated management of human activities based on the best available scientific knowledge about the ecosystem and its dynamics, in order to identify and take action on influences which are critical to the health of marine ecosystems, thereby achieving sustainable use of ecosystem goods and services and maintenance of ecosystem integrity.”*

The OSPAR Convention 1992 recognises that the work of the OSPAR Commission needs to be science-based<sup>1</sup>. The ambition of the ecosystem approach, endorsed by Ministers in 2003, provides a continuous challenge to improve understanding and to apply that understanding to improve its marine environmental policy and the implementation of the OSPAR Convention and the agreed strategies.

The OSPAR Commission recognises that the science-base that it needs for its work has to be sourced both within the Contracting Parties and from wider sources. Institutions and organisations with which OSPAR maintains working relations, such as the organisations that are Observers to OSPAR or with whom OSPAR has formalised agreements continue to be welcome to provide scientific input to the work of the OSPAR Commission. Moreover, the OSPAR Commission welcomes contributions from other organisations, which aim to promote better understanding of the marine environment and how such knowledge can be applied for the benefit of its protection and conservation.

OSPAR notes in particular that the development in the European Union of an Integrated Maritime Policy and its environmental pillar, the Marine Strategy Framework Directive, has led to a new dynamism in the EU to secure environmentally sustainable maritime activities with a strong emphasis on marine knowledge. As a non-EU country, Norway has made management plans for its sea areas in the OSPAR Convention maritime area which have very similar objectives.

These developments provide a fertile basis for new possible partnerships which can foster OSPAR achieving its goals on the basis of improved creation and transfer of scientific knowledge to application within the context of OSPAR (see Section 4).

OSPAR maintains a Joint Assessment and Monitoring Programme (JAMP), which sets out many items of joint activity by Contracting Parties. Long-term commitment to monitoring and assessment does not imply that these activities ever become ‘routine’ operations: they continue to rely on further technical and scientific improvements. The challenges and speed of new technological development require a dynamic response in all areas of work, and to secure cost-effective action that makes best use of data, knowledge and related resources.

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<sup>1</sup> The OSPAR Convention Art. 8 stresses that joint programmes of scientific or technical research are important to further the aims of the Convention.

## Need for an OSPAR Science Agenda

Defining gaps in knowledge is a standard part of OSPAR's work and these gaps are identified and disseminated with the publication of the Quality Status Reports. However, there is no common understanding of how these gaps should be addressed in a co-ordinated way and to which extent closure of these gaps would help OSPAR to achieve the aims of the Strategies. In addition, the knowledge gaps defined so far are sometimes rather unspecific, and therefore will not easily lead to targeted action.

Progressing the work of OSPAR relies heavily on Contracting Parties that adopt and prioritize a specific subject, and generate resources to bring the knowledge base further. With constraints in resources, this 'lead country' approach has come to its limits. A promising way forward is that OSPAR offers a platform for co-ordination of scientific programmes for policy advice at the level of regions and subregions. This would enable a more balanced sharing of resources and is increasingly supported by EU programmes. In the EU context, there is a continuum between the immediate support for the implementation of environmental protection legislation (the Marine Strategy Framework Directive) and programmes shaping the European Research Area (ERA) where the science is more oriented to fundamental understanding<sup>2</sup>.

Under some of the on-going initiatives, the participating Member States organize themselves<sup>3</sup> in order to carry out research projects with shared funding, with or without direct co-funding by the European Commission. It is important to understand the requirements of such programmes and how OSPAR can meet these.

Complementary to the JAMP and reflecting similar areas of interest included in the JAMP, the present Science Agenda for medium and long term planning of research needs has been developed. This will enable OSPAR to engage in collaboration, on the basis of clear objectives, with scientific institutions and networks and to effectively use opportunities for external funding, that have remained under-exploited so far. This requires a coherent approach and involvement of all Committees and groups working under OSPAR. In addition, there is a need to ensure that initiatives under the OSPAR Science Agenda will not duplicate ongoing work elsewhere.

## Aim of the OSPAR Science Agenda

This OSPAR Science Agenda is an OSPAR document setting out most clearly its most important needs in the broad science areas that underpin OSPAR work. It aims to contribute to OSPAR communication with science providers and science funders. In order to do so, the scientific needs should be formulated at the right level of abstraction/concreteness and should be well balanced. Within OSPAR the Coordination Group (CoG), the thematic Committees and their subsidiary bodies should be involved. An additional aim is that it sets a framework for continuing and strengthening the partnership that OSPAR has with organisations such as ICES. It can provide a basis for coordination of national science programmes and define research needs that are best addressed at international level.

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<sup>2</sup> Horizon 2020 and its various components.

<sup>3</sup> JPI Oceans – see [www.jpi-oceans.eu](http://www.jpi-oceans.eu)

The OSPAR Science Agenda:

- identifies gaps in knowledge that hamper progress towards achieving the aims of the OSPAR Strategies;
- sets out a procedure to ensure that science needs are well defined and based on common understanding of knowledge needs (criteria), so that items:
  - reflect the needs identified by relevant groups working within OSPAR, and that they have contributed to their formulation;
  - are prioritised, well planned and refer to appropriate (sub) regional scales;
  - any initiative by OSPAR will not duplicate ongoing or planned research elsewhere.

The Science Agenda will be a living document, with updates on a regular basis.

## 2. Working across disciplines and institutions to foster scientific developments

The ecosystem approach to managing human activities in the marine environment requires an interdisciplinary approach for most items. There is an increased push from OSPAR and EU regulations to develop coherent approaches for the whole management cycle. Although the need for such an approach is clearly understood, a clear focus on how interdisciplinary research should be organised requires a thorough understanding of how research needs from OSPAR's thematic Committees and Working Groups/ICGs link together. Such links relate to the geographic scale, planning and contents of the various research needs and need to be identified through the OSA and with the help of CoG.

It furthermore requires an understanding of how co-operation between disciplines and institutions can lead to better science and thereby improve the competitive position of scientific institutions operating in the Northeast Atlantic. Clearly, joining forces is a prerequisite for establishing winning consortia and is ongoing practice in the interest of the participating scientific institutions. Furthermore, the issue is addressed in the Joint Programming Initiative Oceans.

From a policy perspective, international and interdisciplinary co-operation is expected to deliver useful advice in a cost-effective manner. However, where research programmes become more complicated, it is more difficult to organize lasting liaisons between scientists and policy makers/marine managers during the course of a project in order to ensure development of advice that can be implemented.

### 3. OSPAR invites other institutions to join forces in the following areas of joint interest

#### Identification of priority science needs

In the following sections, the current main scientific needs are listed, which are areas where OSPAR declares an interest that it wishes to share with other institutions.

Identification of science needs has been done by OSPAR Committees and their subsidiary bodies, assisted by the Secretariat and the Science agenda task group, during the 2012-2013 and 2013-2014 meeting cycles. The detailed results are presented in the **Inventory and Background**<sup>4</sup> document that accompanied this OSPAR Science Agenda for the OSPAR 2014 meeting. Items are, to the extent possible at this stage, described using templates with justification why this need is important to progress the work of OSPAR.

Criteria for priority setting are crucial for focused action. The main aim of these criteria is to provide a common language for a dialogue at policy level and to communicate with scientists. Application of these criteria will help to:

- a. compare priorities between themes;
- b. within a theme explain the importance of a specific science need in relation to monitoring and assessment and the development of measures and policy; and
- c. articulate how new research will enable progress in these areas.

With regard to b and c, it can be helpful to use the DPSIR framework, as explained in the Inventory and Background document. An effort has been made for some research needs to indicate their position in the management cycle.

As described above, the set of criteria will help to structure and prioritize the OSPAR Science Agenda, involving the thematic Committees and their subsidiary bodies. To date, this process has only partly been implemented. Therefore, the Science Agenda task group has provided the OSPAR Coordination Group with an initial selection of research questions, based on a subset of the criteria for prioritisation:

- **Policy deadline:** the research question should relate to a concrete OSPAR deadline, notably the Intermediate Assessment 2017 or the QSR 2021 (POL 17/21);
- **(Sub)Regional:** the research need is generic and needs to be used by several CP's and responsibility should not be with single CP; The research question should be applicable at the region or sub-region level (S/R);
- **Severity:** the research question should be related to a human activity that has the potential to have an impact at the ecosystem level (SEV);

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<sup>4</sup> Document OSPAR 14/8/4-Add.1, available from the OSPAR Secretariat via [secretariat@ospar.org](mailto:secretariat@ospar.org)

- **Likelihood of success:** answering the research question should be possible and, in combination with solving other identified research questions, be sufficient to fulfil a policy need (SUC).

The outcome of this selection process is presented in the present document.

The FP7 STAGES project ran from September 2012-October 2014 to support the use of scientific research in MSFD implementation. The work package on identifying science needs included three thematic workshops (on monitoring, on pressures and impacts and on socioeconomics). This OSPAR Science Agenda uses in particular the outcomes of the work on pressures and impacts<sup>5</sup>, which were based on inputs from OSPAR lead persons on MSFD themes and other MSFD experts.

## Priority research questions

*(as identified by OSPAR and by the STAGES project)*

The prioritised research questions are grouped according to the Themes of the OSPAR Joint Assessment and Monitoring Programme:

- A. Ecosystem approach and cross-cutting issues
- B. Biodiversity and ecosystems (includes MSFD Descriptors 1, 2, 3, 4, 6, 7, 10 and 11)
- E. Eutrophication (includes MSFD Descriptor 5)
- H. Hazardous substances (includes MSFD Descriptors 8 and 9)
- O. Oil and gas industry (as far as not covered by above)
- R. Radioactive substances

#	Theme (cf. above)	Item	Reference in Inventory (origin)
<b>A. Ecosystem approach and cross-cutting issues</b>			
1	A	1. Tools for integrated assessment / management	ITEM A1. (QSR 2010)
2	A	2. Cumulative effects – when is a change significant and when should it trigger action	ITEM A2. (ICG COBAM)
<b>B. General biodiversity and ecosystems - Main research needs as identified by OSPAR</b>			
3	B	1. Statistical techniques to improve confidence at different scales: important for evidence based decisions.	ITEM B1. (ICG COBAM)
4	B	2. Adequate monitoring and availability of pressure data including time & space resolution and biological data	ITEM B2. (ICG COBAM)
5	B	3. Improve accuracy of physical loss calculations at regional scale.	ITEM B3. (ICG COBAM)
6	B	4. Statistical techniques to ensure comparability (habitat vs pressure)	ITEM B4. (ICG COBAM)
7	B	5. Changes due to prevailing or natural conditions versus human pressures- sub-regional specificities of habitats (communities)	ITEM B5. (ICG COBAM)
8	B	6. Cumulative effects of fishing over large areas/broad-scale habitats	ITEM B6. (ICG COBAM)
9	B	7. Understand biodiversity-productivity relationships, especially for fishes and their food.	ITEM B7. (ICG COBAM)

<sup>5</sup> FP7-ENV-2012: Science and Technology Advancing Governance of Good Environmental Status (STAGES), 2<sup>nd</sup> Workshop on Further research Needs on Pressures and their Impact on the Marine Ecosystem under MSFD, Rome, 04-05 September 2013, Workshop report available on:

[http://www.stagesproject.eu/images/STAGES/deliverables/STAGES%20Pressures%20%20Impacts\\_Workshop%20Report\\_v5\\_04%2002%202014.pdf](http://www.stagesproject.eu/images/STAGES/deliverables/STAGES%20Pressures%20%20Impacts_Workshop%20Report_v5_04%2002%202014.pdf)



<b>B. General biodiversity and ecosystems Marine Protected areas</b>			
10	B	8. Increased assessment of the effects of human activities on MPA features	ITEM B8. (ICG MPA)
11	B	9. improved knowledge on species and habitat distribution with regards to ABNJ/continental shelf/ EEZ: (i) monitoring; (ii) areal surveillance	ITEM B9. (ICG MPA)
12	B	10. establish reference / baseline conditions for species and habitats	ITEM B10. (ICG MPA)
<b>B - MSFD Descriptor 1 - biodiversity - Main research needs as identified by OSPAR</b>			
13	B	11. To assess the best biodiversity index to use	ITEM B11. (ICG COBAM)
<b>B - MSFD Descriptor 1 - biodiversity - Main research needs as identified in the STAGES project</b>			
14	B	S1. Develop and apply new technologies for rapid biodiversity discovery, especially environmental genomics and other 'omics' technologies, for improved understanding of functional biodiversity	ITEM BS1. (STAGES workshop Pressures / Impacts page 10 <sup>6</sup> )
15	B	S2. Develop indicators for cetaceans to provide a greater understanding of species distribution and abundance	ITEM BS2. (STAGES workshop Pressures / Impacts page 10 <sup>6</sup> )
16	B	S3. Develop methods for combining long term monitoring studies that account for pressures on biodiversity and regional sea marine observation systems	ITEM BS3. (STAGES workshop Pressures / Impacts page 10 <sup>6</sup> )
17	B	S4. Develop methods for considering synergistic, cumulative, and antagonistic effects of human pressures on biodiversity	ITEM BS4. (STAGES workshop Pressures / Impacts page 10 <sup>6</sup> )
18	B	S5. Develop methods to account for long-term consequences of human pressures on marine ecosystems especially considering climate change, and the implications of ocean acidification on ecosystems	ITEM BS5. (STAGES workshop Pressures / Impacts page 10 <sup>6</sup> )
19	B	S6. Develop and validate operational habitat definitions. For these develop and validate ecologically relevant thresholds of change between levels of conservation status taking account of natural variability, structure and function, and species abundance and distribution	ITEM BS6. (STAGES workshop Pressures / Impacts page 10 <sup>6</sup> )
<b>B - MSFD Descriptor 2 - non-indigenous species - Main research needs as identified in the STAGES project</b>			
20	B	S7. Development of risk based criteria to highlight key pathways of non-indigenous species (NIS) introduction, hot spot areas and secondary spread in order to assess effectiveness of management measures	ITEM BS7. (STAGES workshop Pressures / Impacts page 10 <sup>6</sup> )
21	B	S8. Develop methods to measure the magnitude of bio-invasion impacts on the marine ecosystem and ecosystem services, including considerations for threshold reference points	ITEM BS8. (STAGES workshop Pressures / Impacts page 10 <sup>6</sup> )
22	B	S9. The role of NIS in confounding assessments of GES by modifying the performance of existing indicators, such as those describing benthic quality	ITEM BS9. (STAGES workshop Pressures / Impacts page 10 <sup>6</sup> )
<b>B - MSFD Descriptor 3 - populations of commercial fish - Main research needs as identified in the STAGES project</b>			
23	B	S10. Determining targets and reference points for fish stocks with limited data in relation to set descriptors (including more stock assessments) especially for shellfish.	ITEM BS10. (STAGES workshop Pressures / Impacts page 16 <sup>6</sup> )

24	B	S11. Modelling spatial pressures of fishing in relation to ecosystem sensitivities and the structure of stocks	ITEM BS11. (STAGES workshop Pressures / Impacts page 16 <sup>6</sup> )
25	B	S12. The impact of fishing by-catch on the populations of protected, endangered or threatened species (PETS).	ITEM BS12. (STAGES workshop Pressures / Impacts page 16 <sup>6</sup> )
26	B	S13. Consequences for fisheries management of changes in exploited marine population distributions and productivity	ITEM BS13. (STAGES workshop Pressures / Impacts page 16 <sup>6</sup> )
27	B	S14. Methods development for quantification of fishing pressure from small scale and recreational fisheries including the impact of discarded fishing gear.	ITEM BS14. (STAGES workshop Pressures / Impacts page 16 <sup>6</sup> )
<b>B - MSFD Descriptor 4 - food webs - Main research needs as identified by OSPAR</b>			
28	B	12. To test theories on how to use different measures of phytoplankton production/biomass together	ITEM B12. (ICG COBAM)
<b>B - MSFD Descriptor 4 - food webs - Main research needs as identified in the STAGES project</b>			
29	B	S15. The consequences for food web structure and function of fishing all stocks at Maximum Sustainable Yield (MSY) and consider the impacts of changes in fishing selectivity	ITEM BS15. (STAGES workshop Pressures / Impacts page 10 <sup>6</sup> )
30	B	S16. Develop methods that describe consequences of shelf seas biogeochemistry on plankton communities, especially nutrient fluxes, to inform the application of indicators of food web production ratios	ITEM BS16. (STAGES workshop Pressures / Impacts page 10 <sup>6</sup> )
31	B	S17. Techniques and approaches that support the implementation of food web indicators to describe productivity of key ecosystem components of regional seas	ITEM BS17. (STAGES workshop Pressures / Impacts page 10 <sup>6</sup> )
32	B	S18. Develop methods to identify change in food web structure. These will be used to quantify fundamental threats and risks to ecosystem functioning and the provision of ecosystem services	ITEM BS18. (STAGES workshop Pressures / Impacts page 10 <sup>6</sup> )
33		S19. Methods that discriminate between effects on food webs caused by pressures of human activities and those caused by changes in system carrying capacity through climatic effects	ITEM BS19. (STAGES workshop Pressures / Impacts page 10 <sup>6</sup> )
<b>B - MSFD Descriptor 6 - sea floor integrity - Main research needs as identified in the STAGES project</b>			
34	B	S20. Develop methods to evaluate the risk of the spatial and temporal distribution of human activities (trawling, mining, renewable energy, etc.) on sensitive and vulnerable benthic habitats and species. This can only be undertaken with broader access to satellite location of international fleets	ITEM BS20. (STAGES workshop Pressures / Impacts page 11 <sup>6</sup> )
35	B	S21. Integrate seafloor habitat sampling and biological/physical models, with appropriate ground truthing, to allow Member States to identify areas under greatest risk as a priority for management	ITEM BS21. (STAGES workshop Pressures / Impacts page 11 <sup>6</sup> )
<b>B - MSFD Descriptor 7 - hydrographic conditions - Main research needs as identified in the STAGES project</b>			
36	B	S22. To develop a relevant and harmonised definition of “permanent alteration” both in terms of hydrographic conditions and species and habitats to ensure consistency in assessing impacts of major projects	ITEM BS22. (STAGES workshop Pressures / Impacts page 17 <sup>6</sup> )

37	B	S23. Models to predict the alterations in hydrographical conditions are needed so as to ensure thorough assessment of proposed major projects can be undertaken prior to their approval. This requires knowledge of the sensitivity of ecosystems and their functioning at a broad scale as well as the identification of the parameters needed to model changes in hydrographical conditions ( <i>e.g.</i> shear stress).	ITEM BS23. (STAGES workshop Pressures / Impacts page 17 <sup>6</sup> )
<b>B - MSFD Descriptor 10 - marine litter - Main research needs as identified in the STAGES project</b>			
38	B	S24. Determination of sources and fates of litter in the marine environment by the development a GIS platform and a large-scale EU wide model of litter transportation	ITEM BS24. (STAGES workshop Pressures / Impacts page 14 <sup>6</sup> )
39	B	S25. Determine the relationship between the types and amounts of marine litter in the environment and the degree of 'harm' caused at a population and individual level	ITEM BS25. (STAGES workshop Pressures / Impacts page 14 <sup>6</sup> )
40	B	S26. Determine degradation processes for marine litter and the impact on trend evaluation	ITEM BS26. (STAGES workshop Pressures / Impacts page 14 <sup>6</sup> )
41	B	S27. Development of additional monitoring tools to quantify the pressure from marine litter	ITEM BS27. (STAGES workshop Pressures / Impacts page 14 <sup>6</sup> )
42	B	S28. Socioeconomic assessment- evaluation of direct costs of marine litter to the maritime industry, fishing industry, local authorities and governments	ITEM BS28. (STAGES workshop Pressures / Impacts page 14 <sup>6</sup> )
<b>B - MSFD Descriptor 11 - underwater noise - Main research needs as identified in the STAGES project</b>			
43	B	S29. Determine population effects of low- and mid-frequency impulsive noise on marine life in order to establish targets (for 2018/2021 MSFD cycle)	ITEM BS29. (STAGES workshop Pressures / Impacts page 15 <sup>6</sup> )
44	B	S30. Effects of increased ambient noise levels on marine life, in order to establish targets for future MSFD cycles	ITEM BS30. (STAGES workshop Pressures / Impacts page 15 <sup>6</sup> )
45	B	S31. Determine which additional parameters (other than currently used pressure parameters) are needed to characterise sound sufficiently	ITEM BS31. (STAGES workshop Pressures / Impacts page 15 <sup>6</sup> )
<b>E - MSFD Descriptor 5 - eutrophication - Main research needs as identified by OSPAR</b>			
46	E	1. Cost effective monitoring of eutrophication parameters	ITEM E1. (HASEC)
47	E	2. Next generation marine models to support better target setting	ITEM E2. (HASEC)
48	E	3. Ecologically-based target setting for eutrophication parameters	ITEM E3. (HASEC)
49	E	4. Interactions of eutrophication with climate change	ITEM E4. (HASEC)
<b>E - MSFD Descriptor 5 - eutrophication - Main research needs as identified in the STAGES project</b>			
50	E	S1. Assessment for the MSFD of relationship between pressure and state, taking into account natural processes and ecosystem susceptibility. The specific points are: (a) Natural background nutrient enrichment compared to human-related sources, through development/application of land-ocean models, taking into account point and diffuse sources, ocean boundaries, and atmospheric contributions; (b) Effects of nutrient loads and ratios, together with physical factors, on species composition, with emphasis on harmful algae, with the aim of broadening the range of eutrophication symptoms that can be successfully modelled, and on improving knowledge on reversibility, given the likelihood of baseline shifts and regime changes; (c) Rapid phytoplankton species identification, origin, early detection, and prediction of HAB, <i>e.g.</i> by improved remote sensing and by molecular methods	ITEM ES1. (STAGES workshop Pressures / Impacts page 11 <sup>6</sup> )

51	E	S2. Economic impacts of eutrophication, including economic impacts of eutrophication reduction – full analysis including costs to agriculture and benefits to water quality	ITEM ES2. (STAGES workshop Pressures / Impacts page 11 <sup>6</sup> )
<b>H - MSFD Descriptor 8 - concentrations of contaminants - Main research needs as identified by OSPAR</b>			
52	H	1. Improve our general understanding of effects of hazardous substances at realistic concentrations, in particular their combined effects, and their potential endocrine disruption effect	ITEM H1. (HASEC)
53	H	2. Linkage between sources and pathways on the presence and distribution of hazardous substances in the marine environment	ITEM H2. (HASEC)
54	H	3. Learning from past pollution for dealing with emerging contaminants	ITEM H3. (HASEC)
55	H	4. The impact of climate change and ocean acidification on the effects, distribution and presence of hazardous substances	ITEM H4. (HASEC)
56	H	5. better understanding of the link between discharges, spills and emissions of oil and chemicals and their effect on the marine environment	ITEM H5. (OIC)
<b>H - MSFD Descriptor 8 - concentrations of contaminants - Main research needs as identified in the STAGES project</b>			
57	H	S1. Development of thresholds/target/assessment levels for GES and biological effects/responses evaluation: a. Transfer of contaminants through marine food webs and their effects at different trophic levels (taking into account bioaccumulation /biomagnification, natural ecological processes and modelling); b. Development of methodologies and techniques for biological effects including contaminant mixture actions, effects on genetic composition of populations; c. Assessment of anthropogenic pressure: determination of regional specific background concentrations derived taking into account the geochemical and oceanographic variability between regions; allowing also assessment of pollution trends and setting environmental indicators	ITEM HS1. (STAGES workshop Pressures / Impacts page 12 <sup>6</sup> )
58	H	S2. Pollution pressures on the wider marine environment scales: a. Development of baseline studies on fate and effects of pollution in deep and open European seas; b. Assessments of large-scale fluxes of priority hazardous substances: at sub-regional, oceanic basin-wide scales and at air-sea and water-sediment compartment interfaces; c. Development of cost-effective new strategies and techniques for pollutant monitoring at wider marine environment scales	ITEM HS1. (STAGES workshop Pressures / Impacts page 12 <sup>6</sup> )
<b>H - MSFD Descriptor 9 - contaminants in seafood - Main research needs as identified in the STAGES project</b>			
59	H	S3. Collaborative work with D8 on pathways of contamination, toxicokinetics and ecotoxicology with emphasis on substances where limits are set ( <i>i.e.</i> mercury, cadmium and PCBs)	ITEM HS3. (STAGES workshop Pressures / Impacts page 13 <sup>6</sup> )
60	H	S4. Variability of concentrations of relevant substances in different edible parts of seafood (account for variability of diet in the EU space <i>e.g.</i> white meat/ brown meat);	ITEM HS4. (STAGES workshop Pressures / Impacts page 13 <sup>6</sup> )
61	H	S5. Levels of mercury in fish fillets from fish species high in the food chain (pathways, geographical variability and means to circumvent seafood above upper limits to get access to markets	ITEM HS5. (STAGES workshop Pressures / Impacts page 13 <sup>6</sup> )
62	H	S6. Long-term development of dioxins and dioxin-like PCB levels in marine fats and oils as well as oily fish	ITEM HS6. (STAGES workshop Pressures / Impacts page 13 <sup>6</sup> )

<sup>6</sup> [http://www.stagesproject.eu/images/STAGES/deliverables/STAGES%20Pressures%20%20Impacts\\_Workshop%20Report\\_v5\\_04%2002%2014.pdf](http://www.stagesproject.eu/images/STAGES/deliverables/STAGES%20Pressures%20%20Impacts_Workshop%20Report_v5_04%2002%2014.pdf)

63	H	S7. Epidemiological studies on emergent contaminants	ITEM HS7. (STAGES workshop Pressures / Impacts page 13 <sup>6</sup> )
<b>O - Oil and gas industry (as far as not covered by above)</b>			
-	O	Main research need is under Theme H, MSFD Descriptor 8	ITEM H5.
<b>R - Radioactive substances</b>			
-	R	No priorities were selected due to limited impact at ecosystem level	

## 4. Strengthening the cooperation mechanisms

### Need for well-described and shared research needs

As described in the above sections, concerted action to close gaps in knowledge should be based on a shared understanding of priority science needs, both at the level of OSPAR, at regional and at sub-regional level. A process to deliver a research agenda involving OSPAR groups is in place.

### Strengthening the science-policy interface and effective use of internal and external funding mechanisms

OSPAR currently liaises with several existing networks and programmes to bring to the attention the priority research needs and/or develop projects to close gaps in knowledge. Relevant fora, programmes and networks include:

- EU – MSFD CIS – steering on support projects by the Project Co-ordination Group (PCG);
- EU – Horizon 2020 and Integrated Maritime Policy: maritime strategies for sea basins and their specific action lines<sup>7</sup>;
- (Member) States with EU support – Joint Programming Initiative Healthy and Productive Seas and Oceans (JPI Oceans<sup>8</sup>);
- International Council for the Exploration of the Sea (ICES)<sup>9</sup>;
- BONUS<sup>10</sup> – the 2010-2017 joint Baltic Sea research and development programme set up by Decision 862/2010 of the European Parliament and of the Council is working towards an extension of its geographic scope to include the North Sea for the next programming period from 2018;
- European Marine Board<sup>11</sup>.

It is expected that further strengthening of the EU MSFD CIS will include stronger arrangements for the Science-Policy Interface (SPI), starting with support for the better use of existing scientific knowledge (see *knowledge gate* below).

<sup>7</sup> <http://ec.europa.eu/programmes/horizon2020/en>

<sup>8</sup> [www.jpi-oceans.eu](http://www.jpi-oceans.eu)

<sup>9</sup> [www.ices.dk](http://www.ices.dk)

<sup>10</sup> [http://www.bonusportal.org/bonus\\_2010-2017](http://www.bonusportal.org/bonus_2010-2017)

<sup>11</sup> <http://www.marineboard.eu/>

The OSPAR Secretariat actively contributes to these networks and brings forward research needs based on this agenda.

Arrangements between OSPAR and ICES include a yearly work programme for developing advice within a fixed – and limited – budget. This also contains a medium-term advice part. Populating this part with medium-term science needs related to the OSPAR Science Agenda could strengthen the relationship with ICES and improve OSPAR's knowledge base.

Being successful in many – if not all – of these networks and programmes, depends on the initiative of Contracting Parties to bring together funds, which may be supplemented by the EU. This again could be inspired by the OSPAR Science Agenda.

### Development of a knowledge gate

With the involvement of the STAGES project the Eurocean Marine Knowledge Gate has been significantly updated, now version 2.0. This web based knowledge gate is a tool that provides an inventory of European and national funded marine science and technology projects and their knowledge outputs. It is freely accessible and regularly updated. The database currently contains 4385 projects. The information can be selected according to groups of end users (eg. environmental managers & monitoring), MSFD Region and MSFD Descriptors, amongst other selection criteria. Website: <http://www.kg.eurocean.org/>



Victoria House  
37-63 Southampton Row  
London WC1B 4DA  
United Kingdom

t: +44 (0)20 7430 5200  
f: +44 (0)20 7242 3737  
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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