Havsmiljöinstitutet

Swedish Agency for Marine and Water Management

Evaluation of the implementation of Ospar measures in Sweden

Havs- och vattenmyndighetens rapport 2016:23

Havs- och vattenmyndigheten
Datum: 2017-03-01

Omslagsbild:
ISBN 978-91-87967-34-4

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Förord

Havs- och vattenmyndigheten är en nationell förvaltningsmyndighet inom miljöområdet för bevarande, restaurering och hållbart nyttjande av sjöar, vattendrag och hav. Vårt uppdrag är att verka för att de generationsmål och miljökvalitetsmål som riksdagen har fastställt ska nås. Ett stöd i detta arbete är de regionala havsmiljökonventionerna, OSPAR och HELCOM som ger oss möjlighet att samordna våra beslut och åtgärder med andra länder för att skydda och minska påverkan på havsmiljön. OSPAR-konventionen är ett formellt samarbete mellan femton länder och EU. Samarbetets syfte är att skydda den marina miljön i Nordostatlanten (inklusive Nordsjön, Skagerrak och Kattegatt). Arbetet med att genomföra gemensamt antagna mål och strategier sker genom antagandet av beslut som är juridiskt bindande för avtalsparterna (dvs. måste införlivas i svensk rätt och eller annat sätt som säkerställer verkställande), eller genom antagandet av rekommendationer (ej juridiskt bindande) och andra överenskommelser.

Denna rapport presenterar resultat från en granskning av hur Sverige genomför de beslut, rekommendationer och andra överenskommelser som antagits av OSPAR. Laura Píriz från HaVs- och vattenmyndigheten har ansvarat för beställningen av uppdraget och medverkat i dess utformning. Rapporten belyser även hur OSPAR arbetet hänger ihop med EU:s havsmiljödirektiv och våra svenska miljömålsystem och hur de olika processerna kan stärka varandra. Rapporten ger oss också tankar och underlag som kan hjälpa oss att bygga upp ett uppföljningssystem för OSPAR relaterade åtgärder.

Granskning genomfördes av Havsmiljöinstitutet, genom Dr. Richard Emmerson, under 2016, utifrån då tillgänglig dokumentation och några intervjuer. Vi hoppas att rapporten skall utgöra en kunskapskälla och ett stöd för fortsatt genomförande av det vi kommer överens inom OSPAR och ett viktigt underlag för fortsatt utvärderings- och uppföljningsarbete för en långsiktigt hållbar förvaltning av hav och vatten.

För rapportens innehåll svarar författaren själv.

Göteborg 2017-03-01

Björn Sjöberg
Avdelningschef
Avdelningen för havs- och vattenförvaltning

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1. Summary

The adoption of measures to protect and conserve the marine environment of the North-East Atlantic is a field in which the OSPAR Commission has been working for over thirty years. OSPAR measures in the form of Decisions and Recommendations for the protection of the marine environment have often acted as a forerunner of European Union environmental action. Substantial progress has been made in addressing discharges, emissions and losses of hazardous substances, nutrients and radioactive substances. While these fields still remain relevant, OSPAR's work on measures has now moved on to focus on biological diversity.

Since 2011, the Swedish Agency for Marine and Water Management (SwAM) has been responsible for the coordination of Sweden's work within the OSPAR Convention for the protection of the marine environment of the North-East Atlantic. SwAM is also responsible for the implementation of the EU Marine Strategy Framework Directive (MSFD) to achieve good environmental status in Sweden's marine waters and for those national Environmental Quality Objectives most relevant to the aquatic environment.

This report examines and elaborates the contribution of the development and implementation of OSPAR measures to achieving good environmental status and moving towards Sweden's environmental quality objectives. Following a general background on OSPAR, MSFD and Sweden's system of environmental quality objectives, the development and history of OSPAR measures (decisions and recommendations) is described. The development of a methodology for evaluation of the implementation of OSPAR measures is presented. This methodology has then been used to guide an evaluation of the implementation of OSPAR measures in Sweden based on information report to OSPAR and available from national authorities. Finally a series of conclusions and recommendations are presented to guide future implementation work on OSPAR measures. It is clear that Sweden's engagement in OSPAR has been of benefit in promoting marine environmental protection both in Sweden and other countries sharing the marine waters that surround Sweden. Overall, Sweden has a strong track record of engagement in OSPAR work and in fulfilling its commitments and obligations. The report does, however, highlight a small number of long-standing measures where implementation has not been completed either because the requirements of the measure have not been met or because a full implementation has not been demonstrated in the information reported even though it has occurred. For more the recently adopted biodiversity measures the implementation process is still underway. The evaluation highlights a number of steps that could be taken to secure this legacy through improved information recording and also points towards areas where an improved national implementation process could assist OSPAR work.

The report recommends that SwAM promotes that any future measures adopted by OSPAR have a more clearly described regional coordination role in the context of MSFD. This can help build synergy and reciprocity between the two processes with OSPAR offering a regional coordination mechanism to support MSFD objectives and the legal framework of the MSFD providing a means to underpin work towards OSPAR's objectives. Alongside this efforts should continue to make use of OSPAR to pioneer new forms of action for which regional coordination would be of benefit (as has been the case in the past with hazardous substances and biodiversity, litter and noise), both within the context of MSFD and beyond. Increased recognition of the contribution of Sweden's engagement in regional sea cooperation (including through OSPAR) to the Swedish

system of environmental objectives would enhance understanding and profile of the regional sea work. An official description of how OSPAR and other regional sea work, such as through HELCOM, are seen to apply in areas where the convention areas overlap would help to guide work by other state authorities.

SwAM is recommended to continue Sweden's positive record of engagement in OSPAR work by ensuring that the quality of information provided on the implementation of measures is sufficiently detailed to provide a fully auditable record of Sweden's implementation of OSPAR measures. It is recommended that, for the avoidance of doubt, Swedish authorities reporting on implementation of OSPAR measures should always provide a national view on whether a measure has been fully implemented or whether work to implement the measure is still in progress.

Efforts to enhance the engagement of implementing bodies in work to implement OSPAR's measures need to be nurtured and supported to build the engagement of other relevant national authorities, county administration boards and municipalities. It is suggested to consider an improved information recording on the national implementation process for OSPAR measures. This would benefit the implementation process for the more recently adopted biodiversity measures. There may be synergies that could be developed with existing information systems developed in other contexts, such as VISS (developed by the Water Authorities for Water Framework Directive measures) or Skötsel DOS (developed by SEPA for measures in protected areas).

Within OSPAR, SwAM is invited to consider promoting approaches to develop a better shared understanding of how and when formal OSPAR decisions and recommendations should be developed which would help those Contracting Party delegates charged with the development of programmes and measures. SwAM is invited to propose that OSPAR work to develop its information systems includes the recording information on measures and their implementation. It is proposed that information on OSPAR measures compiled in spreadsheet form to support analysis in this project would provide a basis for a relational database on OSPAR measures. Building systems for reporting on implementation with improved content management by Contracting Parties would be beneficial to the OSPAR measures and actions programme (MAP). There may be benefits in coordinating this work with other Regional Sea Organisations.

To support work according its commitment to apply an ecosystem approach OSPAR should also continue to develop its evaluation of the implementation of measures in close association with the development of its monitoring and assessment work. SwAM is invited to make use of the framework for the evaluation of the implementation of OSPAR measures developed in this project to support discussion in OSPAR on future implementation of measures and its link to the evaluation of the effectiveness of measures in OSPAR monitoring and assessment work.

2. Introduction

Since 2011, the Swedish Agency for Marine and Water Management (SwAM) has been responsible for the coordination of Sweden's work within the OSPAR Convention for the protection of the marine environment of the North-East Atlantic[1]. SwAM leads Sweden's engagement in OSPAR including through fulfilling the role of head of the Swedish delegation within the OSPAR Commission. The OSPAR maritime area includes the Swedish part of the North Sea, specifically the Kattegat and Skagerrak. SwAM is also responsible for the implementation of the Marine Strategy Framework Directive (MSFD) and the Havsmiljöförordningen (Miljö- och energidepartement, 2010) in Sweden's marine waters where the North Sea region also includes the Öresund.

There are strong synergies between the MSFD and the work of the OSPAR Commission as a regional sea commission. The aim of the MSFD is to take the necessary measures to achieve or maintain good environmental status in the marine environment. The adoption of measures to protect and conserve the marine environment of the North-East Atlantic is a field in which OSPAR has been working for over thirty years. These synergies are recognized in the requirements for regional cooperation set out in Article 6 of the Directive, including through relevant regional organisations, such as OSPAR.

Sweden's national Environment Policy is guided by a series of Environmental Quality Objectives (Miljömål), which together have the aim of handing on to the next generation a society in which the major environmental problems facing Sweden have been solved. Several environmental quality objectives have direct relevance to the marine environment, particularly those relating to (i) a balanced marine environment, flourishing coastal areas and archipelagos, (ii) a non-toxic environment; and (iii) zero eutrophication.

OSPAR is now planning a gap analysis of how far OSPAR measures address pressures on the marine environment in order to inform its future work, including its coordination role with regard to the MSFD. Both in connection with this gap analysis and the handover of OSPAR responsibility from SEPA to SwAM, it is timely to consider the contribution that OSPAR measures have made to marine protection both regionally, in the North Sea and the North-East Atlantic area, and nationally to Sweden's environmental work.

Purpose and scope of the evaluation

The purpose and scope for this evaluation was defined by instructions from the Sweden's head of delegation to OSPAR and the working method was defined in collaboration between SwAM and the Swedish Institute for the Marine Environment (SIME).

The project considers how to link the measures adopted by OSPAR for the protection of the marine environment to the descriptors and targets established under the MSFD and to Sweden's national system of environmental quality objectives and how effective these OSPAR measures have been in Sweden for maintaining or improving the quality of the marine environment.

The overall aim has been to examine and elaborate the contribution of the development and implementation of OSPAR measures to achieving good environmental status and moving towards Sweden's environmental quality objectives.

[1] Before 2011 the Swedish Environmental Protection Agency (SEPA) was the national agency responsible for OSPAR.

The first stage of this work involved the development of a proposal for a framework for assessing how the implementation of existing OSPAR measures contributes towards MSFD objectives. This included the development of a draft format for collecting/ presenting the results of such implementation assessment to be included in the OSPAR measures and actions programme (MAP) as well as ideas on assessment method and roadmap. The work had the following starting points:

i. to systematically identify the way that existing OSPAR measures address relevant pressures and are related to and or supportive in achieving regional (North Sea) GES targets and Swedish MSFD targets (environmental quality norms)and relevant Swedish environmental quality objectives. This involves:
   a. aligning OSPAR measures (including those for biodiversity) with relevant Swedish environmental quality objectives and MSFD environmental quality norms
   b. collating what has been reported to OSPAR so far on Sweden's implementation of OSPAR measures identifying: applicability to Sweden, information on degree of implementation, gaps in implementation
   c. on the basis of the above identify OSPAR measures for further analysis.
ii. to test and refine the implementation assessment framework by application to relevant OSPAR measures in the Swedish context selected in consultation with SwAM.

The project has involved deskwork, interviews and meetings between March and December 2015. The majority of the work was carried out between August and December 2015. The project is mainly relevant to the Västerhavet (Skagerrak and Kattegat), which together form Sweden's part of the OSPAR maritime area. The project mainly considers OSPAR measures in the form of Decisions and Recommendations and not OSPAR other agreements.

Reading Instructions

Chapters 3 and 4 of the report provide a general background on OSPAR, MSFD and Sweden's system of environmental quality objectives followed by more extensive background information on OSPAR measures (decisions and recommendations). Chapter 5 reports on the development of a methodology for evaluation of the implementation of OSPAR measures. Chapters 6 and 7 summarise an evaluation of the implementation of OSPAR measures in Sweden. Chapter 8 provides a deeper evaluation of the implementation of two OSPAR measures. A more detailed compiling information from the evaluation is provided in at Annexes 4. A supporting spreadsheet compiled during the project is available on request from Havs- och Vattenmyndigheten (see Annex 3 for details). Chapter 8 provides a series of conclusions and recommendations to guide future implementation work on OSPAR measures. Conclusions and recommendations are also made which may be of relevance to the further development of an OSPAR measures and actions programme.

3. Background

OSPAR Convention

The 1992 OSPAR Convention established on-going cooperation between 15 European Governments[2] and the EU on the protection of the marine environment of the North-East Atlantic. OSPAR's work, however, started in 1972 at the time of the UN Conference on the Human Environment in Stockholm[3] with adoption of the Oslo Convention by a group of European states to address the increased concerns over the harmful effects of marine pollution from the dumping of wastes from ships and aircraft into the sea. In 1994 the Paris Convention was adopted addressing the prevention of marine pollution from land-based sources. Both the Oslo and Paris Conventions shared a similar marine area and a joint secretariat.

In 1992 the year of the first UN Conference on Environment and Development in Rio de Janeiro (the so-called "Earth-Summit") the two conventions were unified, up-dated and extended by the 1992 OSPAR Convention. A new annex to the Convention on the protection and conservation of biodiversity and ecosystems (Annex V) was adopted in 1998 to cover non-polluting human activities that can adversely affect the sea. This annex was seen as a regional instrument to support Contracting Parties in fulfilling their obligation under the Convention on Biological Diversity to develop strategies, plans or programmes for the conservation and sustainable use of biological diversity.

Box 3.1. OSPAR Convention Article 2 – General Obligations

(a) The Contracting Parties shall, in accordance with the provisions of the Convention, take all possible steps to prevent and eliminate pollution and shall take the necessary measures to protect the maritime area against the adverse effects of human activities so as to safeguard human health and to conserve marine ecosystems and, when practicable, restore marine areas which have been adversely affected.
(b) To this end Contracting Parties shall, individually and jointly, adopt programmes and measures and shall harmonise their policies and strategies.

In 2010 the OSPAR Ministerial Meeting in Bergen, Norway adopted a North East Atlantic Environment Strategy (OSPAR Commission, 2010a[4]). This affirmed that the OSPAR Commission would facilitate the coordinated and coherent implementation of the Marine Strategy Framework Directive using its shared expertise, mechanisms and structure as a strong regional platform.

The North East Atlantic Environment Strategy reconfirmed OSPAR's strategic objectives in five thematic areas, which are each addressed by a separate thematic strategy (Box 3.2).

[2] The fifteen Governments are Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

[3] The UN Conference on the Human Environment adopted a series of common principles common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment.

[4] OSPAR Commission (2010a). North-East Atlantic Environment Strategy. OSPAR Commission other agreement 2010-03.

Box 3.2: The OSPAR Commission's strategic objectives for the five Thematic Strategies of the North-East Atlantic Environment Strategy (Agreement 2010-03)

Eutrophication
To combat eutrophication in the OSPAR maritime area, with the ultimate aim to achieve and maintain a healthy marine environment where anthropogenic eutrophication does not occur.

Eutrophication
To combat eutrophication in the OSPAR maritime area, with the ultimate aim to achieve and maintain a healthy marine environment where anthropogenic eutrophication does not occur.

Hazardous Substances
To prevent pollution of the OSPAR maritime area by continuously reducing discharges, emissions and losses of hazardous substances, with the ultimate aim to achieve concentrations in the marine environment near background values for naturally occurring substances and close to zero for man-made synthetic substances.

Offshore Oil and Gas Industry
To prevent and eliminate pollution and take the necessary measures to protect the OSPAR maritime area against the adverse effects of offshore activities by setting environmental goals and improving management mechanisms, so as to safeguard human health and to conserve marine ecosystems and, when practicable, restore marine areas which have been adversely affected.

Radioactive Substances
To prevent pollution of the OSPAR maritime area from ionising radiation through progressive and substantial reduction of discharges, emissions and losses of radioactive substances, with the ultimate aim of concentrations in the environment near background values for naturally occurring substances and close to zero for artificial radioactive substances.

Work under each strategy addresses:

i. the OSPAR Convention's general obligations of protecting the marine environment (Article 2) by the Contracting Parties adopting programmes and measures, jointly and individually, and harmonising their policies and strategies.
ii. The OSPAR Conventions obligations on the development of regular joint assessments of the quality status of the marine environment (Article 6), including evaluation of the effectiveness of measures taken and planned for the protection of the marine environment and the identification of priorities for action.

Work on assessment and related monitoring is planned through the OSPAR Joint Assessment and Monitoring Programme (JAMP, currently OSPAR other agreement 2014-2). For the purposes of the assessment and monitoring the OSPAR maritime area five regional divisions of the OSPAR maritime area have been defined (OSPAR Regions 1 to 5). At the time of finalizing this report OSPAR is examining the possible renaming of the Joint Assessment and Monitoring Programme as the Joint Assessment and Monitoring Strategy (JAMS). This is not yet confirmed.

The relationship and overall flow of work between management (development, adoption and implementation of management measures) and monitoring and assessment work has been represented through a stylized OSPAR policy cycle (Box 3.3). Specification of information needs arising from management processes and work to address these information needs are the key drivers of this cycle.

Box 3.3: OSPAR policy cycle.

SwAM is the leading national authority responsible for Sweden's engagement in OSPAR and provide the Swedish head of delegation to the OSPAR Commission. SwAM coordinates Sweden's OSPAR engagement across a range of national agencies. Before 2010, the lead OSPAR role was the responsibility of the Swedish Environmental Protection Agency. SwAM's plan for work within OSPAR is published on the SwAM website (Havs- och vattenmyndigheten, 2013a) and updated annually.

EU Marine Strategy Framework Directive

The Marine Strategy Framework Directive (MSFD) adopted by the European Council in May 2008 (2008/56/EC) has the aim of establishing a framework within which Member States shall take the necessary measures to achieve or maintain good environmental status in the marine environment by the year 2020 at the latest.

The MSFD represents the environmental pillar of the broader EU Integrated Maritime Policy, endorsed by the European Council in December 2007.

The MSFD focuses Member States of the European Union on the effects of marine regulation through binding them to a measure of health in marine ecosystems. This is good environmental status (GES)[5] at regional or subregional level, which is defined by reference to 11 descriptors of normative status (see Box 3.4). Each Member State is required to define marine strategies for managing human activities so as to ensure GES, working where necessary in coordination with neighbouring Member States sharing the same sea region. The Directive defines a series of marine regions and subregions with

[5] Good Environmental Status is defined as the environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy and productive within their intrinsic conditions, and the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations.

Sweden's marine waters falling in the North-East Atlantic Region and the Greater North Sea subregion.

The marine strategies that Member States must develop and implement involve a series of steps to be repeated at a six yearly interval (see Figure 3.1), which in practice support an iterative progression towards good environmental status.

Box 3.4. Main issues covered by the MSFD Descriptors for good environmental status (see Annex 1 of EU Directive 2008/56/EC).

1. Biodiversity is maintained
2. Non-indigenous species do not adversely alter the ecosystem
3. Populations of commercial fish stocks are healthy
4. Marine Food Webs: elements of foods webs ensure long-term abundance and reproduction
5. Eutrophication is minimised
6. Sea-bed integrity ensures functioning of the ecosystem
7. Permanent Alteration of hydrographic conditions does not adversely affect the ecosystem
8. Contaminant concentrations have no pollution effects
9. Contaminants in seafood are at safe levels
10. Marine Litter does not cause harm
11. Introduction of energy (including underwater noise) does not adversely affect the ecosystem

Figure 3.1. Schematic representation of the EU Marine Strategy Framework Directive implementation cycle.

Following on from the requirements of Article 6 of the Directive on Regional Coordination, European Union Member States who are Contracting Parties to the OSPAR Convention are making use of framework of OSPAR to coordinate their work on implementation of the MSFD.

In Sweden the MSFD is implemented through the Havsmiljöförordningen (Miljö- och energidepartement (2010)). This identified SwAM as the competent authority in Sweden for the implementation of the Directive. SwAM has defined the Swedish marine strategy by means of a regulation and a series of reports entitled God Havsmiljö 2020. The regulation (Havs- och vattenmyndigheten, 2012a) sets out the characteristics of GES in Swedish marine waters, and related targets, indicators and environmental quality norms. The report series covers the initial assessment, definition of good environmental status, monitoring programmes and programmes of measures (Havs- och vattenmyndigheten, 2012b, 2012c, 2014, 2015).

The Swedish Environmental Objectives System

In 1999 the Swedish Parliament adopted a set of environmental quality objectives (Regeringens proposition 1997/98:145) to give a clear structure to environmental action, which led to what is now called the environmental objectives system. The environmental objectives system is headed by a generational goal that is intended to guide environmental action at every level of society (see Box 3.5).

Box 3.5. Swedish system of environmental quality objectives: the generational goal

To hand on to the next generation a society in which the major environmental problems facing Sweden have been solved, without increasing environmental and health problems beyond Sweden's borders.

The generational goal means that the conditions for solving environmental problems are to be met within one generation and that environment policy should be directed towards ensuring that:

- Ecosystems have recovered, or are on the way to recovery, and their long-term capacity to generate ecosystem services is assured.
- Biodiversity and the natural and cultural environment are conserved, promoted and used sustainably.
- Human health is subject to a minimum of adverse impacts from factors in the environment, at the same time as the positive impact of the environment on human health is promoted.
- Materials cycles are resource-efficient and as far as possible free from dangerous substances.
- Natural resources are managed sustainably.
- The share of renewable energy increases and use of energy is efficient, with minimal impact on the environment.
- Patterns of consumption of goods and services cause the least possible problems for the environment and human health.

To attain the generational goal, national Environmental Quality Objectives (EQOs – miljömålen) have been formulated for 16 issues (see Box 3.6). The set of EQO's was initially adopted by the Swedish Parliament in 1999. The EQOs are now set out in Government Bill 2004/05:150 Environmental Quality Objectives – A Shared Responsibility which was adopted by the Riksdag in November 2005 (Regeringens Proposition 2004/05:150).

Box 3.6. Sweden's Environmental Quality Objectives.

• Reduced climate impact • Clean air • Natural acidification only • A non-toxic Environment • A protective ozone layer • A safe radiation environment • Zero eutrophication • Flourishing lakes and streams • Good quality ground water	• Thriving wetlands • A balanced marine Environment, flourishing coastal areas and archipelagos • Sustainable forests • A varied agricultural landscape • A magnificent mountain landscape • A good built environment • A rich diversity of plant and animal life

Note: SwAM has lead responsibility for the environmental quality objectives: zero eutrophication; a balanced marine environment, flourishing coastal areas and archipelagos, and flourishing lakes and streams.

The EQO system also includes milestone targets (etappmål) which are intended to direct action towards the changes in society that are needed in order to achieve the environmental quality objectives and the generational goal. Milestone targets are decided by the government or the Swedish Parliament (Riksdag) and can be relevant to one or more environmental quality objectives. The milestone targets are intended to show what options are open to Sweden on a specific issue and to pinpoint focus areas for action.

The Environmental Quality Objectives system is designed to provide an overall framework for Sweden's environmental work. Meeting the environmental objectives is seen to require a concerted effort across the whole of society: public agencies, business, stakeholder organisations and individuals. A total of 25 government agencies have explicit responsibilities in the environmental objectives system. Those environmental quality objectives of most relevance to the marine environment are the responsibility of SwAM and SEPA. Within their own operational areas, they are all required to promote the achievement of the generational goal and the environmental quality objectives and to propose measures to further develop environmental action where necessary.

Sweden's environmental objectives are also dependent on action at EU level and around the world, which calls for both an ambitious environmental policy in Sweden but also an active leadership by Sweden on environmental issues with the EU, UN and other international organisations and vice versa. The environmental objectives provide a basis for Sweden's reporting with regard to its obligations under the Convention on Biological Diversity as well as under other international conventions such as the UN Framework Convention on Climate Change and RAMSAR Convention.

Thus Sweden's engagement in OSPAR work as well as in developing implementation of the MSFD can be seen as action that contributes towards its internal policy of environmental quality objectives.

Environmental Quality Objectives sit alongside, but should not be confused with, more specific and binding environmental quality norms (miljökvalitetsnormer), which were introduced by the Swedish Environmental Code in 1999 and set out the environmental quality to be achieved by a specific time or as a result of membership of the European Union. An environmental quality norm may, for example, lay down the maximum allowable concentration of a substance in air, soil or water. Environmental quality norms can be introduced nationwide or for particular geographical areas, such as counties or municipalities. Most of the environmental quality norms are based on requirements on various European Union directives. Environmental quality norms for the marine environment have been set out by SwAM in Regulation

HVMFS 2012:18 (Havs- och Vattenmyndigheten, 2012a) and 2013:19 (Havs- och Vattenmyndigheten, 2013b) to implement the requirements of the EU MSFD and the EU WFD respectively.

SEPA coordinates a periodical deeper evaluation of the system of environmental quality objectives which is prepared and published at least once in each term of government (Naturvårdsverket, 2015). SEPA also prepares an annual evaluation of the possibilities for achieving the objectives and the milestone targets and what has happened in terms of progress which is reported this to a cross-party committee on environmental quality objectives that advises the government on how the objectives can be achieved and (in cooperation with agencies) delivers proposals on strategies.

4. OSPAR Measures

OSPAR Decisions, Recommendations and other agreements

Since the mid-1970s work with the frame of the OSPAR Convention 1992 (including the former Oslo and Paris Conventions) has established internationally agreed measures for the purpose of the protection of the marine environment in the North East Atlantic.

OSPAR measures can take the form of Decisions, which are legally binding under international law, or Recommendations. In accordance with Article 13 the Convention these measures are usually adopted unanimously which guarantees broad acceptance of those measures and their implementation. Should unanimity not be attainable, the OSPAR Commission may nonetheless adopt decisions or recommendations by a three-quarters majority vote of the Contracting Parties. This option has only been invoked on rare occasions. Decisions Recommendations and other agreements applicable within the framework of the OSPAR Convention (the OSPAR acquis) are listed in OSPAR Commission (2015a), which is updated by the OSPAR Secretariat and periodically reviewed by the OSPAR Commission. OSPAR Commission (2015b), which forms a starting point for this analysis, provides a regional overview of the measures already agreed within OSPAR that support the achievement of good environmental status in marine waters under the MSFD and describes further the development of these exiting OSPAR measures. An overview of the measures, defined as decisions and recommendations, adopted by the OSPAR Commission through its history in relation to the different fields of OSPAR's work is given in Figure 4.1. The figure demonstrates the different focuses of OSPAR work especially the dominance of work on measures to address pollution in the 1980's and 1990's and the shift in focus towards measures worth regard to biological diversity since 2010.

The OSPAR Commission also adopts 'other agreements' e.g. for setting guidance for the implementation of decisions and recommendations or the Convention itself, or establishing programmes for further work on (a set of) OSPAR measures, and any actions recommended to other international organisations.

Life cycle of an OSPAR measure

A schematic illustration of the life-cycle of an OSPAR measure is given in Figure 4.2. The development of an OSPAR measures begins with a justification, which should have as its basis text in the OSPAR Convention itself. Within this overall scope further justification may be provided by the North-East Atlantic Strategy and, additionally, through prior agreements on OSPAR programmes, e.g. in the form of action plans. The OSPAR Commission works on the basis of lead countries taking work forward so such a justification is usually presented by one or more Contracting Parties or on occasions one of the observer organisation with the clear support of at least one Contracting Party. It is well-established practice that lead countries first produce a background document on a certain problem that needs resolution in the form of a measure. Further justification, if necessary, and proposals for the scope and form of measures developed by one or more lead countries are discussed and refined in the relevant working groups and / or committees, and are then finally adopted by the OSPAR Commission at its annual meeting. On the basis of an agreed background document or further justification document, the lead country then comes up with a proposal for a draft recommendation or decision which is first considered by the relevant thematic committee

and when considered ready forwarded to the OSPAR Commission with a recommendation for adoption at its annual meeting in June each year.

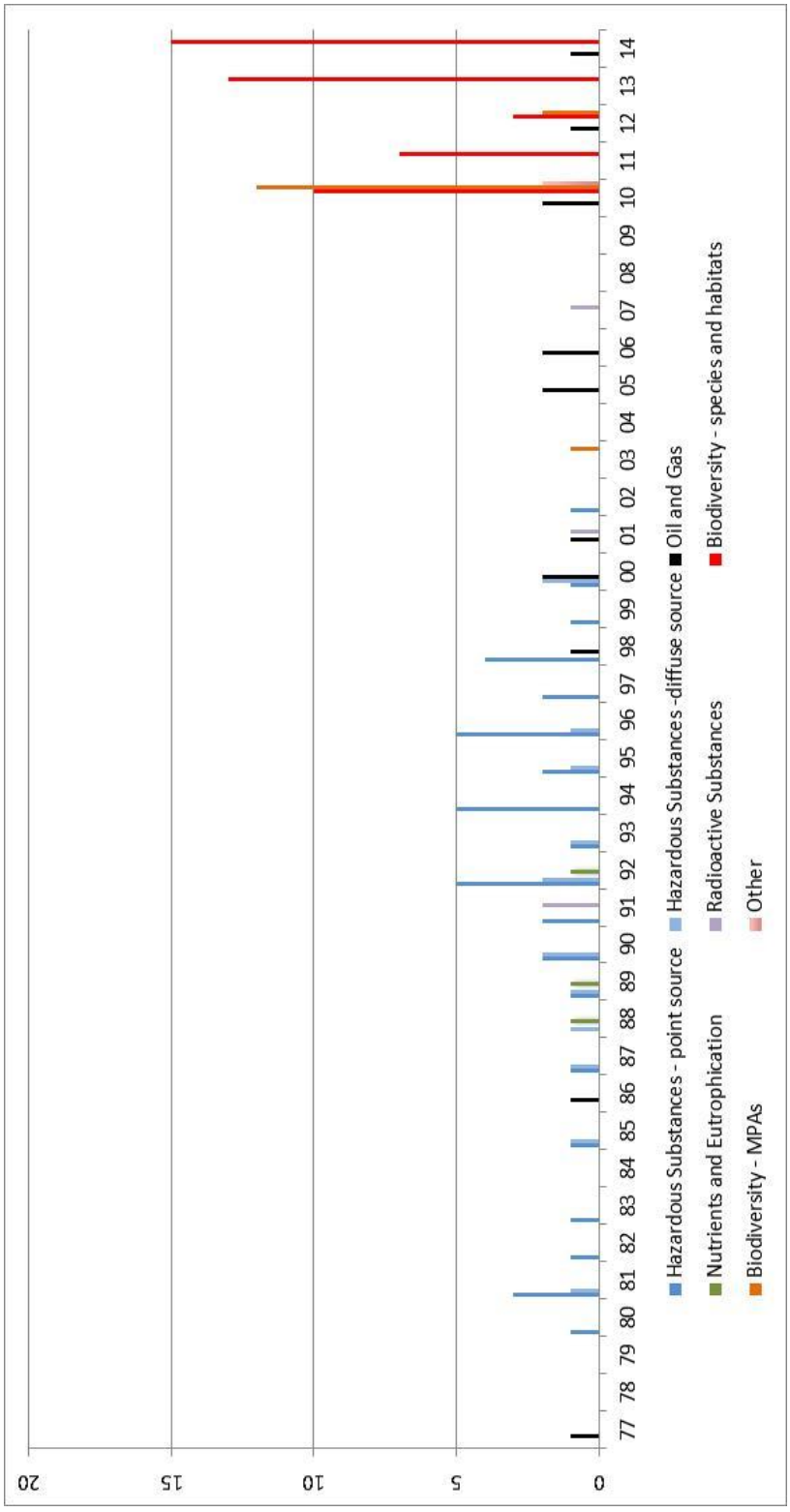

Figure 4.1. Overview of the measures adopted by the OSPAR Commission (1977 to 2014) in relation to the different thematic areas of OSPAR's work. This is based upon measures (decisions and recommendations) included in the OSPAR Commission 2015b and does not include measures adopted by set aside before this.

Figure 4.2 Life cycle of an OSPAR measure.

Prior to consideration for adoption the OSPAR Commission normally carries out a legal and linguistic review of the proposed measure through a subsidiary body (Jurists and Linguists) comprising legal representatives from the Contracting Parties.

A guidance document has been agreed (OSPAR Commission, 2004), with the status of an *other agreement*, to guide the preparation of measures and background documents. This guidance mainly addresses issues concerned with the drafting of measures with there being no guidance on the scope and purpose of application of measures. OSPAR measures can, and have been, attribute to even a single decision reached by the Commission and recorded in the summary record (meeting record) of the meeting. However, the guidance document sets out how measures should be more substantive with recitals, definitions, descriptions of the purpose and arrangement for reporting on the implementation of the measure. The trend has been towards decisions and recommendations that include numerous actions.

OSPAR Implementation reporting

The OSPAR Convention (Article 22) requires that the Contracting Parties shall report to the OSPAR Commission at regular intervals on:

a. the legal, regulatory, or other measures taken by them for the implementation of the provisions of the Convention and of decisions and recommendations adopted thereunder, including in particular measures taken to prevent and punish conduct in contravention of those provisions;
b. the effectiveness of the measures referred to in subparagraph (a) of this Article;
c. problems encountered in the implementation of the provisions referred to in subparagraph (a) of this Article.

Consequently when they draw up draft OSPAR decisions or recommendations, lead countries also develop proposals for the scope and requirements of implementation reporting on the measure concerned. The requirements for implementation reporting are

formalised in an implementation reporting format which is attached to each decision or recommendation. The text of the decision or recommendation will specify the time frame for implementation reporting of each measures normally by indicating when the first reporting back to the OSPAR Commission (in practice to the OSPAR Secretariat) should take place and how frequently thereafter further reports should be submitted. Implementation reporting on individual, or where appropriate, a set of measures is usually carried out every 3–6 years.

The requirements of OSPAR implementation reporting are tailored tightly to the scope and content of the measures can vary quite markedly both between and within thematic areas. For some measures the information that is required is limited to administrative details, such as whether the measures has been implemented and what administrative steps have been taken. For other measures the implementation reporting requirements have extended from the administrative implementation into more detailed technical implementation and effectiveness assessment. A small number of measures are more closely linked to other OSPAR data reporting programmes (monitoring etc.)

Evaluation of OSPAR Implementation Reporting

Article 23 of the OSPAR Convention deals with the evaluation of the implementation reporting by Contracting Parties as follows: The OSPAR Commission shall:

a. on the basis of the periodical reports referred to in Article 22 and any other report submitted by the Contracting Parties, assess their compliance with the Convention and the decisions and recommendations adopted thereunder;

b. when appropriate, decide upon and call for steps to bring about full compliance with the Convention, and decisions adopted thereunder, and promote the implementation of recommendations, including measures to assist a Contracting Party to carry out its obligations.

Article 23 is implemented by the OSPAR thematic committees, which are tasked with organising evaluations of the implementation reporting from Contracting Parties. Generally a lead country or an expert panel will review the reports submitted by Contracting Parties and prepare a draft implementation overview assessment for consideration at the Committee meeting following the deadline for implementation reporting. The Committee will agree the conclusions of the implementation overview assessment and when it is ready forward a recommendation to the OSPAR Commission that the assessment report should be published on the OSPAR website.

The conclusions of implementation overview assessments may include:

a. identification of Contracting Parties failing to report on implementation;

b. conclusions on the state of play with implementation, both by specific Contracting Parties and across the OSPAR Convention area as a whole. This may cover both the degree of implementation and the effectiveness of implementation;

c. conclusions on the information provided by Contracting Parties and improvements needed to implementation reporting. This can be either at the level of requesting further information from specific Contracting Parties or at the collective level the revision of the requirements of implementation reporting;

d. conclusions on the continuation of implementation reporting including whether a measure has been fully implemented by Contracting Parties and implementation can be ceased. Decisions on the cessation of implementation reporting are generally forwarded to the annual meeting of the OSPAR Commission for agreement. The

cessation of implementation reporting is just that and does not imply that the measure no longer applies (see considerations on setting aside measures below).

As OSPAR is generally applied as "soft law" the review of implementation provides one of the key means of securing implementation of OSPAR measures (a rather softer form of enforcement) through seeking to ensure a consistent level of implementation across the Contracting Parties. However, for the implementation of Convention itself and OSPAR Decisions, which are binding in international law there is the possibility of recourse to arbitration if disputes arise over implementation. Article 32 of the OSPAR Convention contains detailed dispute settlement procedures relating to the interpretation or application of the Convention, which could be invoked should a dispute arise between Contracting Parties that cannot be settled otherwise. In view of the legally-binding status of OSPAR Decisions in respect of international law disputes over the non-compliance of a Contracting Party with an OSPAR Decision could, in theory, lead to arbitration by the Permanent Court of Arbitration. To date this option has never been invoked in the case of non-compliance with an OSPAR Decision, although a case has been brought by Ireland to the Permanent Court of Arbitration regarding a dispute with the United Kingdom over the implementation of Article 9 of the OSPAR Convention concerning freedom of information (see McMahon, 2009).

"Setting aside" measures

Following a review of measures in 2010, OSPAR agreed on a list of decisions and recommendations, as well as other agreements, that were considered fulfilled or overtaken by measures adopted at national level or within other forums and therefore not followed by OSPAR anymore (OSPAR Commission, 2015a). As a consequence, while being set aside, they were retained as part of OSPAR's 'acquis'.

In deciding upon how to describe the set aside measures OSPAR took into account legal advice that highlighted that a fully implemented measure may need to remain extant for the provisions therein to remain alive. While it could be possible to describe measures as obsolete and revoke them the crucial question is whether a measure is still relevant to retain in an OSPAR context. This would involve a careful and concrete consideration of each measure (what is the status of its implementation, is it covered by other international legislation, has it become obsolete, what are the practical consequences (legal, administrative or otherwise)). Revoking a measure would mean that references to a revoked instrument in other extant instruments would need to be amended accordingly. Thus, while those OSPAR measures that have been deemed to be set aside may include measures that have become obsolete because their provisions have been overtaken by other events, such as the requirements of EU legislation, this cannot be taken as read for all measures in this category. It should also be noted that while Norway and Iceland are members of the European Free Trade Area, EU legislation is not always applied.

Interaction between OSPAR measures and EU legislation

The implementation of the OSPAR Convention and OSPAR measures can be considered as complicated by the interaction with EU legislation, which has increasingly covered the issues addressed by the OSPAR Convention, as well as nationally established objectives. Moving towards a clearer process of OSPAR work within the more legally binding context

of EU law is important. The following areas of OSPAR work can be considered as covered by EU legislation:

a. Eutrophication: the aims and purposes of OSPAR measures to combat eutrophication are largely covered by measures under existing EU legislation such as the Urban Waste Water Treatment Directive (91/271/EEC), the Nitrates Directive (91/676/EEC), the Industrial Emissions Directive on integrated pollution prevention and control (2010/75/EU) which are regarded as so-called basic measures for the implementation of the Water Framework Directive (2000/60/EC). The National Emission Ceilings Directive (2001/81/EC) is also important for the protection of the marine environment against emissions of NOx to air. With regard to agricultural sources of nutrients the Rural Development Regulation (EC) No 1698/2005 supports funding of measures for environmental protection.

b. Hazardous Substances – land-based point sources of pollution: The discharges and emissions of the targeted substances from industrial installations relevant to the sectors are also covered by the Industrial Emissions Directive 2010/75/EU (integrated pollution and prevention control).

c. Hazardous substances – diffuse sources of pollution: For certain the OSPAR measures on diffuse (or multiple) sources of OSPAR priority chemicals there is corresponding EU legislation for marketing and use chemicals under the REACH (EC) No 1907/2006 Regulation, under pesticides legislation (Directives 91/414/EEC and 2009/128/EC, Regulations EC 1095/2007, EC 1107/2009, EU 283/2013 and EU 284/2013) and, concerning marketing and use of biocidal products Regulation (EU) No 528/2012. There are also corresponding regulations under UNECE or UNEP.

It should, however, be noted that Norway and Iceland are Contracting Parties to OSPAR and while they are members of the European Free Trade Area, EU legislation is not always applied.

In fields where OSPAR work has become covered by EU legislation (such as those above), OSPAR has generally adopted a role of review with special emphasis on the marine environment, including through monitoring and assessment.

5. Methodology for evaluating how implementation contributes to OSPAR and MSFD Objectives

Development of an evaluation methodology

Following discussions on how to achieve a better coordination of work between the EU MSFD common implementation process and the Regional Sea Commissions' work, the OSPAR Intersessional Correspondence Group on the MSFD (ICG-MSFD) began discussing the development of an OSPAR measure and actions programme (MAP) during 2014/15.

The proposal for this initiative arose from consideration of OSPAR's role as a coordinating platform for the MSFD with regard to the development of programmes of measures (Article 13). This discussion highlighted that the development and implementation of measures had been scattered across the thematic committees, lacking an overarching, integrative planning instrument that would guide the identification of needs, development, timing and implementation control of measures. It was recognised that despite this OSPAR had built up an extensive record of jointly developed measures to combat pressures on the marine environment and that measures are at the core of the OSPAR convention's mandate. An actions and measures programme was seen as a means to internally structure OSPAR's approach to measures and externally enhance the visibility of what OSPAR has achieved and is currently working on. This was contrasted with the intensive and successful engagement OSPAR has had in coordinating assessment and monitoring activities through the Joint Assessment and Monitoring Programme (JAMP).

Early discussions on the development of a MAP identified the need for a common implementation assessment of existing OSPAR measures, given that knowledge on the effectiveness of existing OSPAR measure is a pre-requisite for deciding on whether any further measures are needed. Additionally it can be recognised that such an assessment can provide a basis for:

- enhancing the visibility of the OSPAR acquis and of ongoing developments by considering measures under a common roof across OSPAR thematic areas;
- highlighting gaps in activity related to particular pressures and enable the deduction of any additional measures to be developed and/or coordinated;
- serving as a planning resource and scheduling tool for coordination under the MSFD and as joint documentation tool for the purpose of Art. 13 reporting.

Although the OSPAR Quality Status Report 2010 had been structured around an evaluation of the overall effectiveness of management measures under each OSPAR strategy and area of interest, it was recognised that a more specific methodology for the evaluation of how measures address environmental pressures was currently lacking in OSPAR. SwAM contracted Havsmiljöinstitutet to begin the development of a framework for an implementation evaluation of OSPAR measures with a view to stimulating thinking on what would be an appropriate framework for the evaluation of the existing measures under the convention. An initial proposal for possible implementing evaluation framework was developed during March 2015 and is at

Annex 2. Work was paused when the framework was submitted for consideration at the ICG-MSFD meeting in April 2015.

The initial framework methodology was submitted to the ICG-MSFD meeting under the title "Starting Point for evaluation of OSPAR measures" (See Annex 2) recognising that it needed to be developed further on the basis of discussions with representatives from the other Contracting Parties who would be expected to apply the evaluation.

The initial proposal for the evaluation framework consists of the following steps (see Box 5.1):

Box 5.1. Starting Point for evaluation of OSPAR measures

1. Characterisation of OSPAR measure
    a. OSPAR objective, MSFD Descriptor, Swedish environmental quality norm,
    b. environmental objective
    c. activities/pressures/features addressed
    d. key types of measure (as used in EU reporting)
    e. types of physical controls/actions
    f. links to EU or other international measures
2. Progress in implementation
    a. state of implementation
    b. methods of implementation
    c. effectiveness toward environmental objectives
    d. linking to environmental improvements
3. Expected effectiveness when fully implemented
    a. to what extent would full implementation be in line with GES?
    b. are there further actions needed to address sources of the pressure?

The following considerations guided the development of the framework:

- to use the OSPAR acquis as a starting point,
- the need to be relevant for OSPAR-wide use and provide the basis for a common OSPAR decision-support tool and audit trail for decision-making on the development of programmes and measures;
- the need to be relevant to MSFD and to take into account relevant terminology and categorisations introduced within the MSFD implementation framework. Categorisations within framework makes use of OSPAR thematic vocabulary and the vocabularies and reporting categories developed within the MSFD – Common Implementation Strategy for the first cycle of MSFD reporting on assessment, indicators, targets and measures;
- that it would be applied through an expert judgement approach, drawing on knowledge of OSPAR assessments and evaluations and other assessments at regional and national scale;
- that there will be limitations in data availability and accessibility
- acting as a means of capturing clear messages on the work that OSPAR has so far done with its work on measures and the identification of the need for further measures.

Evaluation of the implementation of OSPAR measures in Sweden

Alongside the development of the evaluation methodology SwAM instructed Havsmiljöinstitutet to develop an evaluation of Sweden's implementation of OSPAR measures. A purpose of this implementation evaluation can be seen as building knowledge on Sweden's earlier work in applying OSPAR measures that can help to guide SwAM's work in this area in the future. Given the synergy with the development of a regional implementing evaluation framework, the implementation evaluation has been developed guided by the proposed framework and provides a test of the methodology.

The implementation evaluation is described as follows: Chapters 6 (Characterisation of the measures), Chapter 7 (Implementation in Sweden) and Chapter 8 (Deeper analysis of selected measures). It was recognized at the outset that application of the evaluation framework in a national context was a different exercise to the regional exercise between Contracting Parties for which it has originally been prepared. The opportunity was taken to also consider the linkages between OSPAR measures and the Swedish system of Environmental Quality Objectives (see Chapter 6).

Information on each measure relevant to the evaluation was compiled in a supporting excel spreadsheet[6]. The basis for this was the list of OSPAR measure (decisions and recommendations) in the OSPAR Acquis (OSPAR Commission, 2015a). The information provided in the OSPAR acquis has also been included in the spreadsheet. This has been extended through compiling information relevant to the application of the evaluation framework. The full list of information categories for each measure is given in Table 5.2. This has been implemented, where possible, for measures relevant to hazardous substances, eutrophication and radioactive substances. Information on measures on biodiversity protection was primarily limited to their characterization, given that there has only been one round of implementation reporting in these measures and that the OSPAR Intersessional Correspondence Group on Protection of Species And Habitats (ICG-POSH) is currently engaged in a process to consider the implementation of these measures. Although information was collated on the measures for radioactive substance they were not a major focus of this work. Measures relating to the offshore oil and gas industry do not apply in Swedish waters as there is no offshore oil and gas industry.

Table 5.2. Information categories used for evaluating each measure.

OSPAR measure	Number	
	Title	
Information from OSPAR Acquis	OSPAR Regions where measure applies	
	BAT/BEP	
	Type of actions in the measure	
	Other remarks (e.g. targeted substances, sectors, uses)	
	Environmental target (P/S)	
	Implementation reporting (cat.)	
MSFD	Descriptor	

[6] Available on request from Havs- och Vattenmyndigheten (see Annex 3 for details).

MSFD Implementation in Sweden	Characteristics that represent GES (De förhållanden som kännetecknar god miljöstatus)	
	Indicators for assessing the characteristics) (Indikatorer för att bedöma de förhållanden	
	Environmental targets (miljökvalitetsnormer)	
Svenska Miljömålsystem	Environmental Quality Objective (Miljökvalitetsmålen)	
	Generational goal (Generationsmålet)	
	Milestone target (Etapmål)	
OSPAR	NEAES Strategic Objective	
	NEAES Operational Objective	
	NEAES Timeframe and Implementation	
	Common Indicator	
EU Reporting	Key type of measure (KTM as used in EU reporting)	
	Pressure addressed	
	Ecosystem component	
	Activities/Sectors	
	Physical controls or actions	See Box 6.3
	Supplementary Actions	See Box 6.3
	Is pressure/ component also covered by EU International measures	
Progress in Implementation i Sverige	Last reported information on implementation (where necessary supplemented by information from earlier reporting)	
	Link to OSPAR implementation assessment	
	Relevant in Sweden	
	State of implementation at OSPAR level (O) and according to Swedish reporting (S)	1a – fully implemented, 1b – party implemented, 1c – not implemented
	Instruments used for implementation	
	Gaps in implementation	
	Progress toward environmental objectives (if included in implementation reporting)	
	Links to environmental status	
Expected effectiveness of full implementation	Effectiveness of full implementation	Applied only for deeper analysis in Chapter 8
	Proportion of excess levels of pressure to be addressed by the measure	
	Expected effect on ecosystem feature	
	Further actions needed so pressure or feature is in line with GES	

Limitations in applying the framework methodology

It should be noted that the implementation evaluation framework was developed for regional application within the OSPAR context and that there are some differences in applying the framework for implementing evaluation within a national context. Therefore some modifications have been made in applying the evaluation to consider the implementation of OSPAR measures in Sweden. These are remarked on in the Chapters 6 and 7.

As recognized when developing the framework there are limitations in characterizing the relationships between pressures and impacts in the marine environment as well as data on the incidence, extent and intensity of pressures and their impacts. The use of expert-judgement guided by the best-available data and information is therefore needed in applying any such framework.

6. Summary of Implementation Evaluation Results: Linking OSPAR measures to OSPAR, MSFD and Sweden's Objectives for Environmental Quality

This chapter reports on the first part of the Swedish implementation evaluation developed through the application of the proposed framework described in Chapter 5. The information in the tables presented in this Chapter summarises information compiled in supporting excel spreadsheet (see Annex 3 for details).

Characterisation of OSPAR measures

The OSPAR measures (Decisions and Recommendations) adopted in each of OSPAR's thematic areas that currently form part of the OSPAR acquis are summarised in Box 6.1. It should be noted that measures in the form of Decisions and Recommendations represent only one of the means that the OSPAR Commission has taken towards achieving its strategic objectives.

Box 6.1. Summary of OSPAR measures under the OSPAR acquis and their relevance to Sweden

Biodiversity

OSPAR List of Threatened and/or declining species and habitats
42 species (15 are relevant in Swedish waters)
16 habitats (9 are relevant in Swedish waters)
58 species and habitats (24 relevant in Swedish OSPAR waters)

By 2016 OSPAR has adopted:

- 51 Recommendations covering 54 species and habitats
- 38 species are addressed by 35 Recommendations (14 species covered by 13 Recommendations are relevant in Swedish waters)
- 16 habitats are addressed by 16 Recommendations (9 habitats covered by 9 Recommendations are relevant in Swedish waters)
- one Recommendation that OSPAR species and habitats are addressed in Environmental Impact Assessment

By 2016 4 species and habitats had not been directly addressed by an OSPAR measure (Azorean Barnacle, Dogwhelk, houting, Bluefin tuna,)

Marine Protected Areas
In 2015 OSPAR has adopted

- one Recommendation on the development of an OSPAR network of MPAs
- 7 OSPAR Decisions on the designation of MPAs in areas beyond national jurisdiction
- 7 OSPAR Recommendations on the management of MPAs in areas beyond national jurisdiction

Hazardous Substances
OSPAR List of Chemicals for Priority Action identifies 26 substances (and groups of substances) OSPAR adopted • 41 OSPAR measures addressing industries acting as point sources • 35 Decisions and Recommendations addressing 12 industries acting as point sources of OSPAR Chemicals for Priority Action (31 applied in Sweden, 4 did not)[7] • 6 decisions and recommendations addressing 2 industries that act as point sources of other forms of pollution[8] • 14 decisions and recommendations addressing diffuse discharges, emissions and losses of 7 OSPAR chemicals for priority actions[9] • 3 recommendations addressing heavy metals and pesticides more generally • 18 OSPAR Chemicals for Priority Actions were addressed without recourse to a dedicated OSPAR measure on diffuse sources In total 55 decisions and recommendations addressing OSPAR Chemicals for Priority Action

Nutrients and eutrophication
3 Recommendations addressing the reduction of nutrients input to the sea from land

Radioactive Substances
3 Recommendations addressing discharges, emissions and losses of radioactive substances from the nuclear industry (1 is applicable to Sweden) 1 Recommendation addressing disposal of nuclear waste in sub-seabed

Other
1 Recommendation for fishing for litter projects (Marine Litter) 1 Recommendation on reporting of encounters with convention and chemical munitions 14 Decisions and Recommendations addressing the offshore oil and gas industry 1 Decision on storage of carbon dioxide in geological formations (sub-seabed) 1 Decision to prohibit storage of carbon dioxide in the water column or on the seabed 1 Recommendation on implementation of the Joint Assessment and Monitoring Programme/Strategy

The requirements or recommendations of OSPAR measures can vary quite markedly between the different thematic areas. The thematic areas on hazardous substances and biodiversity conservation have developed considerable momentum in developing measures with differing approaches being taken to the scope and content of the measures. In contrast, relatively few measures have been adopted by OSPAR to address other pressures, such as non-indigenous species, marine litter and underwater noise although other forms of action have been developed. Whilst this reflects differences in the scope of action in relation to other bodies (e.g. EU) and that formal measures are not always the most appropriate or preferred policy means for addressing and issue, it is also a possibly a result of different administrative structuring of measures (packaging of actions and sectors addressed versus very measures with few actions addressed to single sectors). There is no formal guidance on what type of issue a Decision or Recommendation should be used to address (e.g. when a formal measure is warranted) in the OSPAR rules of procedure or how specific it should be. Each proposed measure is judged on its coherence with other elements of the OSPAR strategies and its external coherence with actions and measures in other forums. It could be helpful to have

[7] 33 were set aside in 2010 but retained in the OSPAR acquis.

[8] 6 were set aside in 2010 but retained in the OSPAR acquis.

[9] 10 were set aside in 2010 but retained in the OSPAR acquis.

some “non-official” and “non-binding guidance” on the preparation of measures to help guide the selection of Decisions or Recommendations as a means of securing action. This could useful describe how existing OSPAR measures have been acoped and defined.

OSPAR measures also require actions of quite differing character. There are OSPAR measures that set out requirements specifying direct physical controls on activities as well as OSPAR measures that set out administrative actions whose effect on human activities and their pressures on the marine environment can only be indirect. Some OSPAR measures have been adopted only for administrative steps such as amending OSPAR measures, while others have sought to stimulate investigation or problems or to seek technical solutions.

The evaluation framework developed by this project proposes applying a categorization of the types of controls included in OSPAR measures. This was based upon the categories set out in the MSFD Common implementation strategy framework for reporting on Article 13 (see Box 6.2). A distinction was made between measures that require physical controls (i.e. those that directly mitigate pressure) and those that have a more supplementary function.

Box 6.2. Categorisation of measures used in the analysis (developed with reference to the categorisation of physical controls adopted for Reporting on MSFD Programmes of Measures (Art. 13) (European Commission, 2015).

Physical controls:
I – Input – controls on the overall amount of a human activity
S – Spatial – controls on where an activity is permitted (spatial controls)
T – Temporal – controls on when an activity is permitted (temporal controls)
O – Output – controls on the degree of perturbation of an ecosystem component (e.g. controls on the level of pressure an activity is permitted to output);
R – Remediation: actions that restore components of marine ecosystems that have been adversely affected

Supplementary measures:
IT – Development of information tools;
E – Education and awareness raising
RI – Research: investigation
RT – Research: technology development

A summary of the application of these categories to OSPAR measures is set out in Table 6.1. In some case the requirements of the OSPAR measures are that Contracting Parties should implement a process to determine the need for application of physical control. Therefore it cannot be assumed that a particular physical control is needed or will be applied. These cases are indicated with brackets

Due to the varied nature of OSPAR measures some caution should be given to considering one measure equivalent to another (in importance/or potential effectiveness). However, in the following sections the application of the evaluation framework and the overall nature of the measures has been summarized by simply stating the number of measures fulfilling certain categories. This should be treated with some caution when drawing conclusions.

Table 6.1: Characterisation of OSPAR measures according to their requirements: environmental targets and types of controls.

	Number of measures	Number relevant in Sweden	Environmental target	Types of measure	
				Physical	Supplementary
Biodiversity					
Species – protection and conservation	35	13		Spatial Temporal Output Remediation	RI, RT, E
Habitats – protection and conservation	16	9		Spatial Temporal Output Remediation	RI, RT, E
EIA	1	1		(Spatial) (Temporal)	
MPAs	15	1*		(Spatial) (Output) (Input) (Temporal)	E, RI
Eutrophication					
Inputs of nutrients	3	3	P	Output Input	RI, RT
Hazardous substances					
Industrial point sources – hazardous substances	35	31		Output	RT
Industrial point sources – other	6	6		Output	RT,
Diffuse sources	16	16	S	Output	RT, RI
Radioactive substances					
Nuclear industry	3	1		Output	
Waste disposal	1	1		Output	
Other (not oil)					
Fishing for litter	1	1		Remediation	
Munitions	1	1			RI
Carbon storage	2	2		Spatial Output	-
Offshore oil and gas	14	0		-	-
Monitoring and assessment	1	1		-	IY, E, RI, RT

Notes:

Environmental target: P – Pressure target; S – State target

Supplementary measures: See Table Box 6.2 for abbreviations

() – OSPAR measures requires or recommends a national process (e.g. a decision-making process) that may or may not lead to the control indicated. (Note: Categories may not adequately reflect conservation measures or techniques these have been classes as remediation).

* The remaining 14 MPA measures are followed by Sweden but apply to marine protection in areas beyond national jurisdiction.

Linking OSPAR measures with MSFD descriptors and national implementation instruments

How do OSPAR measures contribute to MSFD good environmental status?

Article 13 of the MSFD requires Member States to identify and take measures to achieve or maintain good environmental status in their marine waters. The measures adopted in this context need to take into account measures required under other European Union legislation together with measures resulting from international agreements, including regional sea conventions such as OSPAR. Article 5 identifies the programmes of measures as part of a Member State's marine strategy. As part of a marine strategy the programmes of measures need to be developed in a coordinated way with other Member States sharing the same marine regions (Article 6) including through regional sea conventions, such as OSPAR.

OSPAR's acquis of measures can be regarded as the contextual background marine regulation existing prior to implementation of the MSFD, i.e. they will still exist as binding obligations and commitments to which OSPAR Contracting Parties have entered, whether, or not MSFD is implemented. They can therefore be regarded as part of a business-as-usual scenario (see Figure 6.1) contributing to reaching MSFD environmental targets, providing a level of background (or pre-existing) legislation that entirely contextual to MSFD measures.

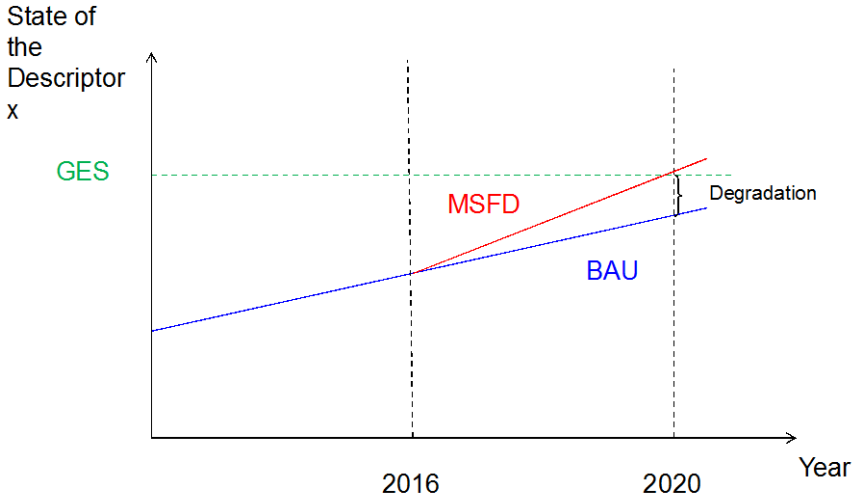

Figure 6.1. Schematic representation of the business-as-usual scenario (BAU) under the MSFD where measures relevant to the Directive's aims can be considered as "existing", where they are would be in place irrespective of the Directive (blue), or new, when established in order to implement MSFD (red).

The EU Common Implementation Strategy guidance to be used for reporting in MSFD measures in 2016 seeks to reflect this by distinguishing two categories of existing measures under MSFD Articles 13.1 and 13.2:

- Category 1.a – measures relevant for the maintenance and achievement of GES under the MSFD that have been adopted under other policies and implemented;
- Category 1.b – measures relevant for the maintenance and achievement of GES under the MSFD that have been adopted under other policies but that have not yet been implemented or fully implemented.

New measures (Art 13.3) are to be categorized as follows:

- Category 2.a: Additional measures to maintain and achieve GES which build on existing implementation processes regarding other EU legislation and international agreements but go beyond what is already required under these;
- Category 2.b: Additional measures to maintain and achieve GES which do not build on existing EU legislation or international agreements.

How do these two categories apply to OSPAR measures? The OSPAR acquis (OSPAR Commission, 2015) provides a categorization of OSPAR measures according to whether a measure falls under category 1a or 1b. OSPAR measures that were adopted and fully implemented before the adoption of the MSFD in 2008 (or in practice 2010) are clearly part of the business-as-usual scenario (cat 1.a). These OSPAR measures were not designed specifically for the purpose of implementing the Directive. They, therefore, may not be sufficient for ensuring good environmental status or even over-reach the requirements of the Directive. However, as measures addressing issues relevant under the Directive (hazardous substances, eutrophication), they do have a relevance to maintaining and achieving good environmental status and can be understood as supporting a business-as-usual good status.

OSPAR measures that were only partly implemented or were adopted after 2008 were categorized as Category 1b. This categorization has been used in the joint documentation on coordination of measures developed by OSPAR (OSPAR Commission, 2015c) and used in the first official reporting by Sweden on the implementation Article 13 of the MSFD (April 2016).

Since the adoption of the MSFD in 2008 OSPAR has continued to work for the protection of the marine environment of the North-East Atlantic and at the same time sought to increase synergy with MSFD implementation, including by acting as regional platform for MSFD implementation since 2010. The relevance to the MSFD of OSPAR measures that have continued to be implemented after 2008 or that have been adopted since 2008 is perhaps more nuanced than purely being considered as existing measures, which can be seen through OSPAR measures being implemented in such a way as to contribute to MSFD objectives beyond the baseline of business-as-usual. OSPAR measures also ensure regional coordination (in line with Article 6 of the MSFD) and have the benefit of influencing non-EU states sharing marine regions to achieve consistent levels of marine protection.

For some OSPAR measures adopted before 2008 a synergy has been achieved with the parallel implementation of the MSFD, which could be considered as mutually beneficial. For example, OSPAR Recommendation 2003/3 recommends the identification of MPAs and their reporting as components of the OSPAR network of MPAs. This needs to be followed up by appropriate management of the MPA to achieve protection of the features and/or ecological process for which the MPAs have been identified, including species and habitats that OSPAR has identified as threatened and/or declining and in need of protection. These actions are compatible with Article 13 (4 and 5) of the MSFD concerning spatial protection measures. Provisions for securing the objectives of the MSFD have extended to the procedure set out in Article 11 of the revised Common Fisheries Policy (EU Regulation 1380/2013) whereby Member States are empowered to introduce conservation measures in waters under their jurisdiction where fisheries interest of other Member States are not affected or invoke a procedure where the European Commission can introduce conservation measures where the interest of other Member States are affected. These provisions have been invoked in the case of the Bratten OSPAR Marine Protected Area/SAC in the Skagerrak where conservation targets include OSPAR listed threatened and/or declining species and habitats, such as coral gardens, deep-sea sponge aggregations and sea-pen and burrowing megafauna communities as well as several fish species from the OSPAR list.

Those OSPAR measures adopted after the 2008 have been implemented in tandem with the MSFD. Here, OSPAR Recommendation 2010/5 (OSPAR Commission, 2010) is a relevant example that has been applied in Sweden in the development of port facilities at Gothenburg and Wallhamn to ensure attention is applied to the presence of Zostera beds. It recommends that Contracting Parties should ensure that environmental impact assessments of human activities take into account species and habitats identified by OSPAR as threatened and/or declining. The measure has been recognized as a means of regional coordination for a measure (AP-H 13) within the Swedish programme of measures for the Marine Strategy Framework Directive (Havs- och vattenmyndigheten, 2015).

In practice, OSPAR measures adopted since 2011 (mainly for the protection of threatened and/or declining species and habitats) have included references to the MSFD such as the recitals from Recommendations 2011/5 and 2015/1 (see Box 6.3). Although the recital is a non-operative part of the recommendation it clearly reflects an intent upon the part of OSPAR Contracting Parties to ensure that the OSPAR measure contributes to MSFD goals.

Box 6.3. Examples of recitals referencing the Marine Strategy Framework Directive in recent OSPAR Recommendations

OSPAR Recommendation 2011/5 on furthering the protection and conservation of the Black-legged kittiwake (Rissa tridactyla tridactyla)

NOTING that the actions and measures of this Recommendation will support the regional implementation of the Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)

2015/1 on furthering the protection and conservation of intertidal Mytilus edulis beds on mixed and sandy sediments in Regions II and III of the OSPAR maritime area

NOTING that, where appropriate, the programmes and measures of this Recommendation will support the regional implementation of EU Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ("Habitats Directive"), EU Directive 2000/60/EC establishing a framework for community action in the field of water policy (Water Framework Directive), EU Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) and corresponding legislation of other Contracting Parties.

While the implementation processes of the Directive have begun to be developed, increased clarity on the interpretation of the Directive has fed through into OSPAR measures to influence OSPAR measures work to become more synergistic with MSFD requirements. In the future, where the implementation of an OSPAR measure has been developed and realized in parallel with MSFD, it could effectively have the same effect as an MSFD measure after a certain point. It could also be the case that the MSFD influences OSPAR measures work to become more distinct from MSFD requirements. Any future measures adopted by OSPAR will need to have a more clearly described role viz-a-viz regional coordination in the context of MSFD. This is one of the issues that need to be addressed under the OSPAR Measures and Actions programme.

Each OSPAR measure can be linked to MSFD Descriptors and each measure classified in terms of its state of implementation and relevance to Sweden as well as the Key types of measures (KTM) categories used in the MSFD reporting. Table 6.2 summarises for each MSFD Descriptor the numbers of OSPAR measures that are relevant in Sweden and their implementation and adoption status in respect of the MSFD reporting categories 1a and 1b. OSPAR's measures work can be seen as supporting MSFD biodiversity descriptors (1, 4 and 6) in line with the categorization 1b and the descriptors for eutrophication (5) and hazardous

substances (8 and 9) in line with category 1a. Marine litter (descriptor 10) currently has one OSPAR measure, although a Regional Action Programme has been adopted. There are currently no OSPAR measures directly relevant to non-indigenous species (2) and underwater noise (11). Regional action on marine litter, non-indigenous species, and underwater noise is likely to be needed to ensure good environmental status. Although the preference has been not to adopt OSPAR measures to achieve action, this should not be ruled out. Fishing is one of the main pressures on biodiversity, however, OSPAR has no competence to adopt measures addressing questions of fisheries management, although certain biodiversity measures for the protection and conservation of fish species (e.g. on cod) are relevant to the MSFD Descriptor 3. Criteria for the development of the OSPAR network of MPAs (OSPAR Commission, 2003) are also relevant parts of the process for achieving protection and conservation for species, habitats and ecological processes.

Table 6.2. Number of OSPAR Measures relevant in Sweden per MSFD descriptor before and after 2008 and their implementation status.

MSFD Descriptor	OSPAR Measures relevant in Sweden	Adopted and fully implemented before 2008	Adopted before 2008 – fully implemented by 2016	Adopted before 2008 – not fully implemented by 2016	Adopted after 2008 – not fully implemented	Make reference to MSFD (a)	Not applicable in Sweden
1	24			1	23	16	29
2	(b)						
3	(c)						
4	24				24	16	29
5	3	2		1			
6	13			1	12	5	7
7							
8	51	50 (d)			1		4
9	51	50 (d)			1		4
10	1 (d)				1		
11							
Not closely relevant to a descriptor	7						28
n	84						63

Notes:

a. column records the number of measures that make explicit reference to the MSFD;
b. OSPAR has adopted a general guidance on ballast water management to mitigate against the introduction of new non-indigenous species from vessels operating between the North-Atlantic, Baltic Sea and Mediterranean Sea but not at the status of a decision or recommendation;
c. OSPAR has no competence to adopt measures with regard to questions of fisheries management but where it considers that action is needed draws this to the attention of the competent authorities;
d. According to the OSPAR acquis. Implementation status is not clear for five measures. Last Swedish implementation does not report full implementation in many cases.
e. OSPAR has adopted a Regional Action Programme for the prevention and management of marine litter in the North- East Atlantic but not at the status of a decision or recommendation.

As a further step each OSPAR measure has been linked to the specifications that have been adopted in Sweden to implement the concept of good environmental status in line with Article 9 (characteristics of good environmental status) and 10 (indicators and targets for guiding progress towards good environmental status) of the MSFD. This linking is summarized in Table 6.3. More detail is available in the supporting spreadsheet (see Annex 3 for details) The revision of the European Commission Decision 2010/477/EU on criteria and methodological standards on good environmental status (European Commission, 2010) is

likely to lead to a revision of the definitions of GES and targets set out by SwAM so these analysis may need to be revised.

Table 6.3. Alignment of OSPAR measures with specifications for good environmental status adopted for Sweden's implementation of MSFD: Characteristic for good environmental status (förhållande som kännetecknar god miljöstatus) and targets for guiding progress towards good environmental status (environmental quality norms (miljökvalitetsnorm – MKN)) as set out in Havs- och vattenmyndigheten (2012a).

Characteristics for good environmental status	**MKN**	**Relevant measures**	
1			
1.1		13	Measures for the protection and conservation of threatened and/or declining birds, fish and mammals
1.2	C.3	13	as above
1.3	C.3	13	as above
1.4		11	Measures for the protection and conservation of threatened and/or declining habitats and habitat forming species
1.5		11	as above
1.6	C.4	11	as above
1.7		22	as above
3			
3.1	C.3		OSPAR has no competence to adopt measures concerning questions relating to fisheries management but some of the OSPAR measures for protection and conservation of species and habitats concern fish species that are subject to fishing
3.2	C.3		
3.3			
4			
4.1		13	Measures for the protection and conservation of threatened and/or declining birds, fish and mammals
4.2		13	as above
4.3		13	as above
5	A.1		
5.1		3	Measures for the reduction of nutrient inputs
5.2		3	as above
5.3		3	as above
6	D.1 D.2		
6.1		10	Measures for the protection and conservation of threatened and/or declining habitats
6.2		10	As above
7	D.3		
7.1			no direct measure
7.2			no direct measure
8			
8.1	B.1	57	Measures for the reduction of discharges, emissions and losses of hazardous substances from point and diffuse sources
8.2	B.2	57	As above
9			
9.1		57	As above
10			
10.1	D.4	1	Measure for fishing for litter programmes Also Regional Action Plan
10.2		1	As above

Conclusion

The existing OSPAR Decisions and Recommendations are of most relevance to MSFD descriptors on biodiversity (1, 4 and 6), eutrophication (5) and hazardous substances (8 and 9), the related definitions of good environmental status and associated targets and indicators. OSPAR-measures adopted up to 2008 contribute to the existing marine protection and conservation in place before the implementation of the MSFD (the so-called business as usual scenario), although many have been superseded by EU legislation. Stronger synergies have begun to emerge between OSPAR and MSFD work since 2011, both for some measures that were adopted earlier but have continued to be implemented and for those that have been adopted since 2011. These OSPAR measures, which mainly concern the protection and conservation of species and habitats, support the regional coordination of actions towards MSFD objectives, and their implementation will also contribute towards reaching environmental quality norms C3 and C4 in Swedish waters. In the second cycle of MSFD implementation, these measures could, therefore, be considered for classification as MSFD measures to achieve or maintain GES. Likewise the implementation of certain pre-2011 measures (e.g. OSPAR Recommendation 2010/5) has also been taken up as a regional coordination measure in relation to the directive and could also be classified as such. Any new OSPAR measures addressing, for example, marine litter, underwater noise and non-indigenous species should in future also be classified as MSFD measures.

It should be emphasised that the provisions of the MSFD can also support implementation of relevant OSPAR measures by providing a stronger legal underpinning. Any future measures adopted by OSPAR will need to have a more clearly described role viz-a-viz regional coordination in the context of MSFD. This is one of the issues that need to be addressed under the OSPAR Measure and Actions programme.

Alignment with OSPAR Common Indicators and other categories

OSPAR measures have also been linked to OSPAR Common Indicators, pressures, activities and relevant ecosystem components I the supporting spreadsheet (see Annex 3 for details). These categories have not been summarized in the main part of the report.

Relevance of OSPAR Measures with the Swedish Environmental Objectives system

Environmental Quality Objectives

In conducting an evaluation of the implementation of OSPAR measures evaluation at Swedish national level it becomes relevant to consider the contribution that OSPAR measures may give to national policies and objectives. This was not a focus included in the implementation evaluation framework as its main aim was an OSPAR regional application. As part of the national evaluation it becomes appropriate to consider the linkages and potential contribution of OSPAR to efforts to meet Sweden's Environmental Quality Objectives and the associated milestone targets and generational goals. These linkages are mapped out and summarized qualitatively in the following sections. A more detailed linking of each OSPAR measure to environmental quality objectives, milestone targets and generational goals is available in the supporting spreadsheet (see Annex 3 for details) OSPAR decisions and recommendations have aims that are mainly relevant to the Swedish Environmental Quality Objectives below.

Swedish environmental quality objective	OSPAR thematic strategy
A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos	Biodiversity and ecosystem strategy
Zero Eutrophication	Eutrophication strategy
A Non- Toxic Environment	Hazardous substances strategy
A Safe-Radiation Environment	Radioactive substances strategy

However, OSPAR measures also have relevance to a wider range of environmental protection issues more generally with many measures addressing land-based sources of pollution as well as biodiversity protection in general. In Table 6.4 the relevance of OSPAR measure across all Swedish Environmental Quality Objectives is reviewed.

Table 6.4. Mapping of OSPAR measures (Decisions and Recommendations) and Swedish Environmental Quality Objectives. Linkages are categorized as primary, secondary and low relevance. The measures the table is referring to can be found in Annex 4.

Environmental Quality Objective	Relevance of OSPAR's measures
Reduced Climate Impact *Bregränsad klimatpåverkan*	**Primary/secondary relevance** OSPAR Decisions 2007/1 and 2007/2 addressed carbon capture and storage in the OSPAR maritime area
Clean Air *Frisk luft*	**Secondary Relevance** 15 OSPAR Decisions and Recommendations addressed industries acting as points sources for airborne emissions
Natural Acidification Only *Bara naturlig försurning*	**Secondary relevance** 9 OSPAR Decisions and Recommendations addressed industries acting as point sources of acidifying pollutants
A Non-Toxic Environment *Giftfri miljö*	**Primary relevance** 35 OSPAR Decisions and Recommendation address industries acting as points sources for discharges, emissions and losses of hazardous substances (31 apply in Sweden) 13 OSPAR Decisions and Recommendations address diffuse sources of hazardous substances
A Protective Ozone Layer *Skyddand ozoneskikt*	**Low relevance**
A Safe-Radiation Environment *Säker strålmiljö*	**Primary relevance** One OSPAR Decision and 2 OSPAR Recommendation address discharges, emissions and losses of radioactive substances from the nuclear and non-nuclear industry
Zero Eutrophication *Ingen övergödning*	**Primary relevance** 3 OSPAR Recommendations address the reduction of land-based inputs of nutrients to the marine environment
Flourishing lakes and streams *Levande sjöar och vattendrag*	**Secondary relevance** - by addressing land-based sources of pollution
Good-Quality Groundwater *Grundvatten av god kvalitet*	**Secondary relevance** - by addressing land-based sources of pollution
A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos *Hav I balans samt levande kust och skärgården*	**Primary relevance** - 3 OSPAR Recommendations address the reduction of land-based inputs of nutrients to the marine environment - OSPAR Recommendations address the protection and conservation of 14 species that have life stages in Swedish waters - OSPAR Recommendations address the protection and conservation of 9 habitats occurring in Swedish waters
Thriving Wetlands *Myllrande våtmarker*	**Secondary relevance** - by addressing land-based sources of pollution
Sustainable Forests *Levande Skogar*	**Low relevance**
A Varied Agricultural Landscape *Ett rikt odlingslandskap*	**Low relevance**
A Magnificent Mountain Landscape *Storslagen fjällmiljö*	**Low relevance**

A Good Built Environment *God bebyggd miljö*	**Low relevance**
A Rich Diversity of Plant and Animal Life *Ett rikt växt- och djurliv*	**Primary relevance** - OSPAR Recommendations address the protection and conservation of 14 species that have life stages in Swedish coastal and marine waters - OSPAR Recommendations address the protection and conservation of 9 habitats occurring in Swedish coastal and marine waters - OSPAR network of marine protected areas aims to support the protection of species, habitats and ecological processes **Secondary relevance** - OSPAR Recommendations on hazardous substances and nutrient inputs

Tables 6.5 and 6.6 provide a further analysis of the links between OSPAR work and the components of the Swedish environmental quality objectives system: the generational goals and milestone targets. Focusing on OSPAR measures (Decisions and Recommendations) only provides a partial picture of the scope of OSPAR's work. Other aspects of OSPAR activity that are relevant to the generational goals and milestone targets have been identified in these tables.

Table 6.5. Mapping between OSPAR measures (decisions and recommendations) and other OSPAR work and the Swedish environmental quality objectives system generational goals

Generational goals	**Relevant OSPAR measures**
Ecosystems have recovered, or on the way to recovery, and their long-term capacity to generate ecosystem services is assured.	OSPAR measures on nutrients and hazardous substances contribute through seeking to reduce pressure on ecosystems. OSPAR measures on species and habitats contribute by seeking to further the protection of some key species and habitats within ecosystems
Biodiversity and natural and cultural environment are preserved, promoted and used sustainably.	24 relevant measures
Human health is exposed to minimal negative environmental impact, while the positive impact of the environment on human health is promoted.	OSPAR measures contribute to lowering the concentrations of hazardous substances in fish and shellfish for human consumption. OSPAR measures on nutrients aim to contribute to a reduced incidence of algal blooms 3 OSPAR Decisions and Recommendations address discharges emissions and losses of radioactive substances
Ecocycles are resource efficient and as far as possible free from hazardous substances.	31 OSPAR Decisions and Recommendations addressed industries acting as point sources of hazardous substances in Sweden 18 OSPAR Decisions and Recommendations addressed diffuse discharges, emissions and losses of hazardous substances 3 OSPAR Decisions and Recommendations address discharges emissions and losses of radioactive substances
Natural resources are managed well	All OSPAR measures and other actions with regard to biodiversity, hazardous substances, eutrophication, radioactive substances and the management of human activities can be seen as relating to this goal One OSPAR measure addresses the development of an ecologically coherent network of well managed Marine Protected Areas
The share of renewable energy increases and use of energy is efficient, with minimal impact on the environment	
Patterns of consumption of goods and services cause the least possible problems for the environment and human health	31 OSPAR Decisions and Recommendations addressed industries acting as point sources of hazardous substances in Sweden 14 OSPAR Decisions and Recommendations addressed diffuse discharges, emissions and losses of hazardous substances

The analyses in this section show that OSPAR measures generally have considerable relevance across a spectrum of Sweden's system of environmental quality objectives (Miljömål). Several aspects of OSPAR's wider work also have relevance to the generational goals and milestone targets in the environmental quality objectives system. This relevance is achieved both through Sweden's involvement in OSPAR's regional work and through the specific application of internationally agreed measures by Sweden. OSPAR's Annex V was originally adopted as a regional coordination mechanism for work under the Convention on Biological Diversity. Sweden's system of environmental quality objectives was also defined with reference to CBD, including for reporting purposes.

In the deeper evaluation of the system of environmental quality objectives OSPAR is only mentioned in the supporting documentation. These recognize OSPAR assessments of eutrophication status (Naturvårdsverket, 2015a), and also the development of the OSPAR Regional Action Plan for Marine Litter and the adoption of OSPAR Recommendations for species and habitats in 2014 (Naturvårdsverket, 2015b). As a periodical (5 yearly) report it may also have been appropriate to recognise the latter work since 2010. Increased recognition and elaboration of the linkage between OSPAR work and the system of environmental quality objectives could be beneficial for both processes.

Conclusion

OSPAR measures have considerable relevance to Sweden's system of environmental quality objectives. In additional several aspects of OSPAR's wider work also have relevance to the generational goals and milestone targets in the environmental quality objectives system. This relevance is achieved both through Sweden's involvement in OSPAR's regional work and through the specific application of internationally agreed measures by Sweden.

Increased recognition, such as through and official document, of the contribution of Sweden's engagement in regional sea cooperation (including through OSPAR) to the Swedish system of environmental objectives would enhance understanding of this work.

Table 6.6. Links between OSPAR measures (decisions and recommendations) and other work and the Swedish environmental quality objectives system milestone targets[10]

Milestone target	Support (Direct, indirect)	Adopted OSPAR decisions and Recommendations	Other action taken	Ongoing OSPAR action (2015)
Reduced climate impact				
Emissions of greenhouse gases by 2020	Indirect	OSPAR Decision 2007/1 to Prohibit the Storage of Carbon Dioxide Streams in the Water Column or on the Sea-bed OSPAR Decision 2007/2 on the Storage of Carbon Dioxide Streams in Geological Formations	OSPAR Guidelines for Risk Assessment and Management of Storage of CO2 Streams in Geological Formations	
Exceptions from the target	Not relevant			
Air Pollution				
Limited emissions of transboundary pollution	Direct	28 OSPAR Decisions and Recommendations addressing		Monitoring and assessment of

[10] https://www.naturvardsverket.se/en/Environmental-objectives-and-cooperation/Swedens-environmental-objectives/Milestone-targets/

		emissions from industries acting as point sources of pollution (1980–2000).		hazardous substances and their effect in the marine environment. Review of progress in control of pollutants subject to long-range transport in LRTAP/Stockholm protocol/EU.
Emissions of air pollution from maritime shipping	Indirect			Monitoring and assessment of atmospheric deposition of nutrients and eutrophication status
Emissions of air pollution from small-scale wood burning	Not relevant			
Dangerous substances				
Particularly dangerous substance	Direct	OSPAR measures to address discharges, emissions and losses of hazardous substances from point and diffuse sources have been the focus of OSPAR's work for much of the period from 1995 to 2005. With the emergence of EU policy for hazardous substances OSPAR changed the focus of its work to checking that marine-related protection is addressed in EU-developments rather than creating new regulations.		Monitoring and assessment of hazardous substances and their effect in the marine environment
Knowledge on the health and environmental properties of substances	Direct	Some OSPAR measures on hazardous substances included provisions for investigations related to the use or presence of hazardous substances or on technological development for pollution control	OSPAR's work to evaluate properties (persistence, toxicity and liability to bioaccumulate) of chemicals as a basis for evaluating the case for inclusion in the OSPAR List of Chemicals for Priority Action was one of the forerunners of the EU REACH scheme and helped to promote consistent criteria for evaluation of suspected hazardous substances and related test methods	OSPAR continues to review the operation of EU regulation from a marine environmental perspective. Monitoring and assessment of hazardous substances and their effects in the marine environment.
Information on dangerous substances in articles	Indirect		OSPAR has published background documents on each of the substances (or groups of substances) on the List of OSPAR Chemical for Priority Action which are published on the OSPAR website. The background documents compiled information on the use of OSPAR-listed hazardous substances in products.	OSPAR Background documents continue to be reviewed and updated
Development and application of the EU's chemical rules	Indirect			OSPAR continues to review and comment on EU chemicals policy and other international policy from a marine environmental perspective and where appropriate to urge relevant organization to take action to reduce risks to the marine environment
More effective chemicals supervision in the EU	Indirect			As above
Non-toxic and resource efficient ecocycles internationally	Direct	OSPAR measures to address discharges, emissions and losses of hazardous substances from point and diffuse sources have contributed to non-toxic ecocycles especially where phase-out or reduction targets have been agreed (e.g. mercury, TBT, PCBs, SCCPs, NPEs). It should be recognized that in some cases		

		Swedish policy had agreed phase-out targets ahead of OSPAR		
Reducing children's exposure to dangerous chemicals	Indirect	Can be seen as an indirect by-product of OSPAR's work on hazardous substances		
Greater environmental consideration in EU pharmaceuticals legislation and internationally	Direct		OSPAR's evaluated the case for inclusion of certain pharmaceuticals in the OSPAR List of Chemicals for Priority Action	
Biodiversity				
Ecosystem services and resilience	Direct	22 OSPAR Recommendations address the protection and conservation of threatened and/or declining species and habitats relevant in Swedish waters OSPAR Recommendation 2003/1 requires the development of an ecologically coherent network of well-managed marine protected areas	Guidelines for the implementation of OSPAR Recommendation 2003/1 on the development of an OSPAR Network of MPAs recognise the need for protection of ecosystem processes as well as threatened and/or declining species and habitats Texel-Faial criteria for the identification of threatened and/or declining species and habitats includes keystone species as a criteria (species that have a controlling influence on a community), although this criteria has not been applied.	Evaluation of the implementation of OSPAR Recommendations on protection of threatened and/or declining species and habitats
Importance of biodiversity and the value of ecosystem services	Indirect	Adoption of OSPAR Recommendations to further the protection of threatened and/or declining species and habitats Engagement with other international organization to promote the protection of threatened and/or declining species and habitats	Development of OSPAR List of threatened and/or declining species and habitats	
Threatened species and habitat types	Direct	22 OSPAR Recommendations address the protection of threatened and /or declining species and habitats that have life phases in Swedish waters	Development of the OSPAR List of threatened and/or declining species and habitats	
Invasive alien species	Direct	HELCOM/OSPAR Guidelines on the granting of exemptions under the International Convention for the Control and Management of Ships' Ballast Water and Sediments, Regulation A-4 guidelines		
Knowledge about genetic diversity	Not relevant			
A holistic approach to the use of land	Not relevant			
The protection of land areas, freshwater areas and marine areas	Direct	OSPAR Recommendation 2003/3 on the development of an OSPAR network of Marine Protected Areas has led to the development of an MPA network	Guidelines for the implementation of OSPAR Recommendation 2003/1 on the development of an OSPAR network of marine protected areas recognize the need for protection of ecosystem processes as well as threatened and/or declining species and habitats	Development of the OSPAR network of MPAS continues according to the OSPAR criteria
Environmental consideration in forestry	Not relevant			
Varied forestry	Not relevant			
A dialogue process in a national forestry programme	Not relevant			
Waste				
Better resource management in the food chain	Not relevant			
Construction and demolition waste	Not relevant			

7. Summary of evaluation results: overview of implementation of OSPAR measures in Sweden

Overview

In developing this evaluation the most recent or last implementation reporting by Sweden on each measure has been accessed either from the OSPAR website or through contacting the OSPAR Secretariat. Information provided by Sweden in response to a measure's OSPAR implementation reporting format has been compiled in the supporting spreadsheet (see Annex 3 for details) either in full or summarized where extensive information was provided in the original reporting.. Additional information for some measures has been supplied by relevant Swedish national authorities during the preparation of the report.

In order to apply the evaluation methodology at Swedish national level, information was extracted from Sweden's reporting to OSPAR on the following:

a) the date of the last or most recent implementation reporting,

b) whether the measure is applicable in Sweden,

c) the means of implementation i.e. the instruments used to implement the measure in Sweden,

d) the state of implementation as assessed at OSPAR level and whether there was any comment provided in Sweden's own reporting,

e) whether there were any gaps in the implementation reporting, and;

f) progress toward environmental objectives where it was included in implementation reporting. Given that very few OSPAR measures include an explicit environmental target. Very little information was provided on this in implementation reporting.

A summary of points a. to e. above is given in Table 7.1 against the main areas of OSPAR's work.

Table 7.1. Summary of information reported by Sweden on the means of implementation and OSPAR's assessment of the state of implementation under key areas of OSPAR's acquis.

	Number of measures	Number that apply in Sweden	Means of implementation	Number of measures applying in Sweden assessed as fully implemented by OSPAR (number for which full implementation is clear in last Swedish reporting)
Biodiversity				
Species – protection and conservation	35	13	Policy and strategy (2) Not yet reported (11)	0
Habitats – protection and conservation	16	9	Policy and strategy (4) Legislation (2) Not yet reported (3)	0
EIA	1	1	Legislation	0

			Policy and strategy	
MPAs	15	1*		0
Eutrophication				
Inputs of nutrients	3	3	Policy and strategy (1) Legislation (2) Economic (2) Supervisory (1)	2 (2)
Hazardous substances				
Industrial point sources – haz subs	36	32	Legislation (8) Voluntary (5) Policy and strategy (22) Already implemented (1) Not reported (3) Report not accessible (10) (D96/1, D80/2, D81/1, D81/2, R85/1, 82/1, R83/1. R89/5, R81/2, R87/2)	31 (14) 4 report not found
Industrial point sources - other	6	6	Policy and strategy (5) Legislation (1) Voluntary (1)	6 (3)
Diffuse sources	17	17	Legislation (10) Voluntary (8) Policy and strategy (7) Already implemented 1[11] Report not accessible (D85/2, D90/2, R81/1, D90/2, R80/1, D80/1, R81/1, R81/2, R82/1)	15 (10) 6 report not found
Radioactive substances				
Nuclear industry	3	1	Legislation (1) (D01/1)	0
Waste disposal	1	1	Report not accessible (D91/5)	0
Other (not oil)				
Fishing for litter	1	1		0
Munitions	1	1		0
Carbon storage	2	2		0
* The remaining 14 MPA measures are followed by Sweden but apply to marine protection in areas beyond national jurisdiction.				

Observations

Based on an overall analysis of the reporting, the following general observations can be made on Sweden's reporting on implementation of OSPAR measures. Firstly, on Sweden's fulfilment of reporting requirements:

a) Sweden has reported on its implementation of all OSPAR measures where reporting has been required to date;

b) There are no obvious examples of Sweden failing to report on implementation on time. Sweden is one of the OSPAR Contracting Parties that has always provided its reports on time;

c) The quality of information provided by Sweden in response to the implementation reporting requirements (which can themselves be quite variable) has usually been of a good to high standard, being detailed and precise, with information being provided down to the level of individual plants or developments. This mostly provides a sound basis with which to evaluate whether the strict requirements of the measures have been met.

[11] A further 6 measures in this category appear to have been already implemented through existing legislation at the time of the adoption of the OSPAR measure, but this is not specifically stated.

Secondly, with regards to implementation:

a) There is a lack of information on the specific instruments that have been used to achieve implementation as the standard practice in OSPAR implementation reporting has been to include a categorical question on instruments used for implementation.

b) Many of the OSPAR measures regarding point sources of hazardous substances introduced new requirements in Sweden or supported their introduction, which have led to environmental improvements through mitigation of environmental pressure. This was especially the case for OSPAR point source measures introduced prior to the development of EU IPPC BREF work, which concerned best available technology and best environmental practice for reducing and ceasing emissions and discharges of hazardous substances. Sweden's implementation reporting for point source measures for hazardous substances is informative and precise and shows that the OSPAR measures were effectively implemented.

c) Sweden has reported that several measures addressing diffuse source of OSPAR listed chemicals for priority actions required actions that have already been implemented in Sweden through existing national legislation (or EU policy). In these cases the benefit of OSPAR's initiatives from a Swedish perspective can mainly be seen through requiring a consistent level of environment protection in neighbouring Contracting Parties as well as and other OSPAR parties (equivalent to regional coordination in an MSFD context). Sweden has mostly reported on these measures in an effective and informative way demonstrating how its national measures fulfilled the requirements or recommendations of OSPAR measures. It is possible to conclude that Sweden fulfilled the measure.

d) Sweden had reported that national policy has a different orientation to some OSPAR measures but will effectively secure the same aims (e.g. Recommendation 88/2 on nutrient inputs). This measure is considered in more detail in Chapter 8;

e) Although OSPAR has agreed that implementation reporting can cease the last reported information from Sweden does not demonstrate that the requirements of the measure have been met and there are gaps in the audit trail on whether Sweden has fulfilled the measure. Further analysis of these cases is given below.

Measures assessed as fully implemented by OSPAR with gaps in the Swedish audit trail

For some measures, OSPAR has assessed that a measure has been implemented across the OSPAR area, but the last Swedish implementation reporting shows that Sweden does not consider the measure to be fully implemented or has indicated there are gaps in Sweden's implementation. Some cases are described below:

OSPAR Recommendation 2002/1 on Discharge Limit Values for Existing Aluminium Electrolysis Plants. Amended by Recommendation 2005/1

OSPAR Recommendation 98/2 on Emission and Discharge Limit Values for Existing Aluminium Electrolysis Plants

Recommendation 2002/1 covered discharges to water from existing aluminium electrolysis plants and does not apply to anode-baking operations. It established standards for discharges of PAHs to water and amended and complemented an earlier

Recommendation (98/2) on Emission and Discharge Limit Values for Existing Aluminium Electrolysis Plants. Recommendation 2002/1 is relevant only for Søderberg plants and not for prebake plants.

Sweden's last implementation report on Recommendation 2002/1 in 2007/08 indicated that there was one pre-bake and one Søderburg in operation. The OSPAR implementation overview assessment on Recommendations 92/1, 96/1, 98/2 and 2002/1 (OSPAR Commission, 2008a) highlighted that "no comment was made on whether Sweden considers the measure to be fully implemented". Despite this gap the OSPAR implementation overview assessment concluded that the recommendation was fully implemented. The main reasons for this were that, even if some of national reports were incomplete,

- There was a "general impression that the aluminium electrolysis plants were mainly complying with the requirements of the Recommendations" supported by the closure of a number of plants using the Söderburg plants;
- The commitments of the measures were covered by the IPPC Directive and associated BAT description in the BREF document whose implementation was expected to ensure that the OSPAR requirements were met.
- The quality of the reports from the OSPAR Contracting Parties indicated that the parties do not consider the reporting to be of high importance.

Inspite of this a gap remains in the OSPAR audit trail that Sweden still had in 2008 an operational Söderburg aluminium electrolysis plant.

When consulted as part of this project SEPA has confirmed that in 2015 the remaining aluminium electrolysis plant in Sweden, Kubiken Aluminiumn AB in Sundsvall now has no Söderburg oven production and consequently no Söderburg emissions as the installation has been fully converted to pre-bake anodes. Furthermore emissions of dust from the installation as a whole (now using pre-bake annodes) were in 2014 reported as below the emission limits stated in Recommendation 1998/2 and discharges of PAHs to water had ceased. Emissions of HF gaseous were reported in 2015 as being 0,52Kg/t Al slightly above the emission limit in Recommendation 1998/2 of 0,5kg/t Al (pers. comm. Naturvårdsverket)

Observation

Although a gap was left in the OSPAR information system the information can be filled by Swedish national agencies (SEPA) and the OSPAR conclusions in 2008 were proved correct in Sweden. The justification given at the OSPAR level that the cessation of implementing reporting on these measures should cease on account of the quality of the reports submitted suggests OSPAR did not consider the measures to be of importance. This could be subject to challenge as it may not put OSPAR work in the best light.

PARCOM Recommendation 92/5 Concerning Best Available Technology in the Pharmaceutical Manufacturing Industry

Recommendation 92/5 qualitatively described best available technology (BAT) for the reduction of emissions and discharges to the environment from the pharmaceutical industry. The Recommendation distinguished between four categories of processes: chemical synthesis, biological extraction, fermentation and formulation. The Recommendation dealt in three sections specifically with solvents, other specific substances (metals, nutrients..) and non specific measures (water saving, process control.....).

Sweden's last implementation report in 2002 stated that full implementation had not been achieved and the measure applied to 37 production facilities. Sweden's reason for having not fully implemented the recommendation was reported as "related to the assessments made within the permit-giving procedure, concerning the local environmental impact and what is economically reasonable etc. in the individual case". This is rather unclear but would seem to imply that the requirements to apply BAT were not met at some plants on the grounds that it was not practicable costs or involved excessive costs.

In the last OSPAR implementation overview assessment of Recommendation 92/5 (OSPAR Commission, 2005) it is reported that "The Hazardous Substances Committee (HSC) 2002 concluded that implementation reports showed the success of this measure as far as it could because it contained qualitative BAT elements." HSC agreed that Contracting Parties that had reported could cease the submission of future implementation reports, while for other Contracting Parties reports were missing. Differing views are recorded on whether implementation reporting should be continued as at least one Contracting Party considered implementation of BAT incomplete in this sector. HSC agreed that PDS (a subgroup of HSC) would carry out further work on the examination of the IPPC BREF (on manufacture of fine organic chemicals) as it became available and in the context of a project on whole effluent assessment considering the use of techniques for assessment of the properties of whole effluents as a basis for their regulation.

Recommendation 92/5 was among those "set aside" by OSPAR in 2010. OSPAR work on whole effluent assessment was no longer continued after 2010 due to a lack of support from Contracting Parties having been paused from 2006/7 to 2009/10. There is little within the OSPAR record describing how the IPPC BREF on manufacture of fine organic chemicals has been reviewed since its adoption in 2006.

In the context of this project SEPA was asked whether it held any further information relevant to the implementation of 1992/5, however, no further information could be traced without engaging regulating authorities or the companies themselves.

Observations

Based on the information accessed the audit trail with regard to the implementation of this measure appears incomplete. When OSPAR ceased requiring implementation reporting in 2005, Sweden was reporting that the measure was not fully implemented and providing a unclear reason as to why. An examination of reporting on IPPC for the sector is needed to determine whether the requirements of the measure have been met. Several lessons can be identified:

- The qualitative formulation of the requirements of the Recommendations provided scope for different interpretation by Contracting Parties on whether implementation was sufficient;
- It is difficult to understand the justification expressed at OSPAR level that implementation reporting should cease because it is not providing further information, especially when Contracting Parties report that a measure is not fully implemented. A more rigorous approach would have been to seek more information. While it is likely that Contracting Parties were seeking to balance work on implementation reporting with other priorities, this is not well explained in the OSPAR publication and could be questioned.
- When implementation reporting was ceased at OSPAR level Sweden did not take steps to address gaps in its audit trail for the implementation of Recommendation. It is therefore not clear whether the cessation of implementation reporting

effectively equates to the cessation of application of the measure, which is not the stated intention of the OSPAR Commission;

PARCOM Decision 95/2 on Discharge and Emission Limit Values for the Integrated and Non-Integrated Sulphite Paper Pulp Industry

The last implementation reports in 2003 stated that one Swedish mill does not comply with the limits in the Decision for Chemical Oxygen Demand (Nordic Paper Säffle). The Implementation Overview Assessment for Decision 95/2 (OSPAR Commission, 2003) concluded that the Decision 2005/2 was no longer up-to-date to justify continued reporting. The measure has been assessed by OSPAR as fully implemented. The measure was among those set aside by the OSPAR Commission in 2010.

As part of this project SEPA was asked whether the plant in question now complies with the relevant limits. No information was provided in SEPA's reply.

Observations

There could be a gap in the auditable information trail on this measure. Even though it seems likely that the problem would have been addressed through the implementation of BAT in line with the IPPC process it would be improve transparency to check and record this.

Conclusions

The cases above highlight a need for some more systematic national recording on the implementation of OSPAR measures. This would ensure that there is a traceable national record on implementation, including where OSPAR has agreed that implementation reporting should cease but the last information reported by Sweden indicated that a measure has not been fully implemented. It is also possible that clarifying remarks made by Sweden during the discussion of its implementation reporting have not been adequately recorded in the final implementation overview assessment published by OSPAR. This highlights the need for such reports to be carefully checked to see that they will provide sufficient information for future audit.

National process for implementation of OSPAR measures

Sweden's reporting to OSPAR provides very little information on the national process for implementation of OSPAR measures, including the methods that SEPA and SwAM use to secure the implementation of OSPAR measures. This is a result of three categories of means of implementation being used routinely within the implementation reporting formats for many OSPAR measures: legislation, administrative action and voluntary agreement.

Legislation is referred to as the means of implementation for several measures. However, it is not a specific requirement to report what legislation has been adopted or whether the legislation has specifically been adopted as a result of the adoption of the measure by OSPAR or simply coincides with the requirements of the OSPAR measure. Across all thematic areas several measures are implemented through use of policy and strategy initiatives and voluntary agreements. No detail is given on how national authorities have worked to secure the implementation of OSPAR measures through County Administrative Boards (Länsstyrelser) and municipalities (Kommuner). These are the authorities who are responsible for supervision of activities that are potentially environmental hazardous at the regional and local level and the effective delivery of the

measures. These authorities are dependent on guidance, expertise and financial resources to implement the measures. In contrast information can often be found in the reporting on the steps taken by the private sector bodies and in some cases by academic bodies.

SEPA has been asked to provide further information on their processes for securing the national implementation of OSPAR measure, but reported that there was no special process in place for implementation work with the being the responsibility of several units within their daily work depending on the field being covered.

SwAM made available for review a number analyses of the implications for prospective OSPAR measures for Sweden that are prepared routinely as part of the preparations for negotiations on the adoption the measures. These included those related to the negotiations regarding species and habitats recommendations, although not the final instructions from government offices of Sweden. These analyses consider the interaction of the measure with Swedish regulation and identify work that the adoption of the recommendation might imply. Analysis of some measures identifies other authorities that will need to be engaged in the implementation of the measure, for example County Administration Boards or other national authorities such as SEPA. Although these are valuable analysis they do not provide a record of what steps actually were taken in order to implement the measures after they had been adopted.

In order to gain more insight into the perspective of the County Administrative Boards to OSPAR measures, a short swedish language questionnaire was sent to selected representatives from the County Administrative Boards on the Swedish west coast (Väster Götaland, Halland and Skåne) in January 2016

The selected staff were all working in the field of nature protection given that this has been the most active field in the development OSPAR measures in recent years and experience in working on the implementation of OSPAR hazardous substances measures has become more dispersed with the passage of time.

Responses were received from Västra Götaland and Skåne. Although this was not a particularly objective or rigorous survey of the links between the County Administrative Boards, SwAM and OSPAR, the responses (see Table 7.2) may be instructive in guiding the future implementation of OSPAR measures. The main conclusions from the responses:

- the consultees were aware of OSPAR work in the specific field but have a limited contextual awareness of the scope and nature of OSPAR's work;
- there is a recognition that as the state agencies working at the county level County Administration Boards are in a strong position both to increase knowledge of international efforts on marine protection, to improve knowledge on natural values relevant to OSPAR work and to affect the state of each County's marine areas. This position could be better developed.
- there seems to be scope for nurturing and developing information flow between national authorities and the County Administration Boards regarding the implementation of OSPAR measures in a more systematic way that provides staff at the county level to understand and develop their role and its context.
- the resources available to support the implementation of OSPAR affects the possibilities for County Administration Boards to give them focus.

Table 7.2. Responses (translated and anonymised) to a questionnaire to the County Administrative Boards regarding OSPAR's work.

In which areas of environmental protection does the OSPAR Commission work? *Vilka områden inom miljöskydd känner ni till att OSPAR konventionen täcker?*
• *We work with the issues that fall within the Committee for Biodiversity (BDC). But I know that the OSPAR in other committees, including dealing with issues relating to the discharge of hazardous substances, and marine debris.* • *OSPAR Convention covers the geographical area of the North East Atlantic and it includes a focus on the protection of species and habitats, but which more areas* • *Difficult to determine what is meant by "environmental protection"... Protected Areas (MPA). Classification of species and habitats status in the Northeast Atlantic. Know that there are recommendations on environmentally harmful activities, however, no detailed knowledge of what the recommendations in practice*
Which of the fields of the OSPAR work does the Länsstyrelsen take into account in its own environmental protection activities? *Vilka områden av OSPARS arbete tar er organisation i beaktande i sina egna miljöskyddsaktiviteter?*
• *In efforts to protect marine species and habitats, we now also focus on the OSPAR species and habitats. We have applied for and received funding from SwAM to map the extent of the OSPAR habitat we have in the county. There remains some work and we hope to get funding for this year as well.* • *We work with the protection and management of OSPAR species and habitats within the National Park and also in the Väderörarna Nature Reserve* • *We use mainly of lists of endangered / declining species and habitats. If these species and habitats found in County's water the OSPAR lists become an additional argument for protective measures.*
How do you see the role of your organisation in the implementation of OSPAR measures (Decisions and Recommendations) and other OSPAR work? *Hur ser ni på er organisations roll i genomförandet av OSPAR beslut och rekommendationer och annat OSPAR arbete?*
• *In terms of biodiversity issues, we see that the county administrative boards have a very big role to fill.* • *Except for protected species, I have no knowledge of the decisions and recommendations coming from OSPAR.* • *As the state's regional representatives it is our role is to impart knowledge within the county on Sweden's international commitments. On the other side, we assist with the regional knowledge of existing natural values concerning OSPAR. These are reported to SwAM who then report to OSPAR. We are the state agency that has the greatest influence on how County's marine areas are protected by the OSPAR Convention as well as how knowledge of County's marine conservation values reaches OSPAR*
Do you get guidelines, orientations from HaV regarding the implementation of OSPAR measures? Which instruments are used? *Får ni riktlinjer, vägledning från Havs- och vattenmyndigheten angående implementeringen av OSPAR beslut och rekommendationer? Vilka verktyg använder HaV för att göra detta?*
• *We have not received any clear guidelines from SwAM, but sometimes we are informed of some recommendations adopted by OSPAR via email.* • *Very rarely. To my knowledge, the communication we have had with SwAM in recent years concerning OSPAR has mainly concerned how we can contribute to the knowledge of existing natural values.*
Have you taken any steps to implement OSPAR Rec 2010/5? *Har ni vidtagit några åtgärder för att genomföra OSPARs rekommendation 2010/5[12]?*

[12] OSPAR Recommendation 2010/5 on the assessment of environmental impacts on threatened and/or declining species.

- *I do not know what this recommendation is.*
- *In 2015 we conducted surveys to ascertain the extent of the OSPAR habitat in County's part of the Kattegat. The data was reported to SwAM. The County's assignment from the government has nothing specific has with regard to OSPAR recommendations.*

Do you have any suggestions on how HaV could improve support to Länsstyrelserna in supporting implementation of OSPAR measures?
Har ni några förslag på hur Havs- och vattenmyndigheten kunde förbättra stödet till Länsstyrelserna vad gäller genomförandet av OSPAR åtgärder?

- *Inform about new recommendations, what they contain and how we will work to implement them together. Continue to give us the means to identify endangered / declining habitats, but also in the long term also to monitor these.*
- *First, to inform decisions and recommendations to County Administrative Boards and then to support monitoring of the OSPAR species and habitats with resources so that the recommendations and the protection can be implemented.*
- *Summarize what OSPAR measures and recommendations cover and means, and to clarify in concrete terms how they can / should be used in the county administrative board's work.*

Conclusions

1. Sweden has a strong record of reporting on its implementation of OSPAR measures on-time and has generally provided with a good standard of information in response to the reporting requirements;
2. The absence of a systematic national information record on implementation of OSPAR measures in Sweden beyond the archiving of Sweden's formal implementation reports submitted to OSPAR means that it is very difficult to follow the legal and administrative process used to implement OSPAR measures in Sweden. Knowledge on implementation process seems to be only retained through retention of personnel involved in reporting. This could possibly be addressed by considering more systematic use of existing information systems that are used in other contexts, such as VISS (developed by the Water Authorities for Water Framework Directive measures) or Skötsel DOS (developed by SEPA for measures in protected areas.
3. Comments received from staff at the County Administrative Boards during the course of this work indicate a need to develop information flow between national authorities and the County Administration Boards regarding the implementation of OSPAR measures in a more systematic way that provides staff at the county level to understand and develop their role and its context.
4. The lack of a national data and information record on the actual steps taken to implement of OSPAR measures and the data and information record on environmental pressures and the quality of the marine environment leads to difficulties in analysing the effectiveness of OSPAR measures for environmental improvement.
5. With the adoption of many OSPAR biodiversity measures that include a package of actions addressed to different actors it can be expected that more clarity on the implementation process will be beneficial both for both national and regional authorities to secure and effective implementation.

8. “Deeper analysis” of selected measures

In order to investigate and test out the evaluation framework it has been applied in full to two measures.

- PARCOM Decision 90/3 on Reducing Atmospheric Emissions from Existing Chlor-Alkali Plants – see Table 8.1
- PARCOM Recommendation 88/2 on the Reduction in Inputs of Nutrients to the Paris Convention Area (reference is also made to PARCOM Recommendation 89/4 on a Coordinated Programme for the Reduction of Nutrients) – see Table 8.2

These OSPAR measures have been selected because both are assessed as not fully implemented at OSPAR scale and they are representative of two of the most important thematic areas of OSPAR’s work for Sweden. The application of the evaluation framework to these measures has the purpose of learning and guiding further development of the evaluation framework and considering the information available relevant to the implementation of these measures in Sweden.

PARCOM Decision 90/3 on Reducing Atmospheric Emissions from Existing Chlor-Alkali Plants

Table 8.1. Application of the evaluation framework to considering the implementation of PARCOM Decision 90/3 in Sweden.

1	Measure	PARCOM Decision 90/3 on Reducing Atmospheric Emissions from Existing Chlor-Alkali Plants
	Step 1: Characterisation	
2	OSPAR Strategic Objective	Hazardous Substances
3	Specific and measurable environmental objective? Does the OSPAR measure have a specific and measurable environmental objective, such as reduction or cessation target?	*Category: Yes* - that existing mercury based chlor-alkali plants shall be required to meet by 31 December 1996 a standard of 2g Hg/t Cl2 capacity for emissions to the atmosphere, unless there is a firm commitment that the plant will be converted to mercury-free technology by the year 2000; - that mercury in hydrogen which is released to the atmosphere, or is burnt, is to be included in this standard; - that existing mercury cell chlor-alkali plants be phased out as soon as practicable. The objective is that they should be phased out completely by 2010.
4	Links to MSFD: Which MSFD Descriptors of GES is the OSPAR measure relevant to?	
	MSFD Descriptors	8, 9
	GES characteristics	8.1, 8.2, 9.1
	Miljökvalitetsnorm	B1, B2
	Swedish MSFD Indicators	9.1A
	KTM: Which of the key types of measure (KTMs) in the EU framework for reporting on the MSFD programme of measures (Article 13) is the OSPAR measure relevant to?	15
5	OSPAR common indicators Which OSPAR Common	*D8 metals (biota) – mercury* *D8 metals (sediment) – mercury*

	Indicator(s) is the OSPAR measure relevant to?	
*	Swedish system of Environmental Quality Objectives	
	Environmental Quality Objectives	A non-toxic environment
	Generational goal	- patterns of consumption of goods and services cause the least possible problems for the environment and human health - ecocycles are resource efficient and as far as possible free from hazardous substances
	Milestone target	Särskilt farliga ämnen
7	Pressure addressed Which pressure component (s) does the OSPAR measure address?	Introduction of non-synthetic substances and compounds – mercury
	Ecosystem Components: Which ecosystem component/feature will the OSPAR measure address?	*Birds (all marine species)* *Mammals (all marine species)* *Fish (all fish species)* *Cephalopods* *Seabed habitats – sediments*
8	Activity : Which activities/sectors are covered by the measure or lead to the pressure that is the subject of the measure?	*Land-based industry (discharges and emissions)*
9	Physical controls and actions: Which physical controls and actions and actions are covered by the OSPAR measure that will have a direct effect on the level of pressures/status of features?	*Category:* *S – controls on where an activity is permitted (spatial controls)* *O – controls on the degree of environmental perturbation of an ecosystem component (controls on the level of pressure an activity is permitted to output)*
10	Supplementary actions	*Category: None*
11	Are pressure/component also addressed by EU or international measures? How?	Pressure – Industrial Emission Directive BREF process is relevant to the chlor-alkali industry Component – The Water Framework Directive and Marine Strategy Framework Directive are relevant to concentrations of mercury in the marine and coastal environment.
	Step 2: Implementation	
12	When was the last round of implementation on the OSPAR measure?	2004: Implementation overview assessment Annual report: Mercury losses from the Chlor-alkali industry 2013
	Last reported information	In 2004 Sweden reported: The Swedish Government has proposed a ban on the use of mercury in the chlor-alkali industry from the year 2010. The intention is that the ban will be in place well in advance of, and implemented by 2010. Regarding any legal measure/voluntary agreement, the Swedish plants are in compliance with the requirements of the decision." The OSPAR report "Mercury losses from the Chlor-alkali industry 2013" (OSPAR Commission, 2015d) reports on one mercury-cell chlor-alkali plant in operation by Ineos at Stenungsund with 120000 tonne production capacity with mercury cells. Total discharges, emission and losses 0.15g/t
	Relevant in Sweden	Applies
	State of implementation - Sweden	
	Has the OSPAR measure been fully implemented in each of the marine subregions (MSFD)/OSPAR Regions in the OSPAR maritime area?	*Category: 1b (not fully implemented) in Greater North Sea RII*
	Where the measure has not been fully implemented in an OSPAR	Plants in operation in 2013 with mercury cell technology: BE (2 plants);

	Region which Contracting Parties within each OSPAR Region/marine subregion have fully implemented the measure?	FR (5 plants); DE (5 plants); SE (1 plant)
	State of implementation – Sweden	*Category 1b (not fully implemented)* Sweden reported on two mercury cell chlor-alkali facilities in operation at the time of the first implementing reporting in the measure. In 2013 Sweden reported on 1 plant in continued operation (INeos at Stenungsund). A plant at Dorsebäck north of Gothenburg ceased operation in 2005. SEPA has provided the following information: "There is a ban for using mercury (Regulation 1998:944). Despite the ban it is still possible to use mercury in Chlor-Alkali plants until 9 December 2017 according to Regulation 2014:231. Inovyn Sverige AB in Stenungsund is expected to change its production processes to comply with the relevant EU reference document on best available technology and OSPAR Decision 2000/3 by this date.
13	What instruments have Contracting Parties used to implement the OSPAR measure within each of the marine subregions?	
	Implementation instruments	*Category: Legislation, Policy and strategy initiatives*
	Gaps in implementation	Information in the most recent reporting to OSPAR on 2013 suggests that mercury cell based chlor-alkali production has continued after 2010. No information is given on plans to cease remaining production so as to comply with the measure. (SEPA has provided the information under 12 above on this point although this has not yet been included in an OSPAR publication).
14	Has implementation reporting provided information on the extent to which any environmental objectives in the OSPAR measure have been reached?	
	Progress towards environmental objectives in measure	*Category: Progress towards environmental objectives demonstrated*
15	Has progress towards environmental objectives contained in the OSPAR measure been linked to any observed improvements in environmental status. How does this contribute to OSPAR strategy objectives?	
	Overall conclusion	*Category:* *Environmental objectives of measure: mostly achieved* *Importance of measure in achieving OSPAR strategy objective for component: 10–20 %* *Existing progress towards OSPAR strategy objective for component: progress is limited*
	Comments on links to observed improvements in environmental status in SE waters?	Examination of the OSPAR CEMP and the HAVET report indicates that the national monitoring programme has no monitoring stations for mercury in the immediate vicinity of the remaining chlor-alkali plant (Stenungsund). No time trends are reported from the available stations (Fjällbacka, Fladen, Nidingen), Blue mussel concentrations are at these stations reported above background but below the EC food limit (OSPAR Commission, 2013). Water body classification with regard to chemical status in respect of the Water Framework Directive show that good chemical status is achieved in few Swedish water bodies with the following explanation: "The water body can not establish good chemical status with regard to mercury, the levels in fish exceed the permitted level. Probably the biggest source is the historical emissions of mercury, through atmospheric deposition that has been stored in surrounding land and is now leaking continuously into the surface water and accumulate in fish. At land use, measures to prevent the increase mercury seepage from surrounding land taken. Because of that the largest source is atmospheric deposition, you can not determine the period within which it is possible to reduce levels below the current limit in fish".[13]

[13] Statusbedömningssammanställning kustvattenförekomster hela Sverige Vattenförekomster inklusive preliminära (2010–2015) med påverkanskällor, miljöproblem, skyddade områden och extra geografisk

		A report based on data collected by the Bohuskustens water quality association (Golder Associates, 2015) shows that Hg concentration at Stenungsund was better than at other stations along the Bohus coast in both 2006 and 2011 with only a small deviation from Klass 1 status (klassning enlight Naturvårdsverket bedöminingsgrunder (Svenskt standard) för Kust och Hav (Naturvårdsverket, 1999). A clear deviation from Klass 1 status was determined in other areas along the Bohus coast (Svinesund, Havstensfjörd etc.) S Stenungsundsområdet: Worse measurements in 2011 cf to 2006. Highest concentrations of mercury in areas of Hakefjörd Göta Älvsontrollprogramm – stations at Dörsebäck (noth of kungälv), Eriksberg, Tångudden and a coastal station: Large deviation 2006, clear deviation 2011 at Eriksberg. Dörsebäck little deviation to clear over same period
	Comments on environmental status in RII (Kattegat and Skagerrak)	According to OSPAR Commission (2009) data reported to EMEP showed an overall reduction in total air emissions of around 20 % in the period 1998–2006. The picture of reductions achieved across OSPAR countries is very varied. Total emissions from industrial processes, including manufacturing industries, remained fairly stable over this period with there being an increase in emissions from the metal production sector. The most consistent development since 1998 has been for mercury emissions from the chlor-alkali industry which halved, as have the total losses of mercury from this industry through product, waste water and air. Recent estimates suggest that despite significant emission reduction in Europe and North America, global mercury emissions have not changed significantly over the past 15 years due to emissions growth in other parts of the world (e.g. Asia). Data on discharges of mercury to water reported to EPER give indication that discharges from heavily regulated point sources continue, but do not allow conclusions on trends. Direct and riverine inputs of mercury are the major input in Regions II (Greater North Sea), III (Celtic Seas) and IV (Bay of Biscay/Iberian Coast). Riverine inputs of mercury decreased significantly by 75 % in Region II. Direct discharges were much smaller and showed a similar scale of decrease. Major reductions in riverine inputs (~85 %) and direct discharges of mercury were also observed for the Celtic Seas. Data are not sufficient to allow conclusions on changes in either riverine or total waterborne mercury inputs in Region I (Arctic Waters) or IV. In Region I atmospheric deposition accounts for 99 % of inputs. Across Region II almost all temporal trends in mercury concentrations in sediments are downwards. Both upward and downward temporal trends occur in biota. A number of upward trends of mercury in biota were detected in southern Norway. *Discharges, losses and waterborne inputs* Losses of mercury through product, waste water and air from chlor-alkali installations with waste water discharges in the drainage of the OSPAR maritime area have halved in the period 1998 – 2006 and reached 4192 kg in 2006 (OSPAR, 2008b). Losses from installations range between 0.165 g per tonne production capacity from one plant in Sweden to 1.957 g per tonne production capacity from one plant in the United Kingdom.
	Step 3. Expected Effectiveness	
16	*Is full implementation of the actions required by the measure expected to either:* - *address the pressure component that is the subject of the measure so that it is in line with GES:* - *protect the feature that is the subject of the measure so that its distribution, extent, condition is in line with GES?*	
	Is full implementation likely to	*Category: No*

information (myndighet, distrikt, åtgärdsområde). Klassningar gjorda efter 2011-01-01 vilket innebär att samtliga är gjorda under andra cykeln.

SB02 Statussammanställning kustvattenförekomster hela Sverige senaste klassningen efter 2011-01-01 2015-11-01 18.02.xlsx.

	address the pressure component that is the subject of the measure so that it is in line with GES	Comment: Even with full implementation of 90/3 in the Swedish part of Region II discharges, losses and emissions of mercury will continue to lead to its introduction in to the marine environment, including from its accumulation in surrounding land and leakage into the surface water. A more gradated set of categories in the evaluation framework would elicit provide a more informative answer.
	Is full implementation likely to protect the feature that is the subject of the measure	*Category: No* Comment: Even with full implementation of 90/3 in the Swedish part of Region II discharges, losses and emissions of mercury will continue to lead to its accumulation in to the marine environment, including from sources in other countries. A more gradated set of categories would elicit provide a more informative answer.
17	What proportion of the excess level of the pressure component is expected to be reduced by full implementation of the actions required in the measure	
		Comment: Improvement of the evaluation framework is needed to clarify at what point the excess level of the pressure should be considered (for the purpose of the following answers excess pressures is considered as it is understood in 2015)
	- spatial extent	*Category: Minimal (<5 %) or Minor 5–25 % part*
	(explanation)	Introduction of mercury is widespread and inputs from chlor-alkali works are one source of the pressure.
	- temporal extent	*Category: Minimal (<5 %) or Minor 5–25 % part*
	(explanation)	Introduction of mercury is occurring continuously and inputs from chlor-alkali works are one source of the pressure. Question is less relevant for waterborne inputs than other pressures that may not occur continuously
	- intensity	*Category: Minimal (<5 %) or Minor 5–25 % part*
	(explanation)	Emissions of mercury in 2013 from the remaining Swedish plant are relatively small contribution to regional and transboundary introduction (dispersal) of mercury
18	What is the expected effect on distribution, extent/abundance and condition of the ecosystem feature as a result of the actions required/recommended by the OSPAR measure	
		Decision 90/3 is relevant to the condition of a number of ecosystem features. Population effects from the presence of mercury in the environment are not well modelled
	- distribution	*Unknown*
	(explanation)	See above
	- extent/abundance	*Unknown*
	(explanation)	See above
	- condition	*Birds (all marine species) : unknown/condition of feature is expected to deteriorate more slowly (low confidence)* *Mammals (all marine species) : unknown/condition of feature is expected to deteriorate more slowly (low confidence)* *Fish (all fish species): condition of feature is expected to improve* *Cephalopods* *Seabed habitats – sediments: condition of feature is expected to improve*
	(explanation)	An expression of confidence is needed. Condition of fish and sediments are expected to improve in terms of lower concentration of mercury (subject to time lag for measure to take effect). The effect on physiological. The same can be said for birds and mammals although these are not such a common part of measurement programmes. The effect on physiological condition is less easier to predict although a minor beneficial effect can be expected
19	What further actions are needed so that (i) relevant pressure is in line with GES, or (ii) distribution, extent/abundance and condition are in line with GES	OSPAR Commission (2010) highlighted that control systems and best available techniques are in place for all main sources. There is however a focus on industrial sources and opportunity to improve regulatory activity. Most diffuse sources are addressed by the EC mercury strategy but the strategy has not yet resulted in a ban of dental amalgam. Releases of mercury to the environment continue from all main point and diffuse sources. While overall the trends point down, for many

		Contracting Parties, sectors and activities, emission levels to air from large point sources stagnated or, in some cases, even increased in 1998 – 2005. This is reflected in limited reduction rates in atmospheric inputs to the OSPAR Regions; which is also partly due to the contribution of global emission sources. Actions needed: It is expected that the cessation target will be largely achieved for major point sources but further work is needed to foster this trend, for example, through improvement of technology to support further reductions of releases (e.g. combustion). Under EC marketing and use restrictions, mercury-containing products will phase out in coming years thus reducing pressures from diffuse sources (especially waste streams). Yet, there is opportunity to investigate the need for further initiatives on diffuse sources under the EC mercury strategy. Special attention is warranted to investigate into the ban of dental amalgam, waste water treatment and storm water overflow to inform the need for further actions towards the cessation target for mercury. The effective implementation of the obligations of the Water Framework Directive for mercury is important to facilitate the progress towards the cessation target for mercury. Action reductions in global emission rates for mercury continue to be important.

PARCOM Recommendation 88/2 on the Reduction in Inputs of Nutrients to the Paris Convention Area

Table 8.2. Application of the evaluation framework to considering the implementation of PARCOM Recommendation 88/2 in Sweden.

1	Measure	PARCOM Recommendation 88/2 on the Reduction in Inputs of Nutrients to the Paris Convention Area Reference is also made to PARCOM Recommendation 89/4 on a Coordinated Programme for the Reduction of Nutrients
	Step 1: Characterisation	
2	OSPAR Strategic Objective	Eutrophication
3	Specific and measurable environmental objective? Does the OSPAR measure have a specific and measurable environmental objective, such as reduction or cessation target?	Yes Recommendation 88/2 requires OSPAR Contracting Parties to: (a) take effective national steps in order to reduce nutrient inputs into areas where these inputs are likely, directly or indirectly, to cause pollution, and; (b) aim to achieve a substantial reduction (of the order of 50 %) in inputs of phosphorus and nitrogen into these areas between 1985 and 1995, or earlier if possible. Recommendation 89/4 required Contracting Parties to implement a series of actions in the North Sea, Kattegat and Skagerrak to achieve the aim of Recommendation 88/2
4	Links to MSFD: Which MSFD Descriptors of GES is the OSPAR measure relevant to?	

	MSFD Descriptors	5
	GES characteristics	5.1, 5.2, 5.3
	Miljökvalitätsnorm	A.1
	Swedish MSFD indicators	5.1B, 5.2B, 5.2D A.1.1
5	KTM: Which of the key types of measure (KTMs) in the EU framework for reporting on the MSFD programme of measures (Article 13) is the OSPAR measure relevant to?	Indirect – 1, 2, 12, 16, 17, 23, 33 possibly
6	OSPAR common indicators: Which OSPAR Common Indicator(s) is the OSPAR measure relevant to?	D5 nutr conc D5 chlorophyll D5 oxygen D5 Input water D5 Input air D5 Phaeocystis D1/6 Bent Hab2 D1 Pel Hab 2
*	Swedish system of Environmental Quality Objectives	
	Environmental Quality Objective	No eutrophication
	Generational goal	Ecosystems have recovered, or are about to recover, and their ability to generate long-term ecosystem services is secured.
	Milestone target	-
7	Pressure addressed: Which pressure component (s) does the OSPAR measure address?	Nutrient and organic matter enrichment
	Ecosystem Components: Which ecosystem component/feature will the OSPAR measure address?	Chemical – nutrient levels Chemical – oxygen levels Water column habitats – coastal Water column habitat – shelf Seabed habitats – all
8	Activities/sectors: Which activities/sectors are covered by the measure or lead to the pressure that is the subject of the measure?	Land-based activities/industries – agriculture and forestry Land-based activities/industries – Urban (municipal waste water discharge) Land-based activities/industries – Industry (activities/industry) Food production – aquaculture Land-based activities/industries – other Energy Generation Etc.
9	Physical controls and actions: Which physical controls and actions and actions are covered by the OSPAR measure that will have a direct effect on the level of pressures/status of features	88/2 *Category: O – controls on the degree of perturbation* 89/4 *Category: I – controls on the amount of a human activity; (S – controls on where an activity is permitted); O - controls on the degree of perturbation*
10	Does the measure cover any of the following types of supplementary actions (Information tools, awareness raising, Investigation, technology development)	
11	Are pressure/component also addressed by EU or international measures? How?	*Category : Yes*

		Implementation of EU measures will progressively cover the actions required in the OSPAR measure at least to a considerable degree and possibly in full Directive 92/676/EEC – Nitrates Directive: requires Member States to (i) designate as Nitrate Vulnerable Zones (NVZs) all land draining to waters that are affected by nitrate pollution, (ii) establish a voluntary code of good agricultural practice and Action Programmes of measures for the purposes of tackling nitrate loss from agriculture, and (iii) to review the extent of their NVZs and the effectiveness of their Action Programmes at least every four years and to make amendments if necessary. Directive 91/271/EEC – Urban Waste Water Treatment Directive: includes various requirements for collection and specified treatment of waste water for agglomerations and industries and the designation of "sensitive areas". Directive 2008/1/EC - Integrated Pollution and Prevention Control (IPPC) Directive: pursues reductions of discharges to water and emissions to air of nutrient species from main industrial installations through the use of Best Available Techniques (BAT) and emission/discharge limit values. Directive 2001/81/EC - National Emission Ceilings (NEC) Directive: sets upper limits for each EU Member State for the total emissions in 2010 of the 4 pollutants responsible for acidification, eutrophication and ground-level ozone pollution (SO2, NOx, VOCs and ammonia). Directive 2000/60/EC - Water Framework Directive (WFD): requires Member States to achieve "good ecological and chemical status" of surface water by 2015. Directive 2008/56/EC – Marine Strategy Framework Directive requires Member States to take the necessary measures to achieve or maintain good environmental status in the marine environment by 2020.
	Step 2: Implementation	
12	When was the last round of implementation on the OSPAR measure?	*Category: 2007 – reporting currently suspended* OSPAR Commission (2008b) agreed that, pending a pause in implementation reporting, the format of future reporting on PARCOM Recommendation 88/2 should be reviewed in the 2008/2009 meeting cycle. The purpose of the review includes addressing difficulties raised by a number of Contracting Parties with reporting in relation to the reference year 1985 and associated uncertainties in evaluating progress towards the 50 % reduction target. Information collected by OSPAR under PARCOM Recommendation 88/2 is still unique as it does not duplicate other reporting commitments, e.g. under EC legislation, and it provides a focused answer to the source-oriented objective of the Eutrophication Strategy. Reporting remains suspended in 2015.
	Last reported information	Sweden reported the following on implementation of R88/2 in 2007: *1. National Action Plans* National Plans are adopted related to nutrient discharges/losses to surface waters and nutrient inputs to the maritime area. National procedures for estimating nutrient discharges take account of relevant procedures for calculating discharges/emissions at source and background and retention emissions. National procedures are based on a catchment-based approach. *2. Fulfillment of the 1988 commitments* The official P-reduction target in Sweden is a reduction of discharges to water between 1995 and 2010 by at least 20 %. This target refers to gross load of P to water (inland + coast) in the whole country. The largest reductions shall be made in the most sensitive areas. There is no action plan in Sweden for fulfilment of the PARCOM 50 % reduction target from 1985, but further efforts are made to continue the reduction of phosphorus from all sectors. One reason for the difficulty in reaching the 50 % target is that Sweden made massive efforts to reduce P from urban wastewater treatment and industry between 1970 and 1985; during this period discharges of P from these two sectors fell by ca 80 %. This has reduced

		the potential for further reductions; e.g. to find effective measures to reduce P from agriculture has been much more problematic. Besides, the fulfilment of the target is difficult to monitor since there are problems to update the estimate of P loss from agriculture in 1985, which was made by a method that is not comparable with later estimates. Finally, P is not considered the limiting nutrient in Kattegat and Skagerrak and is thus considered a less sensitive area than the Baltic Proper. Thus, the main efforts to reduce nutrient input to the Swedish West Coast will focus on the reduction of nitrogen. In summary, we cannot give a precise estimate when the target has been achieved, but probably not before 2010. The present official target for N input to sea areas of southern Sweden is a 30 % reduction between 1995 and 2010. As for phosphorus, no action plan exists for reaching the PARCOM 50 % target for nitrogen. Sweden reduced N input to the OSPAR area by 22 % between 1985 and 1995, primarily due to actions taken in agriculture, sewage treatment and industry. According to current plans a reduction in the order of 30 % will be reached between 1995 and 2010, but the improvements taken so far is to be evaluated in 2007. In total, fulfillment of this latter target would mean a reduction by 45 % from 1985 to 2010, and thus the 50 % reduction target would be reached some time between 2010 and 2015. Sweden reported on implementation of 89/4 in 2007 as follows: *3. Measures on a sector-by-sector basis.* *Agriculture* In June 1988 the Swedish Parliament launched a special action programme to reduce the loss of nitrogen from agriculture, which is progressing largely according to plan. The national programme is built on legislation, advice and information to farmers, R&D programmes, and economic incentives. Regional efforts have also gathered momentum, and most county administration boards have developed proposals for regional goals and measures, together with a joint structure for monitoring progress, based on indicators. A reinforced action programme has also been initiated in order to further reduce the load of nitrogen by 10 000 tonnes and ammonia by 7 300 tonnes per year between 1995 and 2020. The programme contains increased used of catch crops, increased share of agricultural land being cultivated in spring instead of autumn, reduced number of incidents when excessive amounts of fertilizers are used, reduced spreading of fluid manure in autumn, and the construction of 12 000 ha of wetland. Implementation of the EU Nitrate Directive (91/271/EEC) The Nitrate Directive has been implemented in various Regulations from the Board of Agriculture. These are the main components: - Apply Good Agricultural Practice by introducing special rules for storage capacity for stable manure as well as requirements on supply rate, spreading times and spreading techniques for fertilizer in sensitive areas (vulnerable zones). - Restricted supply of manure to arable land to a maximum of 22 kg P/ha yr. This also reduces N supply well below the stipulated 170 kg N/ha yr. *Regulations on autumn and winter grown land* In the three southernmost counties in Sweden, a regulation from the Board of Agriculture (SJVFS 2004:62) stipulates that 60 per cent of arable land shall have a green cover during autumn/winter. In the rest of southern Sweden, the corresponding figure is 50 per cent. The rules entered into force in 1992. There are also rules on first tillage for certain crops in order for them to be approved as autumn or winter grown land. *Financial incentives* Since 1996 there are various forms of agri-environmental schemes for reducing plant nutrient losses, partly financed by the EU. The Environmental and Rural Development Plan for Sweden 2000–2006 as well as that for 2007–2013 include riparian strips, catch crops, spring tillage, and wetlands and ponds. Sweden applies environmental fees since 1984 in order to reduce the use of mineral fertilisers. *Extension services and information* In 1995, extension services became a part of the Environmental and Rural Development Plan. Each regional authority has, in co-operation with organisations of their counties, developed programmes including regional objectives for the activities. Training has been offered both in the form of advising individual farmers and arranging classes for groups of farmers. In contacts with individual farmers it has been possible to design environmentally sound solutions for handling manure and other plant nutrients, all based on the needs of the individual farm. *R&D developments*

		In connection with the introduction of the plan of action against plant nutrient losses from agriculture, research and development activities were initiated with the aim of finding methods that may reduce plant nutrient losses from agriculture e.g. through the refinement of methods to handle manure and to use catch crops. *Sewage* Sweden has taken far-reaching measures to remove phosphorus at the urban wastewater treatment plants. At present, the mean removal rate for phosphorus >95 %. Since 1995, more than 70 large (10 000 pe) sewage treatment plants situated mainly in the southern part of Sweden and located near the coast have received new discharge permits according to the requirements of the EC UWWT-directive. These plants have subsequently been upgraded for nitrogen removal. The mean removal rate for all treatment plants > 2000 p.e > 60 %. To further reduce the load of phosphorus and nitrogen to meet the Swedish environmental quality objective "Zero eutrophication", improvements of the sewerage system are made. This will reduce overflows at the sewage treatment plants. In order to further reduce the load, municipalities are requested to improve small-scale wastewater treatment in rural areas and thus consider e.g. source separation techniques and wetland filters. The Government has expressed its intention to ban the use P-containing detergent for households from 1 January 2008. *Aquaculture* Not reported Improvements have been made by adjusting the feed composition. Industry Application of the main legal instrument for reducing environmental impacts – The Environmental Code – has resulted in considerable reduction of nitrogen and phosphorus from industrial installations. The improvements have been achieved by improved water treatment facilities in combination with process changes. *Forestry* The Forestry Law (§30) requires the following: - forest owners should leave protective buffer zones with trees along streams, lakes and sea shores. - Forest cuttings should be performed in a way to avoid nutrient leaching – restrictions on forest fertilization (application technique, dose, and regionalisation) Several information and education programmes for forest owners and forest contractors have been performed. Information material with regard to the Water Framework Directive is under preparation. *4. Reasons for not achieving the 1988 commitment with regard to nitrogen* All Environmental Objectives in Sweden decided by the Parliament has the base year 1995. Sweden has no official 50 % reduction target objective; the interim target for nitrogen under the Environmental Quality Objective is to reduce the waterborne emissions into the Sea by 30 % between 1995-2010. Difficulties to update the load estimate for 1985 gives an uncertainty. Losses from diffuse sources is uncertain and more point sources have been included in the estimates since 1985. Difficulties to reduce losses from diffuse sources *5. Main catchment areas* Kattegat - No specific measures for individual catchment areas. All legal environmental instruments apply for industry in the whole country. Enhanced reduction requirements for Urban Wastewater Treatment Plants apply to all plants > 10 000 pe in southern Sweden. For Agriculture regional the following regional measures apply; - incentives for construction of wetlands - storage capacity for manure containers - rules for manure spreading and winter grown land Skagerrak - see Kattegat
	Relevant in Sweden	Yes
	State of implementation – Has the measure been fully implemented?	
	OSPAR level	*Category: 88/2 – 1b (not yet fully implemented)* *89/4 – 1a (fully implemented)* With regard to the regional implementation of Recommendation 88/2, OSPAR Commission (2008b) reported that:

		In 2005, six of nine reporting Contracting Parties met the 50 % reduction target for phosphorus. However, most of the Contracting Parties have not yet achieved the 50 % target for nitrogen. In 2003, Denmark achieved a 50 % reduction in nitrogen inputs; in 2005 Germany and the Netherlands achieved reductions in the order of 50 %. Reported national reductions for 1985 – 2005 ranged between 20 % for Sweden and 48 % for Germany. Compared to 2003, most Contracting Parties made clear progress in reducing input levels of phosphorus. The picture of achievements in 2003 – 2005 for nitrogen is less coherent and explicit. In a number of cases, levels remained around the same levels as in 2003.
	State of implementation - Sweden	*Category:* *88/2 – not fully implemented* *89/4 – fully implemented* **Sweden's reporting on the implementation Recommendation 88/2 is reported in OSPAR Commission (2008) as follows:** **Assessment of the achievement of the 50 % reduction target (p26–27):** Sweden has not reached any of the targets, either for nitrogen or for phosphorus. The indicated increase in phosphorus losses for the period 1985–2005 is caused by the change in methodology for calculating phosphorus losses from agricultural soils. Difficulties to update the load estimate for 1985 give an uncertainty in the figures for 1985, especially for diffuse sources. Besides, the data for 1985 are based on somewhat fewer point sources than in 2003 and 2005. The reference year does not take into account substantial reductions achieved by Sweden prior to 1985. In the last reporting round for the year 2003, Sweden stated that, in reality, no increase in either nitrogen or phosphorus loadings had occurred. Sweden has national objectives relating to the 1995 – 2010 period. The targets are 30 % reduction for nitrogen (net loss to the sea, south Sweden) and 20 % for phosphorus (gross, all country). Sweden achieved larger reductions for both nitrogen and phosphorus since 2003. Sweden explained that the main reasons for not reaching the target for nitrogen are difficulties to reduce and assess nitrogen losses from diffuse sources. For phosphorus, the main reason is that most of the measures, e.g. improving wastewater treatment in municipalities and industries, were done before 1985. Sweden estimated that the anthropogenic phosphorus discharges to water in 1970 amounted to 12600 tonnes/year compared to 1130 tonnes in 2003, a reduction of 91 %.
13	What instruments have Contracting Parties used to implement the OSPAR measure within each of the marine subregions?	
	Implementation instruments	*Category: Policy and strategy initiatives* National Actions Plans have been adopted. Although these are not for the explicit purpose of implementing Recommendation 88/2 and 89/4 they are considered to fulfill the requirements. **Sweden reported on its national plans for implementation of Recommendation 88/2 as follows in OSPAR Commission (2008):** *Please describe HOW your country is going to reach the agreed reduction target for phosphorus, and indicate the year WHEN it is expected that the reduction target for phosphorus will be achieved:* The official P-reduction target in Sweden is a reduction of discharges to water between 1995 and 2010 by at least 20 %. This target refers to gross load of P to water (inland + coast) in the whole country. The largest reductions shall be made in the most sensitive areas. There is no action plan in Sweden for fulfilment of the PARCOM 50 % reduction target from 1985, but further efforts are made to continue the reduction of phosphorus from all sectors. One reason for the difficulty in reaching the 50 % target is that Sweden made massive efforts to reduce P from urban waste water treatment and industry between 1970 and 1985; during this period discharges of P from these two sectors fell by ca 80 %. This has reduced the potential for further reductions; e.g. to find effective measures to reduce P from agriculture has been much more

		problematic. Besides, the fulfilment of the target is difficult to monitor since there are problems to update the estimate of P loss from agriculture in 1985, which was made by a method that is not comparable with later estimates. Finally, P is not considered the limiting nutrient in Kattegat and Skagerrak and is thus considered a less sensitive area than the Baltic Proper. Thus, the main efforts to reduce nutrient input to the Swedish West Coast will focus on the reduction of nitrogen. In summary, we cannot give a precise estimate when the target has been achieved, but probably not before 2010. *Please describe HOW your country is going to reach the agreed reduction target for nitrogen, and indicate the year WHEN it is expected that the reduction target for nitrogen will be achieved:* The present official target for N input to sea areas of southern Sweden is a 30 % reduction between 1995 and 2010. As for phosphorus, no action plan exists for reaching the PARCOM 50 % target for nitrogen. Sweden reduced N input to the OSPAR area by 22 % between 1985 and 1995, primarily due to actions taken in agriculture, sewage treatment and industry. According to current plans a reduction in the order of 30 % will be reached between 1995 and 2010, but the improvements taken so far are to be evaluated in 2007. In total, fulfilment of this latter target would mean a reduction by 45 % from 1985 to 2010, and thus the 50 % reduction target would be reached some time between 2010 and 2015. Programmes of measures under the WFD (09–15 cycle) and WFD and MSFD (15–21) will also contribute towards the OSPAR target
	Gaps in implementation	From the perspective of Recommendation 88/2 the key question is whether the OSPAR 50 % reduction target will be achieved through the Swedish national targets for nutrient reduction, the HELCOM BSAP target and any other actions taken to fulfill requirements of WFD and MSFD (see below).
14	Has implementation reporting provided information on the extent to which any environmental objectives in the OSPAR measure have been reached?	
	Progress towards environmental objectives in measure	*Category: progress towards objectives demonstrated* OSPAR Commission (2008) reported that in 2005 (see table below): total losses and discharges of nitrogen to the OSPAR maritime area had reduced by 20 % since 1985 total losses and discharges of phosphorus to the OSPAR maritime area had reduced by 19 % since 1985 Commentary around these figures indicate differences in the calculation method used between the 1985 and 2008 figures
15	Has progress towards environmental objectives contained in the OSPAR measure been linked to any observed improvements in environmental status. How does this contribute to OSPAR strategy objectives?	
	- environmental status in SE waters	*Category:* *Environmental objectives of the measures: partly achieved* *Importance of measure in achieving the OSPAR Strategy Objective: >90 % (in terms of what can be practicably done)* *Existing progress towards OSPAR strategy objective for component: Progress is limited* SMHI (2007) report on the following classification of Swedish Kattegat and Skagerrak areas with respect to eutrophication status following national application of the OSPAR Common Procedure for eutrophication status assessment: Kattegat: all waters classified as problem areas (7 Fjords, bays, estuaries; 4 coastal waters; 4 offshore waters). Skagerrak: 7 out of 7 Fjords, bays, estuaries are problem areas; 9 out of 9 coastal waters are problem areas; 2 out of 2 offshore waters are non-problem areas. The Swedish “offshore Skagerrak” and the Danish offshore “Skagerrak Open Area” have both moved from problem area to non-problem area. SMHI (2016) report on the same general outcome from the application of the OSPAR Common Procedure to Swedish waters with only the

		Skagerrak open sea classified as a non-problem-area and all other assessment areas classified as problem areas. In Skagerrak coastal waters winter nutrients were only elevated in the fjords. Concentrations of DIN generally decreased significantly over the assessment period (2006–2014) and there were tendencies for reduction in DIP. This pattern was also supported by the total nitrogen while total phosphorus increased. Zoobenthos were still in bad condition and phytoplankton indicator species were often elevated. Chlorophyll-a concentrations were generally going down but still elevated in the inner coastal waters. There were also problems with algal toxins. In the open area of Kattegat there are still problems with oxygen deficiency, especially in the southern parts, even though the trend was significantly positive for the assessment period 2006 – 2014. In Kattegat coastal waters winter nutrients were elevated in all areas, except from the inner coastal waters, even though there was a general pattern of down going trends. Chlorophyll-a was only elevated in the Sound and the estuaries. Zoobenthos were in bad condition and phytoplankton indicator species were often elevated. The results of the Baltic Sea HEAT assessment of eutrophication 2003–2007 (HELCOM, 2009) were that approximately 50 % of assessed areas in the Kattegat were assessed with bad status, <10 % with poor status, approximately 10 % with moderate status and <10 % as not affected by eutrophication. The results of the Baltic Sea HEAT assessment of eutrophication 2007–2011 (HELCOM, 2014) were that all the entire Kattegat open sea and coastal areas were classified as affected by eutrophication. The Swedish waters of the north-eastern Kattegat, which had been classified in the previous assessment as not affected by eutrophication, were now classified as affected by eutrophication. Changes in the sub-basin are recognized as affecting the result. According to the HAVET report (Havsmiljöinstitutet, 2014) Concentrations of total phosphorus in the Kattegat and Skaggerrak decreased up to 2005 but have increased after this datapoint. Concentrations of total nitrogen have decreased throughout the period up to 2014 assessment.
	- environmental status in RII (Kattegat and Skagerrak)	*Category:* *Environmental objectives of the measures: partly achieved* *Importance of measure in achieving the OSPAR Strategy Objective: >90 % (in terms of what can be practicably done)* *Existing progress towards OSPAR strategy objective for component: Progress is limited* OSPAR Commission 2008c reports that: “A high number of estuaries, fjords, coastal waters and parts of the offshore waters mainly at the continental coast, the Skagerrak and the Kattegat have still been classified as problem areas. These are either shallow areas with restricted mixing or stratified environments. These conditions keep the phytoplankton seasonally within the euphotic zone and allow an extended utilisation of supplied nutrients (for example in the Norwegian coastal current which is fed by the Baltic outflow). Reasons for the classification of these open waters as problem areas are elevated chlorophyll concentrations, the occurrence of phytoplankton indicator species and seasonal oxygen depletion in the bottom water of stratified areas. Fjords and estuaries are often classified as problem area due to restricted occurrence of macrophytes” However, there are some positive signals, and several countries report that nutrient reduction measures are starting to result in lower concentrations of nitrogen and phosphorus in problem area waters, particularly in estuaries (Germany, Sweden). Next application of the OSPAR Comprehensive Procedure will be finalized in 2016/17 covering data from 2006–2014. SMHI (2016) is the Swedish national report contributing to this overall OSPAR-wide assessment.
	Step 3. Expected Effectiveness	
16	*Is full implementation of the actions required by the measure expected to either:*	

	- *address the pressure component that is the subject of the measure so that it is in line with GES:* - *protect the feature that is the subject of the measure so that its distribution, extent, condition is in line with GES?*	
	Is full implementation of the actions required by the measure expected to address the pressure component that is the subject of the measure so that it is in line with GES	*Category:* *Not known (for pressures)* Comments: For Recommendation 88/2 this question concerns whether a 50 % reduction in nitrogen and phosphorus inputs can be considered in line with GES. This depends upon how GES has been defined. SwAM Regulation 2012:18 defines the characteristics for GES for nutrient inputs as follows: 5.1 Concentrations of nutrients do not result in direct or indirect negative effects on biological diversity and ecosystems. 5.2 Undesired algal blooms do not lead to deteriorated water quality, reduced seawater transparency, or indirect effects on biological diversity and ecosystems. 5.3 Perennial seaweeds and sea grasses show a natural depth distribution and no decrease in oxygen concentrations as a consequence of eutrophication occurs. The definition of the characteristics of GES establishes GES to be at a level where nutrient concentrations in marine waters result in no negative effects. This could be taken to imply that as long are negative effects (e.g. poor eutrophication status) nutrient concentrations are too high and GES is not achieved. Given only this definition the categorization is would be “No” since negative effect continue to be identified in the most recent assessments. However, the categorisation may depends on further other aspects of the definition of GES. SwAM Regulation 2012 defines an environmental quality standard (miljökvalitetsnormer) A1 for “Inputs of nutrients and organic material” for as: “Concentrations of nitrogen and phosphorus in the marine environment as a consequence of input of nutrients from human activities, does not cause negative effects on biological diversity and ecosystems.” Accompanying this is an “Indicator for environmental quality standard A.1”, such that: A.1.1. Input of nitrogen and phosphorus via run-off and point sources Good environmental status for indicator is defined as: When the amount of input of nitrogen and phosphorus per basin permanently decreases. The assessment must be based on flow-normalised annual mean values for the preceding six- year period. The long-term goal is for the input to fall below the maximum load established as part of the framework of international agreements. The environmental quality standard (Miljökvalitetsnorm) (equating to an Article 9 target for guiding progress towards GES) is informed by an indicator (A:1.1.). the specification for this indicator established a long term goal of inputs of nutrients being below the maximum levels established in the frame of international agreements. The meaning of international agreements is not further defined. For the Swedish waters of the Kattegat both OSPAR Convention and HELCOM apply. Both can be considered to be international agreements. The Swedish waters of the Skagerrak fall only within the OSPAR maritime area. OSPAR, through Recommendation 88/2 has defined an aim to achieve a substantial reduction (of the order of 50 %) in inputs of phosphorus and nitrogen into these areas (i.e. areas where these inputs are likely, directly or indirectly, to cause pollution) between 1985 and 1995, or earlier if possible. HELCOM through the Baltic Sea Action Programme has defined maximum allowable nutrient input that makes it possible for the Baltic Sea to reach a good ecological status. HELCOM Contracting Parties have agreed to specific model-based nutrient reduction targets for the Kattegat in 2007,

		which were updated in 2013. Reduction targets for phosphorus for the Kattegat were met in 2013. A target of a further reduction of of 4 761 tonnes of nitrogen from 2003–2007 reference levels inputs were needed in the Kattegat from Denmark and Sweden together Some questions occur here: - does the reference to maximum levels established in the frame of international agreements in the definition of indicator A.1.1. refer to both OSPAR or HELCOM targets; - is the wording of the definition specific enough to refer only to the HELCOM target which may have been the intention in using the word maximum; - is there a mismatch between the HELCOM reduction target and the OSPAR reduction target. The OSPAR target has not been shown to have been met for either N or P, while the HELCOM P target is met. - has the OSPAR 50 % reduction target been met for (problem/non-problem areas in the Skagerrak)
	Is full implementation of the OSPAR measure likely to protect the feature that is the subject of the measure so that its distribution, extent, condition is in line with GES?	*Category: No (for environmental features)* Sweden points out that the eutrophication status of the Kattegat and inshore Skagerrak are dependent on transboundary fluxes from the Baltic Sea, the German Bight and emissions and sources from Denmark, Norway and Sweden. A significant number of areas identified as potential problem areas in the first application of the Comprehensive Procedure have been confirmed as problem areas in the current assessment. Generally, Contracting Parties are not confident that their Problem Areas in coastal and transitional waters will move to non-problem area status in the near future. One of the main reasons given is the fact that there is a long time lag between the implementation of nutrient reduction measures and seeing a significant improvement in eutrophication status.
17	What proportion of the excess level of the pressure component is expected to be reduced by full implementation of the actions required in the measure	
		Comment: Improvement of the evaluation framework is needed to clarify at what point the excess level of the pressure should be considered (for the purpose of the following answers excess pressures is considered as it is understood in 2015)
	- spatial extent	*Category: Minor part (5–25 %) Confidence: low*
	(explanation)	Nutrient and organic matter enrichment is widespread. Achieving reduction targets is important but the internal nutrient loading of the system (recycling of nutrients) means that it can only be expected to reduce part of pressure.
	- temporal extent	*Category: Minor part (5–25 %). Confidence: low*
	(explanation)	Introduction of nutrients from land is occurring continuously. Question may be less relevant for waterborne inputs unless there is some seasonal variability.
	- intensity	*Category: Minor part (5–25 %). Confidence: low*
	(explanation)	Nutrient and organic matter enrichment is widespread. Achieving reduction targets is important but the internal nutrient loading of the system (recycling of nutrients) means that it can only be expected to reduce part of pressure.
18	What is the expected effect on distribution, extent/abundance and condition of the ecosystem feature as a result of the actions required/recommended by the OSPAR measure	
	- distribution	Unknown
	(explanation)	Not relevant as features are ubiquitous
	- extent/abundance	Unknown

	(explanation)	Not relevant as features are ubiquitous
	- condition	*Category* *Chemical – nutrient levels: Improve or stabilise* *Chemical – oxygen levels: improve or stabilise* *Water column habitats – coastal: slowed deterioration (short term) to improve (long term)* *Water column habitat – shelf: slowed deterioration (short term) to improve (long term)* *Seabed habitats – all: slowed deterioration (short term) to improve (long term)*
	(explanation)	The aim will to improve or maintain so that there is no undesirable disturbance to the marine ecosystem as a result of anthropogenic enrichment by nutrients. However this may take considerable time due to the recycling of nutrients from sediments. Over the longer term reduce pressure from inputs and improved chemical status with respect to nutrients may lead to an improvement in condition.
19	What further actions are needed so that (i) relevant pressure is in line with GES, or (ii) distribution, extent/abundance and condition are in line with GES	Continue action so that nutrient inputs are brought in line with agreed targets for GES. It suggested that the targets that represent GES in the Kattegat are clarified for the purpose of implementation of the MKN. GES is also specified in terms of there being no negative effects from concentrations of nutrients. Further actions are therefore needed to bring nutrient loading to a level where direct and indirect effects do not occur.
20	Overall Comments	Comments on the evaluation framework: Q17 – a time point of excess pressure needs to be clarified Q18 – the question needs a confidence rating

Addendum to Table 8.2. Discharges of nutrients (tonnes) from different sectors reported according to a source-orientated approach for the entire OSPAR catchment area (Source: OSPAR Commission, 2008b).

Sector	Nitrogen			Phosphorus		
	1985	2005	% Reduction	1985	2005	% Reduction
Aquaculture	80(a)	145	increase	10	25	increase
Industry (c)	1 040 (b)	1 000	4	118 (b)	80	32
Sewage	7 420 (d)	4 500	39	262	120	54
Households not connected to public sewerage	900	500	44	216	90	58
Agriculture	20 000	14 800	26	390	380	3
Diffuse Anthropogenic sources (e)	38 100	32 100	16	1 020	1 005	1
Total losses and discharges	47 540	38 245	20	1 626	1 320	19

(a) The 1985 figure is rounded off, and thus differs from the figure in the last reporting round
(b) A smaller number of industrial sectors were included in the figure for 1985 compared to 2005
(c) Industries not connected to municipal sewerage systems
(d) The population size was different in 1985, compared to 2005
(e) Reported for agriculture, atmospheric deposition and natural background losses (including forestry)

The application of the evaluation framework to the two example-measures above highlights some of the challenges in evaluating the environmental effectiveness of measures and the

contrasts between different thematic issues. Both the examples above concern naturally-occurring substances that are released to the environment in concentrations above those that would usually occur as a result of human activities. These pollutants are transported to the sea through water or air where they have an impact. One example concerns the released of a group of pollutants from a diverse range of dispersed activities, the other examples concerns the release of a pollutant from a specific industrial installations that act as a point source for emissions, discharges and losses.
Monitoring design for ubiquitous diffuse pollution is well suited to picking up a general effect on concentrations in the environment as a result of the implementation of measures. Levels of nutrients in watercourses as inputs to the sea are used as close proxy for the effect of measures. The exact measures being implemented and their effect on societal processes and nutrient-discharging activities is less closely monitored the nutrient load in order to reveal the most effective. This contrasts with the monitoring of implementation of measures for to address discharges of hazardous substances from point sources, where the exact measures being taken are well recorded monitoring, the levels of relevant substances in discharges are monitored and the concentrations in the receiving environment are recorded.

As monitoring of implementation and effectiveness of biodiversity measures becomes more important information will be needed on the “on the ground” measures being taken, their effectiveness on bringing about a reduction in pressures and the abundance, distribution and condition of the feature being conserved and protected.

9. Conclusions and recommendations

Sweden and OSPAR

1. OSPAR Decisions and Recommendations provide an important part of the framework of environmental measures through which Sweden coordinates its marine environmental work in the Kattegat and Skagerrak with other countries in the North Sea region and the wider North-East Atlantic area.
2. Since the adoption of first measures in the 1980's, OSPAR's Decisions and Recommendations have primarily addressed point and diffuse sources of hazardous substances, inputs of nutrients and eutrophication, discharges, emission and losses of radioactive substances. Since 2010, OSPAR measures have primarily focused on biodiversity conservation.
3. OSPAR measures are, therefore, of most relevance to MSFD Descriptors on biodiversity (1, 4 and 6), eutrophication (5) and hazardous substances (8 and 9). OSPAR-measures adopted up to 2008 contribute to the existing marine protection and conservation in place before the adoption of the MSFD. Stronger synergies between OSPAR and MSFD processes and goals have begun to emerge since 2011 and there are good arguments for considering more recent OSPAR measures as MSFD measures. There is a reciprocity between the two processes with OSPAR offering a regional coordination mechanism to support MSFD objectives and the legal framework of the MSFD providing a means to underpin work towards OSPAR's objectives. Continued work on measures in OSPAR should focus on the protection of biodiversity through adequate management of human activities including addressing pressures such as marine litter, underwater noise and non-indigenous species, which can also play a role in reaching national under MSFD and regional goals under OSPAR. Continued collaboration on reviewing the effectiveness for the marine environment of EU measures and global controls on discharges, emissions and losses of hazardous substances and nutrient is important.

Recommendation: *Sweden should work to ensure that any future measures adopted by OSPAR have a more clearly described regional coordination role in the context of MSFD. This can provide mutual benefit to both processes and is one of the issues that needs to be addressed under the future OSPAR Measure and Actions programme.*

4. In the past OSPAR has been a pioneer organization taking action in advance of EU environmental action. Many of the OSPAR measures regarding industrial point sources of hazardous substances introduced new requirements in Sweden or supported their introduction, which have led to environmental improvements through mitigation of environmental pressure. This was especially the case for OSPAR point source measures introduced prior to the development of EU IPPC BREF work.
5. In the field of control of emissions, discharges and losses of hazardous substances OSPAR measures for best environmental practice and best available techniques were one forerunner to current EU processes and stimulated considerable action across the

OSPAR area. Alongside this OSPAR generated substantial progress in the identification of hazardous substances of concern as a forerunner of the REACH process.

6. Several of the OSPAR measures addressing diffuse sources of OSPAR listed chemicals for priority actions (and a small number of point source measures) required actions that had already being taken in Sweden as a result of national or EU policy. In these cases the benefit of OSPAR's initiatives from a Swedish perspective can mainly be seen through requiring a consistent level of environment protection in neighbouring OSPAR states.

***Recommendation**: Sweden should continue to seek ways to make use of OSPAR to pioneer new forms of action for which regional coordination would be of benefit, both within the context of MSFD and beyond.*

7. OSPAR measures generally have considerable relevance to Sweden's system of environmental quality objectives (Miljömål) and have relevance to a wider range of the environmental quality objectives than is usually recognised. It should be noted that Annex V to the OSPAR Convention aims to provide a regional coordination mechanism for work under the Convention on Biological Diversity. Several aspects of OSPAR's wider work also have relevance to the generational goals and milestone targets in the environmental quality objectives system. This relevance is achieved both through Sweden's involvement in OSPAR's regional work and through the specific application of internationally agreed measures by Sweden.

***Recommendation**: Increased recognition of the contribution of Sweden's engagement in regional sea cooperation (including through OSPAR) to the Swedish system of environmental objectives would enhance understanding of the regional sea work.*

Sweden's National implementation of OSPAR measures

8. Overall, Sweden has a strong record in fulfilling its commitments to reporting on its implementation of OSPAR measures. Sweden is one of the OSPAR Contracting Parties that has always provided its reports on time.
9. The quality of information reported to OSPAR by Swedish authorities has generally been detailed and precise when compared to some other Contracting Parties reporting and has mostly provided a sound basis with which to evaluate whether the strict requirements of the measures have been met. There has however been some variation depending on how the requirements of the measures have interacted with national policy as detailed below.

***Recommendation**: Maintain Sweden's positive record of engagement in OSPAR work and ensure that quality of information provided on the implementation of measures is sufficiently detailed to provide an auditable record of Sweden's implementation of OSPAR measures.*

10. Sweden's implementation reporting for point source measures for hazardous substances was informative and precise and shows that the OSPAR measures were effectively implemented. Sweden mainly reported on measures on diffuse sources of

hazardous substances in an effective and informative way demonstrating how its national measures fulfilled the requirements or recommendations of OSPAR measures. Most of the issues addressed by these issues have since been taken over by EU action.

11. There are a small number of long-standing measures where implementation has not been completed either because the requirements of the measure have not been met or because a full implementation has not been demonstrated in the information reported even though it has occurred. For some measures there is an inconsistency between the OSPAR-wide conclusion that a measure has been fulfilled and the final implementation report submitted by Sweden.

***Recommendation**: For the avoidance of doubt, Swedish authorities reporting on implementation of OSPAR measures should include a national view on whether a measure has been implemented, whether work is ongoing to implement the measure and whether implementation reporting should continue.*

12. Sweden's reporting is less clearly described where an OSPAR measures has a specific target that is not exactly replicated in national environmental policy (e.g. national targets for inputs of nutrients). This means that it is difficult to tell whether the requirements of the measure have been fulfilled and, as the indicator for GES reference targets in international agreements, ambiguous. There is a case for further analysis of how OSPAR, HELCOM and national targets for nutrient reduction in the Kattegat are mutually related.
13. In parallel, the alignment and interaction between OSPAR measures, Swedish national policy objectives and the objectives and requirements of HELCOM in the overlapping areas of OSPAR and HELCOM in the Kattegat is not formally described in an official document. This means that where there are different measures or targets from different regional organisations there is uncertainty over which has primacy

***Recommendation** An official description of how OSPAR and other regional sea work, such as through HELCOM, are seen to apply in areas where the convention areas overlap would help to guide work by other state authorities.*

14. There is, however, no sustained systematic archiving of information on implementation of OSPAR measures in Sweden beyond the archiving of Sweden's formal implementation reports submitted to OSPAR. This means that there is no more detailed information resource on national implementation than that required by OSPAR implementation reporting. Two specific gaps in information are:
    - the absence of any more detailed record of the legal and administrative process used to implement OSPAR measures in Sweden beyond the categorised recording in OSPAR implementation. Knowledge of the implementation process seems to be only retained through retention of personnel involved in negotiating, implementing and reporting on measures.
    - cases where OSPAR has agreed that implementation reporting should cease but the last information reported by Sweden indicated that a measure has not been fully implemented. Given that OSPAR measures continue to apply there should

be a corresponding national record to show when full implementation of a measure has been secured.

15. Comments received from staff at the County Administrative Boards during the course of this work indicate a need to develop information flow between national authorities and the County Administration Boards regarding the implementation of OSPAR measures in a more systematic way that provides staff at the county level to understand and develop their role and its context.

***Recommendation**: Efforts to enhance engagement of implementing bodies in work to implement OSPAR's measures need to be nurtured and supported.*

16. The lack of a national data and information record on the actual steps taken to implement of OSPAR measures, the resulting actions taken and the effect on environmental pressures and the quality of the marine environment leads to difficulties in analysing the effectiveness of the development of OSPAR (and other) measures for environmental improvement.
17. With the adoption of many OSPAR biodiversity measures that comprise a package of actions addressed to different actors it can be expected that more clarity on the implementation process will be beneficial both for both national and regional authorities to secure and effective implementation.

***Recommendation**: It is suggested to consider an improved information recording on the implementation process for OSPAR measures. There may be synergies that could be developed with existing information systems developed in other contexts, such as VISS (developed by the Water Authorities for Water Framework Directive measures) or Skötsel DOS (developed by SEPA for measures in protected areas).*

Conclusions on the development of measures programme in OSPAR and its implementation

18. From the review of Swedish implementation of OSPAR measures, the following conclusions and associated recommendations emerge which may be relevant for Sweden's input to OSPAR.
19. There are some differences in the approach to developing OSPAR measures between the different thematic areas. For example, while measures for hazardous substances were adopted to enact quite specific actions, often, addressed to specific sectors or activities, measures have been adopted for biodiversity that are a package of multiple actions of different scope and addressing different actors.
20. OSPAR guidance on the development of decisions and recommendations only sets out structural and linguistic considerations. There is no guidance on what type of issue a Decision or Recommendation should be used for or what formulation of measures has been successful in the past. Each new measure is judged on its own linguistic coherence and its coherence with other measures and its political acceptability. From this review of implementation reporting, the implementation of measures can be most unequivocally judged when measures are targeted at specific sectors or activities and categorical or quantitative

***Recommendation**: It could be helpful to those involved in OSPAR work to build understanding of OSPAR measures amongst those Contracting Party delegates charged with the development of programmes of measures through developing some "non-official" and "non-binding guidance" on the how decisions and recommendations should be used to address issues.*

21. Implementation reporting and evaluation can be seen as a strength of OSPAR and is one of the means by which some degree of enforcement can be achieved. For measures on point and diffuse pollution it has provided an auditable evidence base on the implementation of the measure by Contracting Parties. Implementation reporting to OSPAR has been ceased for some measures on the basis of conclusions drawn for the whole OSPAR Convention area, even though some individual Contracting Parties are reporting that they have not fully implemented a measure. The result is that there is no record in the OSPAR documents on the measures of whether a full implementation has been achieved at the level of that country.

***Recommendation:** Propose that OSPAR work to develop information systems include systems for recording information on OSPAR measures and their implementation. It is proposed that the information on OSPAR measures compiled in spreadsheet form to support analysis in this project would provide a basis for a relational database on OSPAR measures. Building systems for reporting on implementation with improved content management by Contracting Parties would be beneficial to the OSPAR measures and actions programme (MAP). There may be synergies with coordinating this work with other Regional Sea Organisations*

22. As one component of implementing an ecosystem approach to management of the marine environment one of the objectives of the JAMP is to evaluate the effective of measures on the quality status of the marine environment. Reporting on implementation of OSPAR measures does not consistently provide a basis to analyse how each measure is related to the overall mitigation of environmental pressures and their impacts. Continued work to develop the linkages in assessment process between evaluation of measures and pressure and impacts assessment is needed to understand this contribution when the measures are viewed from a North-East Atlantic or subregional perspective within an MSFD framework. It would improve the understanding of implementation progress if conclusions were drawn on a regional basis rather than at the whole convention scale.
23. The implementation framework for the evaluation of the implementation of OSPAR measures and their effectiveness developed under this contract aims to provoke further consideration of these needs.

***Recommendation**: Propose that the framework for the evaluation of the implementation of OSPAR measures is developed and used to support discussion in OSPAR on future implementation of measures and its link to OSPAR monitoring and assessment work.*
***Recommendation**: Propose that OSPAR should in future develop overview assessments of the implementation of measures aligned with the OSPAR regions/MSFD subregions.*

Annex 1
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Annex 2
Starting point for a framework for assessing how the implementation of existing OSPAR measures contributes towards the OSPAR NEA and MSFD objectives

Background

As part of this assignment the following framework for the evaluation of the implementation of OSPAR measures and their effectiveness has been prepared as described in Chapter 5. The evaluation framework has been used in this report to structure an overall consideration of the role of OSPAR measures towards Sweden's marine environment work. This has involved modifications to the framework. It is a different exercise from the original intention of providing a decision-support and accounting tool to be applied at regional-sea level for collating and considering information on the implementation of OSPAR measures. A national evaluation inevitably leads to the need to analysis of more specific and pinpointed questions while a regional application across Contracting Parties would need to be developed based on summarized expert knowledge of the situation within each country.

Nevertheless the exercise has been used to identify specific improvements in the implementation evaluation assessment framework as indicated at below. The changes made here mostly concern adjustment of the categories, including increasing the sensitivity of categorisation, and increasing the use of confidence ratings. In addition a simplification of the descriptive fields in the evaluation would make the development of any evaluation more straightforward.

Structuring the output from the application so that measures are grouped by pressure and activity could provide a clearer basis for describing the need for new measures. The appendix to this annex presents two example tables for presenting collectively information gathered through the application of the evaluation framework. Collecting the assessment data in a relational database would enable its interrogation from a variety of perspectives and could be beneficial to the OSPAR measures and actions programme (MAP). There may be synergies with coordinating this work with other Regional Sea Organisations.

Before any attempt to apply the implementation assessment framework at OSPAR level it needs to be discussed more closely with relevant representatives of other Contracting Parties and developed to reflect joint priorities. There could, however, be benefit in developing a trial application at regional sea scale. It could also be benefit in comparing it with the system developed by Helcom.

Starting point for a framework for assessing how the implementation of existing OSPAR measures contributes towards the OSPAR NEA and MSFD objectives

Potential information fields for evaluation of the implementation of OSPAR measure are set out below and reporting categories. Further consideration needs to be given to an approach for presenting the information collected. This version of the framework has been amended in the light of its application during the Swedish implementation evaluation presented in this report. Further discussion and development will be needed before any application in a regional sea context.

Part One: Characterisation of the OSPAR measure. Questions to be answered by reference to the contents of the measure.

1. OSPAR measure

Name of measure

2. Which OSPAR Strategic Objective(s) is the OSPAR measure relevant to and are there any other relevant OSPAR environmental targets?

Biodiversity and Ecosystems Eutrophication Hazardous Substances Offshore Oil and Gas Strategy Radioactive Substances	OSPAR environmental targets pressure-based (free text) state-based(free text)

3. Does the OSPAR measure have a specific and measurable environmental objective, such as reduction or cessation target?

Yes/No. If yes, state objective.	pressure-based state-based

4. Which MSFD Descriptors of GES is the OSPAR measure relevant to?

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

5. Which OSPAR Common Indicator(s) is the OSPAR measure relevant to?

See reference list of OSPAR Common Indicators

6. Which of the key types of measure (KTMs) in the EU framework for reporting on the MSFD programme of measures (Article 13) is the OSPAR measure relevant to?

See reference list of key types of measures (European Commission, 2015)

7. Which pressure component (s) does the OSPAR measure address?

See reference list for pressures (European Commission, 2012)	Specify component further as appropriate (e.g. hazardous substance, substance)

and/or

Which ecosystem component/feature will the OSPAR measure address?

See reference list for ecosystem components and features (European Commission, 2012)	Specify feature further as appropriate (e.g. species, habitat)

8. Which activities/sectors are covered by the measure or lead to the pressure that is the subject of the measure?

See reference list for activities/sectors list (European Commission, 2012)

9. Which types of physical controls or actions are covered by the OSPAR measure that will have a direct effect on the level of pressures/status of features?

Physical actions and controls are those that can be expected to have a direct physical influence in the field on the level of a pressure in the environment or the protection and conservation of a feature.

Controls and actions that aim to directly affect the level of a pressure/protection of a feature
I - controls on the overall amount of a human activity
S - controls on where an activity is permitted (spatial controls)
T - controls on when an activity is permitted (temporal controls)
O - controls on the degree of perturbation of an ecosystem component (e.g. controls on the level of pressure an activity is permitted to output [– including phase outs, BAT and BEP]
R - Remediation: actions that [conserve or] restore components of marine ecosystems that have been adversely affected

10. Does the OSPAR measure cover any of the following types of supplementary action?

Supplementary actions are those actions that while supportive towards reducing the level of pressures or the protection of features have [a different mode of action than the direct physical mitigation] of pressures or the protection and conservation of features. [These include research and awareness raising measures].

IT – Development of information tools
E – Education and awareness raising
RI – Research: investigation
RT – Research: technology development

11. Are the pressures or components dealt with by the OSPAR measure also covered by EU or international measures

For some OSPAR measures there is corresponding EU legislation or other international legislation which when implemented by OSPAR Contracting Parties will contribute in full or in part the implementation of OSPAR measures. Where this is the case it has been identified in the OSPAR acquis.

List and indicate how this relates to the OSPAR measure • Will cover the actions required by the OSPAR measure in full • Will cover the actions required by the OSPAR measure in part • Includes supportive or complementary actions to the OSPAR measure

Part Two: Progress in implementation. Questions to be answered by reference to the formal OSPAR implementation reporting (as summarised in the OSPAR acquis).

12. When was the last round of implementation reporting on the OSPAR measure?

State year

13. Has the OSPAR measure been fully implemented in each of the marine subregions (MSFD)/OSPAR Regions in the OSPAR maritime area?

Arctic Waters (Region I)[14] Greater North Sea (Region II) Celtic Seas (Region III) Bay of Biscay and Iberian Coast (Region IV) Wider Atlantic (Region V)	1a – fully implemented 1b – [partly] implemented [1c – not yet implemented] Not clear, e.g. some Contracting Parties have not yet reported; Implementation reporting has not yet occurred

Where the measure has not been fully implemented in an OSPAR Region which Contracting Parties within each OSPAR Region/marine subregion have fully implemented the measure?

Arctic Waters (Region I) Greater North Sea (Region II) Celtic Seas (Region III) Bay of Biscay and Iberian Coast (Region IV) Wider Atlantic (Region V)	X (country codes) out of Y X = number of CPs fully implemented Y = number of CPs with marine waters in the region

14. What instruments have Contracting Parties used to implement the OSPAR measure within each of the marine subregions?

Arctic Waters (Region I) Greater North Sea (Region II) Celtic Seas (Region III) Bay of Biscay and Iberian Coast (Region IV) Wider Atlantic (Region V	L - Legislative E – Economic (Financial incentives, grants) S – Supervisory (guidance, inspections, training observers) V – Voluntary agreements PS – Policy and strategy initiatives (planning, strategic activities, administrative action, PC – Communication initiatives (Information campaigns, awareness raising, education)

[14] An alternative would be to regionalise by reference to the MSFD subregions in the OSPAR maritime area, i.e. Greater North Sea, Celtic Seas, Bay of Biscay and Iberian Coast, Macaronesian Biogeographic Region.

15. Has implementation reporting provided information on the extent to which any environmental objectives in the OSPAR measure have been reached?

Where an OSPAR measure includes measurable environmental objectives, such as cessation or reduction targets, have implementation reporting and overview assessments of the implementation provided evidence of progress towards these targets

Arctic Waters (Region I) Greater North Sea (Region II) Celtic Seas (Region III) Bay of Biscay and Iberian Coast (Region IV) Wider Atlantic (Region V	Objectives met throughout region Objectives mostly met within region Progress towards objectives demonstrated No or limited progress No evidence of progress No measurable environmental objective

16. Has progress towards environmental objectives contained in the OSPAR measure been linked to any observed improvements in environmental status. How does this contribute to OSPAR strategy objectives?

This question seeks to identify progress towards environmental objectives included in the OSPAR measure (as identified in Q3) achieved through implementation to date. A second step seeks a categorisation through expert judgement of the measures importance for the progress towards OSPAR strategy objectives and the extent two which progress so far contributes towards the OSPAR strategy objective. This evaluation of importance for, and progress towards, OSPAR strategy objectives should be focused only on the pressure component or ecosystem feature that is addressed by the OSPAR measure e.g. if the measure addresses a source of mercury, only the OSPAR Hazardous Substances Strategy in terms of mercury should be considered.

Arctic Waters (Region I) Greater North Sea (Region II) Celtic Seas (Region III) Bay of Biscay and Iberian Coast (Region IV) Wider Atlantic (Region V	**Environmental objectives of measure** mostly achieved partly achieved progress limited Free comment (incl. reference to report) **OSPAR strategy objective for component** Importance of measure in achieving OSPAR strategy objective for component: <10 %, 10–30 %, 30–60 %, 60–90 %, >90 % Existing progress towards OSPAR strategy objective for component: • mostly achieved • partly achieved • progress is limited Free comment

Part Three: Expected effectiveness of measure when fully implemented. This section would need to be completed/finalized by relevant CPs within each subregion/OSPAR region (e.g. within the context of the relevant OSPAR Thematic Committee).

17. In each OSPAR Region is full implementation of the actions required or recommended by the OSPAR measure expected to *either*:

(i) address the pressure component that is the subject of the measure so that its level is in line with GES

or

(ii) protect the feature that is the subject of the measure so that its distribution, extent, condition is in line with GES?

This question asks for an evaluation through use of expert judgement of whether full and completed implementation of the OSPAR measure (taking into account any time lags for the measure to take effect in the environment) will be sufficient to reduce the pressure component so that it would no longer pose a risk that GES will not be achieved in each OSPAR Region. For example, if an OSPAR measure will address all known sources of a pressure component within a Region then it might be expected to bring the pressure component in line with GES. The evaluation should be focused on the pressure component or ecosystem feature addressed by the OSPAR measures (as identified in Question 7).

Arctic Waters (Region I)	Y - Yes (High Confidence)
Greater North Sea (Region II)	Y - Yes (Moderate Confidence)
Celtic Seas (Region III)	Y - Yes (Low Confidence)
Bay of Biscay and Iberian Coast (Region IV)	N - No
Wider Atlantic (Region V)	NK - Not known
	Not applicable in the Region
	Free comment

18. [*Extra questions*[15]] In each OSPAR Region what proportion of the current excess[16] level of the pressure component is expected to be reduced by full implementation of the actions required/recommended by the OSPAR measure?

This question seeks a more categorised and disaggregated evaluation of how far full and completed implementation of the actions in the OSPAR measures would be expected to address levels of environmental pressure that pose a risk of GES not being achieved, i.e levels of the pressure in excess of those that would be in line with GES. The evaluations should be made using expert judgement and focused on the pressure component addressed by the measure (as identified in Question 7). The evaluation considers three aspects of the pressure: spatial extent, temporal extent and intensity. Percentages defining the categories are provided for guidance only. If no pressure component is identified in question 7, do not answer question. The current excess level of pressure should be understood as that determined under the most recent relevant assessment

[15] Questions 16 and 17 are included as examples for discussion. They may need discussion and further shaping.

[16] Question has been focused on a judgement of the excess of the pressure beyond that which would be in line with GES. An alternative would be to focus question on how much of the pressure as a whole.

Spatial extent

Arctic Waters (Region I) Greater North Sea (Region II) Celtic Seas (Region III) Bay of Biscay and Iberian Coast (Region IV) Wider Atlantic (Region V)	Reduction of excess pressure Minimal part: <5 %; Minor part: 5–25 %; Moderate part: 25–50 %; Major part: 50–75 %; Majority: 75–100 %; Unknown. (Confidence: High, Medium, Low) Free comment [Alternative categories <5 %, 5–30 %, 30–60 %, >60 % – uncertain, certain, certain and documented]

Temporal extent

Arctic Waters (Region I) Greater North Sea (Region II) Celtic Seas (Region III) Bay of Biscay and Iberian Coast (Region IV) Wider Atlantic (Region V)	Reduction of excess pressure - Minimal part: <5 %; - Minor part: 5–25 %; - Moderate part: 25–50 %; - Major part: 50–75 %; - Majority: 75–100 %; - Unknown - (Confidence: High, Medium, Low) - Free comment

Intensity

Arctic Waters (Region I) Greater North Sea (Region II) Celtic Seas (Region III) Bay of Biscay and Iberian Coast (Region IV) Wider Atlantic (Region V)	Reduction of excess pressure - Minimal part: <5 %; - Minor part: 5–25 %; - Moderate part: 25–50 %; - Major part: 50–75 %; - Majority: 75–100 %; - Unknown. - (Confidence: High, Medium, Low) - Free comment

19. [Extra question] In each OSPAR Region what is the expected effect on the distribution, spatial extent and condition of the ecosystem feature as a result of the actions required/recommended by the OSPAR measure?
This question seeks a more categorised and disaggregated evaluation of how far full and completed implementation of the actions in the OSPAR measures would be expected to affect the status of an ecosystem feature. The evaluations should be made using expert judgement and focused on the ecosystem feature addressed by the measure (as identified in Question 7). The evaluation considers three aspects of the feature: distribution, extent/abundance and condition. If no ecosystem feature is identified in question 7, do not answer question.

Distribution

Arctic Waters (Region I)
Greater North Sea (Region II)
Celtic Seas (Region III)
Bay of Biscay and Iberian Coast (Region IV)
Wider Atlantic (Region V)
	Effect on distribution of feature
	- Improve
	  ○ Distribution range and pattern is expected to move towards being in line with prevailing conditions
	- Stabilise
	  ○ Distribution range and pattern is expected to become stable
	- Slowed deterioration
	  ○ Distribution range and pattern is expected change more slowly
	- Unknown
	  ○ Effect on distribution range and pattern is unknown
	- (Confidence: High, Medium, Low)
	- Free comment

Extent/Abundance

Arctic Waters (Region I)
Greater North Sea (Region II)
Celtic Seas (Region III)
Bay of Biscay and Iberian Coast (Region IV)
Wider Atlantic (Region V)
	Effect on extent of feature
	- Improve
	  ○ Area of habitat is expected to move towards being in line with prevailing conditions
	  ○ Abundance of species is expected to move towards being in line with prevailing conditions
	- Stablise
	  ○ Area of habitat is expected to become stable
	  ○ Abundance of species is expected to become stable
	- Slowed decline
	  ○ Area of habitat is expected to reduce more slowly
	  ○ Abundance of species is expected to decline more slowly
	- Unknown
	  ○ Effect on extent of habitat is unknown
	  ○ Effect on abundance of species is unknown
	- Free comment

Condition

Arctic Waters (Region I)
Greater North Sea (Region II)
Celtic Seas (Region III)
Bay of Biscay and Iberian Coast (Region IV)
Wider Atlantic (Region V)
	Effect on condition of feature
	- Improve
	  ○ Condition of feature is expected to improve
	- Stabilise
	  ○ Condition of feature is expected to become stable
	- Slowed deterioration
	  ○ Condition of feature is expected to deteriorate more slowly
	- Unknown
	  ○ Effect on condition of feature is unknown
	- Free comment

20. What further actions are needed in each MSFD subregion/OSPAR Region so that either (i) the relevant pressure is in line with GES or (ii) distribution, extent, condition of the relevant feature are in line with GES?

Arctic Waters (Region I) Greater North Sea (Region II) Celtic Seas (Region III) Bay of Biscay and Iberian Coast (Region IV) Wider Atlantic (Region V)	*free text*

21. Comments

A box for free text comments to explain any specific aspects of the OSPAR measure in question would probably be needed

Reference lists (not reproduced here)

- List of OSPAR Common Indicators
- List of WFD Key Types of Measures and an indicative relationship to the MSFD and its GES Descriptors (Note: text in red indicates modifications to the WFD KTM title to help distinguish them from MSFD KTMs).
- Key Types of Measures (KTMs) for the MSFD, supplementing the WFD KTMs listed in Table 4.
- Lists of pressures; ecosystem components and features (species groups/functional groups, habitat types and physical and chemical features), and; activities and sectors used in EU MSFD reporting on Articles 8, 9 and 10.

Appendix. Example Tables for presentation

Example 1: Overview table measure by measure (measures could be grouped by Descriptor or Common indicator)

MSFD Desc.	OSPAR Common Indicator	OSPAR Measures	KTM	Pressure	Feature/ component	Activities/sectors	Physical actions	State of implemetation					Mode of implementation					Full implementation expected to be sufficient to address pressure component/protect feature in line with GES					Further Actions required
								I	II	III	IV	V	I	II	III	IV	V	I	II	III	IV	V	
1	D1 mammals 4 D1 mammals 6	2013/11	37	C – Underwater noise H – Selective extraction	Harbor porpoise	Marine-based renewables Marine hydrocarbon extraction Fisheries Marine mining Military Shipping	O R S		1b	1b				nr	nr				no	no			Measures to address - the threats such as from bycatch and ship noise in areas where there may be a significant adverse impact on Harbour porpoise from these activities; - any adverse impacts in areas of aggregation, calving and nursery grounds, and other critical habitats
2																							
3																							
4																							
5	D5 nutr conc	PARCOM88/ 2	1, 2	G – Nutrient and organic matter enrichment	B – Nutrient Levels	Not directly specified Urban (municipal waste water discharge) Agriculture & Forestry Aquaculture Industry Energy	Unspecifi ed	1b	1b	1b	1b	1b	L	L E P	L	NI	NI	NK	NK	NK	NK	NK	Improved reporting arrangements..

						production (other) Transport (other)																	
8	D8 metals (biota) D8 metals (sed)	D80/2 D81/1 D81/2 D90/3 R85/1	15	C – Contamination by hazardous substances (mercury)	Fish Seabed habitat	Industry (discharges and emissions) – chlor alkali	O		1a	1a	1a			L	L	L P		No	No	No	No	No	Measures have addressed HG from chlor alkali in tandem with EU measures. Further OSPAR measures on Hg have been taken in large combustion sectors, dentistry, crematoria.

NOTES: an extra column for comments should be included; NI – no information

Example 2: Descriptor and common indicator orientated presentation

Descriptor 8

Relevant OSPAR Objective	OSPAR Hazardous Substances Strategy
Common Indicator	D8 metals biota D8 metals sediment
Feature/component	Fish, Other, Seabed Habitat
Pressure	C – Contamination by hazardous substances (mercury)
Activities or sectors leading to pressure (1)	Industry (discharges, emissions) – chlor-alkali industry,
OSPAR Acquis	PARCOM Decision 80/2 on Limit Values for Mercury Emissions in Water from Existing and New Brine Recirculation Chloralkali Plants (exit of the purification plant) PARCOM Decision 81/1 on Limit Values for Existing Waste Brine Chlor-Alkali Plants PARCOM Decision 81/2 on Limit Values for Existing Brine Recirculation Chlor-Alkali Plants (exit of the factory site) PARCOM Decision 90/3 on Reducing Atmospheric Emissions from Existing Chlor-Alkali Plants PARCOM Recommendation 85/1 on Limit Values for Mercury Emissions in Water from Existing Brine Recirculation Chlor-Alkali Plants (exit of factory site)

	KTM	15		
	Physical Actions	O		
	State of implementation	I	Not relevant	
		II	1a (90/3)	All
		III	1a (90/3)	All
		IV	1a (90/3)	All
		V	Not relevant	
	Mode of implementation	I	Not relevant	
		II	L	
		III	L	
		IV	L, P	
		V	Not relevant	
EU and International Acquis	IED BREF 2001 BATC 12.2013			
Activities or sectors leading to pressure (2)	(2) Waste disposal – Dentistry			
OSPAR acquis	PARCOM Recommendation 93/2 on Further Restrictions on the Discharge of Mercury from Dentistry			
	KTM	15		
	Physical actions	O		
	State of implementation	I		
		II		
		III		
		IV		
		V		
	Mode of implementation	I		
		II		
		III		
		IV		

			V	
EU and International Acquis				
Activities or sectors leading to pressure (3)	(2) Waste disposal – Crematoria			
OSPAR acquis		OSPAR Recommendation 2003/4 on Controlling the Dispersal of Mercury from Crematoria		
		KTM	15	
		Physical actions	O	
		How far implemented	I	
			II	
			III	
			IV	
			V	
Full implementation expected to be sufficient to address pressure component/protect feature in line with GES		Further actions needed and comments		
I	No			
II	No			
III	No			
IV	No			
V	No			
Pressure	C – Contamination by heavy metals (general)			
Activities or sectors leading to the pressure				
		Full implementation expected to be sufficient to address pressure component/protect feature in line with GES		

Annex 3: Access to supporting excel spreadsheet

During the preparation of this report a comprehensive excel spreadsheet was compiled including all information used to apply the evaluation framework to the implementation of OSPAR measures. This spreadsheet is available on request from: Havs- och vattenmyndigheten Box 11 930, 404 39 Göteborg. www.havochvatten.se

Annex 4: Overview of OSPAR measures and implementation status in Sweden

Issue addressed by measure	OSPAR measure	Last Reporting	Applies in Sweden (a)	State of implementation		Instruments used	Gaps in implementation
				OSPAR wide assessment	Last Swedish report to OSPAR (b, c)		
OSPAR measures further the protection of threatened and/or declining species and habitats							
Ocean quahog	R2013/05	2016, 2019	Yes	Not yet assessed	Reported 2016		
Flat oyster	R2013/04	2016, 2019	Yes	Not yet assessed	Reported 2016		
Azorean limpet	R2015/02	2016, 2019	No				
Lesser black-backed gull	R2011/01	2013, 2019	No				
Ivory gull	R2011/02	2013, 2019	No				
Steller's eider	R2013/12	2016, 2019	No				
Little shearwater	R2011/03	2013, 2019	No				
Balearic shearwater	R2011/04	2013, 2019	No				
Black-legged kittiwake	R2011/05	2013, 2019	Yes	Not yet assessed	Not stated [Part implemented]	Policy and strategy	
Roseate tern	R2011/06	2016, 2019	No				
Iberian guillemot	R2014/16	2016, 2019	No				
Thick-billed murre	R2011/07	2013, 2019	No				
Sturgeon	R2014/01	2016, 2019	No - but policy relevant				
Allis shad	R2015/04	2016, 2019	Yes	Not yet assessed	Not yet reported		
European eel	R2014/15	2016, 2019	Yes	Not yet assessed	Not yet reported		
Portuguese dogfish	R2014/05	2016, 2019	No				
Gulper shark	R2014/03	2016, 2019	No				
Leafscale gulper shark	R2014/04	2016, 2019	No				
Basking shark Common Skate species complex White Skate Angel Shark	R2010/06	2013, 2019	Yes for Basking shark and Common skate species complex	Not yet assessed	Not stated [Part implemented]	Policy and strategy	Species are rare in Swedish waters but Sweden is ready to take part in collective actions with other Parties
Spotted Ray	R2014/07	2016, 2019	No				

Issue addressed by measure	OSPAR measure	Last Reporting	Applies in Sweden (a)	State of implementation		Instruments used	Gaps in implementation
				OSPAR wide assessment	Last Swedish report to OSPAR (b, c)		
Cod	R2014/14	2016, 2019	Yes	Not yet assessed	Reported 2016		
Long-snouted seahorse	R2012/03	2016, 2019	No				
Short-snouted seahorse	R2012/02	2016, 2019	No				
Orange roughy	R2010/07	2016, 2019	No				
Porbeagle shark	R2014/06	2016, 2019	Yes	Not yet assessed	Reported 2016		
Sea lamprey	R2015/3	2016, 2019	Yes	Not yet assessed	Reported 2016		
Thornback skate / ray	R2014/08	2016, 2019	Yes	Not yet assessed	Reported 2016		
Atlantic Salmon	R2016/3	2019	Yes	Not yet assessed	Reported 2016		
[Northeast Atlantic] spurdog	R2014/02	2016, 2019	Yes	Not yet assessed	Reported 2016		
Loggerhead turtle	R2013/07	2016, 2019	No				
Leatherback turtle	R2013/06	2016, 2019	No				
Bowhead whale	R2013/08	2016, 2019	No				
Blue whale	R2013/09	2016, 2019	No				
Northern right whale	R2013/10	2016, 2019	No				
Harbour porpoise	R2013/11	2016, 2019	Yes	Not yet assessed	Reported 2016		
Carbonate mounds	R2014/10	2016, 2019	No				
Coral Gardens	R2010/09	2013, 2019	Yes	Not yet assessed	Not stated [Part implemented]	Policy and strategy	Knowledge of where habitat occurs
Cymodocea meadows	R2014/12	2016, 2019	No				
Deep-sea sponge aggregations	R2010/10	2013, 2019	Yes	Not yet assessed	Not stated [Part implemented]	Policy and strategy	Knowledge of where habitat occurs
Intertidal mudflats	R2016/3	2019	Yes	Not yet assessed	Reported 2016		
Intertidal *Mytilus edulis* beds on mixed and sandy sediments	R2015/1	2016, 2019	Yes	Not yet assessed	Reported 2016		
Littoral chalk communities	R2013/01	2016, 2019	No				
Lophelia pertusa reefs	R2010/08	2013, 2019	Yes	Not yet assessed	Not stated [Part implemented]	Legislation	Not all pressures addressed
Maerl beds	R2014/13	2016, 2019	Yes	Not yet assessed	Reported 2016		
Modiolus modiolus beds	R2013/03	2016, 2019	Yes	Not yet assessed	Reported 2016		

Issue addressed by measure	OSPAR measure	Last Reporting	Applies in Sweden (a)	State of implementation		Instruments used	Gaps in implementation
				OSPAR wide assessment	Last Swedish report to OSPAR (b, c)		
Oceanic ridges with hydrothermal vents/fields	R2014/11	2016, 2019	No				
Ostrea edulis beds	R2013/04	2016, 2019	No				
Sabellaria spinulosa reefs	R2013/02	2016, 2019	No				
Seamounts	R2014/09	2016, 2019	No				
Sea-pen and burrowing megafauna communities	R2010/11	2013, 2019	Yes	Not yet assessed	Not stated		Measure was not considered relevant at time of 2013 reporting due to difficulty to apply the definition of the habitat in Swedish waters
Zostera beds	R2012/04	2013, 2019	Yes	Not yet assessed	Not stated [Part implemented]	Legislation	Legislation in place, but unknown to what extent proper legislative measures are generally used to protect/save/restore the habitat.
General measures on biodiversity							
Assessment of Environmental Impacts on Threatened and/or Declining Species and Habitats	R2010/5	First reporting: 2011 (in practice 2012/13) Next reporting: 2016	Yes	Not yet assessed	Part Implemented	Part legislation Part policy and strategy	
Network of Marine Protected Areas	R2003/3 amended by R2010/2	Annual reporting on MPAs established	Yes	Partly implemented	Partly implemented	Policy and strategy Economic	
Network of Marine Protected Areas - ABNJ	7 Decisions 7 Recs		Yes for activities in ABNJ				
Measures to combat eutrophication							
Reductions in Inputs of Nutrients to the Paris Convention Area	R88/2	Last report 2007 Paused in 2009 until improved	Yes (with caveats)	Partly implemented	Not stated [Part implemented]	Policy and strategy	Not currently clear if the measure as been implemented and the reduction target achieved.
Coordinated Programme for the Reduction of Nutrients	R89/4	Ceased in 2008 (all CPs in compliance)	Yes	Fully implemented (Set aside)	Fully implemented	Legislation Economic Supervisory	
Reduction of nutrient inputs from agriculture into areas where these inputs are likely, directly or indirectly, to cause pollution	R92/7	Ceased in 2008 (all CPs in compliance)	Yes	Fully implemented (Set aside)	Not stated [Part implemented]	Legislative Supervisory	
OSPAR measures on point sources							

Issue addressed by measure	OSPAR measure	Last Reporting	Applies in Sweden (a)	State of implementation		Instruments used	Gaps in implementation
				OSPAR wide assessment	Last Swedish report to OSPAR (b, c)		
Iron and steel industry (primary and secondary) - Limit values	R92/2	1996	No	Fully implemented (Set aside 2010)			
Iron and steel industry (primary and secondary) - Reduce use of substances	R93/1	2002	Yes	Fully implemented (Set aside 2010)	Not stated [Fully implemented]	Legislative Voluntary agreement	Now IPPC
Iron and steel industry (primary and secondary) - Limit values	R92/3	1996	No	Fully implemented (Set aside 2010)	Not stated [Fully implemented]		
Iron and steel industry (primary and secondary) - Reduce use of substances	R91/3	1998	Yes	Fully implemented (Set aside 2010)	Fully implemented	NR	No information on implementation process - very limited reporting Now IPPC
Iron and steel industry (primary and secondary) - BAT	R90/1	2000? (but 1994 accessed)	Yes	Fully implemented (Set aside 2010)	Not stated [Fully implemented]	NR	No information on implementation process
Iron and steel industry (primary and secondary) - BAT	R91/2	2000? (but 1994 accessed)	Yes	Fully implemented (Set aside 2010)	Not stated	NR	No information on implementation process
Non-ferrous metal industry (Primary and secondary) - Phase out of hexachloroethane	D96/1	2010 - no report	Yes	Fully implemented (Set aside 2010)	?	?	Now IPPC
Non-ferrous metal industry (Primary and secondary) - Limit values	R2002/1 amended by 2005/1	2010	Yes	Fully implemented (Set aside 2010)	Not stated	Legislative Voluntary agreement	Now IPPC
Non-ferrous metal industry (Primary and secondary) - Limit values	R98/2	2010	Yes	Fully implemented (Set aside 2010)	Not stated	Legislation Policy and strategy	Now IPPC
Non-ferrous metal industry (Primary and secondary) - Limit values	R92/1 supplemented by 2005/1	2010	Yes	Fully implemented (Set aside 2010)	Fully implemented	Legislation Policy and strategy	Now IPPC
Non-ferrous metal industry (Primary and secondary) - BAT	R94/1	2010	No	Fully implemented (Set aside 2010)			

Issue addressed by measure	OSPAR measure	Last Reporting	Applies in Sweden (a)	State of implementation		Instruments used	Gaps in implementation
				OSPAR wide assessment	Last Swedish report to OSPAR (b, c)		
Non-ferrous metal industry (Primary and secondary) - BAT	R96/1	2010	Yes	Fully implemented (Set aside 2010)	Not stated	Legislative Voluntary agreement Policy and strategy	Now IPPC
Non-ferrous metal industry (Primary and secondary) - BAT	R98/1	2008	Yes	Fully implemented (Set aside 2010)	Not stated	Legislative Voluntary agreement Policy and strategy	Now IPPC
Surface treatment of metals - Limit values	R92/4	2006	Yes	Fully implemented (Set aside 2010)	Not stated	Legislation Policy and strategy	Now IPPC
Chlor-alkali industry - Limit values	D80/2,	2008 (for D90/3)	Yes	Fully implemented (Set aside 2010)	Not stated	?	Now IPPC
Chlor-alkali industry - Limit values	D81/1	2008 (for D90/3)	Yes	Fully implemented (Set aside 2010)	Not stated	?	Now IPPC
Chlor-alkali industry - Limit values	D81/2	2008 (for D90/3)	Yes	Fully implemented (Set aside 2010)	Not stated	?	No electronic information
Chlor-alkali industry - Limit values	D90/3	all measures are part of annual report for the sector	Yes	Fully implemented	Not stated [Part implemented]	Legislation Policy and strategy	Information in the most recent reporting suggests that mercury cell based chlor-alkali production has continued after 2010. No information is given on plans to cease remaining production so as to comply with the measure.
Chlor-alkali industry - Limit values	R85/1	2008 (for D90/3)	Yes	Fully implemented (Set aside 2010)	Report not available	?	
Chlor-alkali industry - Limit values	D82/1	2008 (for D90/3)	Yes	Fully implemented (Set aside 2010)	Report not available	?	
Textile industry - reference values	R97/1	2005	Yes	Fully implemented (Set aside 2010)	Not stated	Policy and strategy Voluntary agreement	Now IPPC
Textile industry - BAT	R94/5	2005	Yes	Fully implemented (Set aside 2010)	Not stated [Fully implemented]	Policy and strategy	Now IPPC

Issue addressed by measure	OSPAR measure	Last Reporting	Applies in Sweden (a)	State of implementation		Instruments used	Gaps in implementation
				OSPAR wide assessment	Last Swedish report to OSPAR (b, c)		
Pharmaceutical industry - BAT	R92/5	2005	Yes	Fully implemented (Set aside 2010)	Partly implemented	Policy and strategy	Report clearly states that full implementation had not been achieved by 2002. No further reporting round took place before this was categorise 1a.
Organic chemical industry - BAT	R94/4	2004	Yes	Fully implemented (Set aside 2010)	Not stated [Part implemented]	Policy and strategy	Now IPPC
Large combustion plants - BAT	R97/2	2002	Yes	Fully implemented (Set aside 2010)	Fully implemented	Already implemented	Now IPPC
Pulp and paper industry - BAT	D96/2	2006	Yes	Fully implemented (Set aside 2010)	Fully implemented	Policy and Strategy	Now IPPC
Pulp and paper industry - Limit values	D92/1	2005	Yes	Fully implemented (Set aside 2010)	Not stated [Fully implemented]	Legislation Policy and strategy	Now IPPC
Pulp and paper industry - Limit values	D95/2	2006	Yes	Fully implemented (Set aside 2010)	Not stated [Part implemented]	Policy and strategy	Did Nordic Paper Seffle comply in the end with the Decsions for Chemical Oxygen Demand?
Pulp and paper industry - Limit values	D95/3	2006	Yes	Fully implemented (Set aside 2010)	Not stated [Fully implemented]	Policy and strategy	
Pulp and paper industry - BAT/BEP	R94/2	2006	Yes	Fully implemented (Set aside 2010)	Not stated [Fully implemented]	Policy and strategy	
Pulp and paper industry - BAT/BEP	R94/3	2006	Yes	Fully implemented (Set aside 2010)	Not stated [Fully implemented]	Policy and strategy	
VCM, 1,2-dichloroethane - Limit values	D98/4	2010	Yes	Fully implemented (Set aside 2010)	Not stated [Fully implemented]	Policy and strategy (administrative action)	
VCM, 1,2-dichloroethane - Limit values	R96/2	2010	Yes	Fully implemented (Set aside 2010)	Fully implemented	Policy and strategy	
Suspension PVC - Limit values	D98/5	2010	Yes	Fully implemented (Set aside 2010)	Fully implemented	Policy and strategy (administrative action)	
Suspension PVC - Limit values	R96/3	2010	Yes	Fully implemented (Set aside	Fully implemented	Policy and strategy	

Issue addressed by measure	OSPAR measure	Last Reporting	Applies in Sweden (a)	State of implementation		Instruments used	Gaps in implementation
				OSPAR wide assessment	Last Swedish report to OSPAR (b, c)		
				2010)			
Emulsion PVC - Limit values	R2000/3	2010	Yes	Fully implemented (Set aside 2010)	Not stated [Fully implemented]	Policy and strategy (administrative action)	
Emulsion PVC - Limit values	R99/1	2010	Yes	Fully implemented (Set aside 2010)	Not stated [Fully implemented]	Policy and strategy (administrative action)	
Refineries - Discharge reduction	R83/1	Report not located	(Yes)	Fully implemented (Set aside 2010)	Report not located	Report not located	No electronic information
Refineries - Discharge reduction	R89/5	2002	No	Fully implemented (Set aside 2010)			
Production, collection, regeneration and disposal of waste oils	R81/2	Report not located	(Yes)	Fully implemented (Set aside 2010)	Report not located	Report not located	No electronic information
Reception facilities and oil terminals	R87/2	Report not located	(Yes)	Report not located	Report not located	Report not located	No electronic information
Aquaculture – BEP for reduction of inputs of potentially toxic chemicals	R94/6	2006	Yes	Partly implemented. Reporting ceased pending review.	Not stated (but no relevant industry at that time)	Legislation Policy and strategy (administrative action)	Has the industry remained as it was in 2006?
OSPAR measures on diffuse sources to cut emissions and discharges of OSPAR priority chemicals							
Cadmium - limit values	D85/2	Background Document 2004 (Reviewed 2010)	Yes	Fully implemented (Set aside 2010)	Report not located	Report not located	
Mercury and Cadmium - batteries	D90/2	Background Document 2004 (Reviewed 2010)	Yes	Fully implemented (Set aside 2010)	Report not located	Report not located	
Mercury and organic mercury compounds - alternatives and discharge reduction	R89/3	Background Document 2006	Yes	Fully implemented (Set aside 2010)	Not stated [Fully implemented]	Legislation Voluntary Policy and strategy	
Mercury and organic mercury compounds - Dentistry	R93/2	Background Document 2006	Yes	Fully implemented	Not stated [Fully implemented]	Legislation Voluntary Policy and strategy (Already implemented)	Issue of EN test standard not being as strict as the German test is raised in reporting as a posssible problem. There is no further reporting after this.

Issue addressed by measure	OSPAR measure	Last Reporting	Applies in Sweden (a)	State of implementation		Instruments used	Gaps in implementation
				OSPAR wide assessment	Last Swedish report to OSPAR (b, c)		
Mercury and organic mercury compounds - Crematoria	R2003/4	2011, 2016	Yes	Partly implemented	Not stated [Fully implemented]	Legislation	Was there reporting in 2011??
Mercury and organic mercury compounds - thermometers, batteries and dental filters	R81/1	Background Document 2004 (Reviewed 2010)		Fully implemented (Set aside 2010)	Report not located	Report not located	
Organic tin compounds - marketing and use	R87/1	2006 Background Document 2011	Yes	Fully implemented (Set aside 2010)	(Fully implemented)	Legislation Voluntary	
Organic tin compounds - docking activities	R88/1	2006 Background Document 2011	Yes	Fully implemented	Not stated [Fully implemented]	Legislation Administrative action	Link to recent views on TBT measures?
Polychlorinated biphenyls (PCBs) and hazardous PCB substitutes - phase out	D92/3	2006 Background Document 2004	Yes	Fully implemented (Set aside 2010)	Not stated [Fully implemented]	Legislation Voluntary Policy and strategy (Already implemented?)	
Short chained chlorinated paraffins - phase out	D95/1	2006 (1.a) BD 2009	Yes	Fully implemented	Partly implemented	Legislation Voluntary Policy and strategy (already implemented)	
Nonylphenol-ethoxylates - phase out	R92/8	2006 Background Document 2009	Yes	Fully implemented (Set aside 2010)	Not stated [Fully implemented]	Legislation Voluntary Policy and strategy (Already implemented)	
Polycyclic aromatic hydrocarbons (PAHs) - Phasing Out of the Use of One-Component Coal Tar Coating Systems for Inland Ships	R96/4	2006 Background Document 2009	Yes	Fully implemented	Not stated [Fully implemented]	Already implemented	
Pesticides - Agricultural	R2000/1	2007	Yes	Fully implemented	Not stated [Fully implemented]	Legislation Voluntary Policy and strategy (Already Implemented)	
Pesticides - Amenity areas	2000/2	2007	Yes	Fully implemented	Not stated [Fully implemented]	Legislation Voluntary Policy and strategy (Already Implemented)	
Heavy metals in sewage sludge	R80/1	?	Report not located	?	Report not located	Report not located	No electronic information

Issue addressed by measure	OSPAR measure	Last Reporting	Applies in Sweden (a)	State of implementation		Instruments used	Gaps in implementation
				OSPAR wide assessment	Last Swedish report to OSPAR (b, c)		
Environmental Quality Standard for mercury in organisms	D80/1	?	Report not located	? Set aside 2010	Report not available	Report not located	No electronic information
Mercury (land-based sources)	R82/1	?	Report not located	? Set aside 2010	Report not located	Report not located	No electronic information
Measures with regard to discharges, emission and losses of radioactive substances							
Nuclear Industry - discharges	R91/4	2003 2008 2012 2016	Yes	Fully implemented	Not stated [Fully implemented]		
Nuclear Industry - esp. Nuclear reprocessing - discharges, emissions and losses	D2000/1	2003	No	Fully implemented			
Nuclear Industry - esp. Nuclear reprocessing - discharges, emissions and losses	D2001/1	-	No	Fully implemented (Set aside 2010)			
Nuclear Industry - Disposal	R91/5	-	-	Set aside 2010			
OSPAR measures with regard to other marine sectors							
Marine Litter - Fishing for litter	R2010/19	2013 and annually thereafter	Yes	No overall assessment	Partly implemented	Policy and strategy Economic	
Conventional and chemical munitions - reporting	R2010/20	2011 and annual thereafter	Yes	No overall assessment	Partly implemented	Policy and strategy	
Carbon Capture and Storage (water column and seabed) – prohibition	D2007/01	No Overall Reporting	Yes				
Carbon Capture and Storage (sub-seabed) - regulation and management	D2007/02	When a permit is issued	Yes				
Monitoring and assessment	R2014/18	No overall national reporting	Yes			Policy and strategy Economic	
OSPAR measures with regard to the offshore oil and gas industry (Measures not applicable in Sweden)							

Notes: R – Recommendation; D - Decision
(brackets) denote where no information has been found on applicability in Sweden
[square brackets] indicate where Sweden's view on implementation status has not been stated in the last implementation report and the conclusion presented in square brackets has been inferred on the basis of the reported information.
Reporting in 2016 was not available for analysis during this project
Grey shading: measure does not apply.

Annex 5: Glossary of English and Swedish terms

English name (and abbreviation used in the report)	Svenskt namn
County Administration Boards	Länsstyrelser
Environmental Quality Objectives	Miljömålen
Environmental Quality Norms	Miljökvalitetsnormer
Generational goal	Generationsmål
Governmental offices of Sweden	Regeringskansliet
Milestone target	Etappmål
Municipalities	Kommuner
Marine Strategy Framework Directive (MSFD)	Havsmiljödirektiv
National Data Host	National Datavärd
OSPAR Convention	OSPAR Konvention
Skagerrak and Kattegat (also part of the OSPAR Greater North Sea Region)	Västerhavet
Swedish Agency for Marine and Water Management (SwAM)	Havs- och vattenmyndigheten
Regulating authorities	Tillsynsmyndigheterna
Regulation implementing the MSFD in Swedish law	Havsmiljöförordningnen
Swedish Environmental Code	Miljöbalken
Swedish Environmental Protection Agency (SEPA)	Naturvårdsverket
Swedish Institute for the Marine Environment (SIME)	Havsmiljöinstitutet
Swedish Meterological and Hydrological Institute (SMHI)	Sveriges meteorologiska och hydrologiska institute (SMHI)
Swedish Parliament	Riksdag
Water Authorities	Vattenmyndigeterna
Water Framework Directive (WFD)	Vattendirektiv
Water Information System Sweden (WISS)	Vatteninformationsystem Sverige (VISS)
Water Conservation Association	Vattenvårdsförbund

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Havs- och vattenmyndighetens rapport 2016:23
ISBN 978-91-87967-34-4

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