

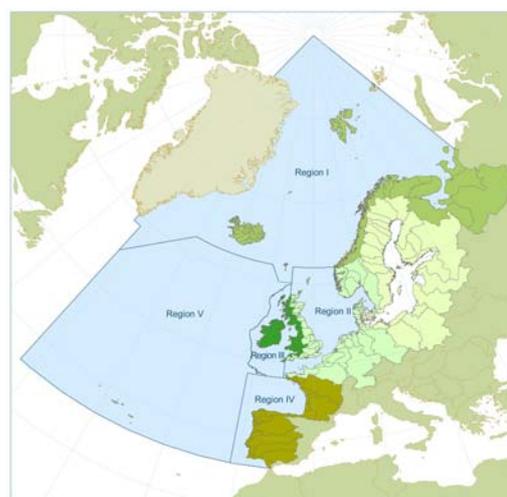
## Combating eutrophication – OSPAR’s work on nutrients

***OSPAR’s objective is to achieve and maintain a healthy marine environment where eutrophication does not occur. To this end, OSPAR Contracting Parties are committed to reduce emissions, discharges and losses of nitrogen and phosphorus. OSPAR works to implement this objective within the framework of the obligations and commitments of Contracting Parties in other international fora. The UNECE Convention on Long-Range Transboundary Air Pollution and its Protocols is one important instrument complementary to OSPAR’s objective. Long-standing co-operation with the EMEP monitoring programme supports evaluations of effectiveness of measures under OSPAR’s commonly agreed monitoring and assessment framework and helps directing future actions.***

### ***The OSPAR Convention – Regional co-operation to protect the marine environment of the North-East Atlantic***

OSPAR is the regional marine organisation working towards the protection of the marine environment of the North-East Atlantic and its Regions: Arctic Waters, the Greater North Sea including the English Channel, the Kattegat and Skagerrak, the Celtic Seas, the Bay of Biscay and Iberian Coast, and the Wider Atlantic including the waters surrounding the Azores. It has a track record of 35 years of international co-operation in the region. The Contracting Parties to the OSPAR Convention are Belgium, Denmark, European Community, Finland, France, Germany, Iceland, Ireland, Luxembourg, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom. OSPAR’s vision is a clean, healthy, biologically diverse and productive sea. OSPAR works under five thematic strategies to achieve its objectives, addressing biodiversity and ecosystems, eutrophication, hazardous substances, radioactive substances and offshore oil and gas. These are supported by a sixth cross cutting strategy on monitoring and assessment of the status of the marine environment and the impacts of human activities.

**The OSAPR maritime area, its five Regions and the OSPAR catchment**



Region I = Arctic Waters; Region II = Greater North Sea; Region III = Celtic Seas; Region IV = Bay of Biscay and Iberian Coast; Region V = Wider Atlantic

## ***The Eutrophication Strategy – OSPAR’s objectives, timeframes and approaches to combat eutrophication***

OSPAR’s objective is to achieve and maintain, by 2010, a healthy marine environment where eutrophication does not occur. Contracting Parties are committed to reduce emissions, discharges and losses of nutrients to the sea. The Eutrophication Strategies (agreement 2003-21) sets out an integrated target-oriented and source-oriented approach to achieve the objectives.

The Common Procedure for the identification of the eutrophication status of the OSPAR maritime area provides a commonly agreed assessment and monitoring framework for evaluating and classifying the quality status of the maritime area in relation to human induced eutrophication in terms of problem areas, potential problem areas and non-problem areas. The Common Procedure links, in an integrated cause-effect relation scheme, indicators on nutrient enrichment with indicators for direct and indirect eutrophication effects. For each indicator generic assessment levels have been set which are refined for area-specific application, based on agreed methodologies and taking into account natural variability and environmental factors in the area concerned. The assessment levels define the desired quality objective (target). For nutrient enrichment, riverine inputs and direct discharges and elevated nutrient concentrations in the sea have been selected as indicators for harmonised application; atmospheric deposition of nitrogen is an additional parameter recommended for application. Five indicators of the Common Procedure have been selected to support the overall Ecological Quality Objective for eutrophication for the North Sea as an integrated set.

The purpose of the Common Procedure is twofold: It identifies problem areas to which the OSPAR target of 50% reduction in nutrient inputs compared to levels in 1985 applies and measures on point and diffuse sources need to be taken as a priority. It also provides a framework to evaluate effectiveness of measures and progress towards the OSPAR objective. This is supported by nutrient reduction scenarios to evaluate whether existing measures at source will be sufficient to resolve remaining eutrophication problems. OSPAR also works on modelling of transboundary nutrient transport to support formulating future actions.

### ***Implementing the Eutrophication Strategy – Cooperation with other international fora***

OSPAR works to implement the Strategy within the framework of the obligations and commitments of Contracting Parties in other international fora. This includes for example

- obligations of OSPAR countries under European Community legislation to take measures for the reduction of nutrient releases as required under the Urban Waste Water Treatment Directive (91/271/EEC), Nitrates Directive (91/676/EEC), IPPC Directive (96/61/EC), Water Framework Directive (2000/60/EC) and the National Emission Ceilings Directive (2001/81/EC);
- measures stipulated within the framework of the Convention on Long-Range Transboundary Air Pollution and its Protocols.

#### **Elements of the target-oriented approach:**

*OSPAR Common Procedure for the identification of the eutrophication status of the OSPAR maritime area (agreement 2005-3)*

*EcoQOs for eutrophication as part of the North Sea system of Ecological Quality Objectives (publications 229/2005, 307/2007)*

*Evaluations of the expected eutrophication status following implementation of measures – nutrient reduction scenarios (latest publication 374/2008)*

#### **Elements of the source-oriented approach:**

*Implementation of national and international measures to reduce nutrient releases from industry, sewage treatment plants, agriculture and other diffuse sources, including promotion of BAT and agricultural BEP*

*For problem areas with regard to eutrophication, implementation of OSPAR measures:*

- *Recommendation 88/2 requiring reductions in nutrient releases at source by 50% compared to levels in 1985*
- *Recommendation 89/4 on a co-ordinated programme for addressing the main point and diffuse sources of nutrients*
- *Recommendation 92/7 requiring measures addressing nutrient inputs from agriculture*

## Tracking progress – OSPAR monitoring and assessment and cooperation with EMEP

The Common Procedure assessment framework and EcoQOs are supported by monitoring under the Eutrophication Monitoring Programme, as part of the OSPAR Co-ordinated Environmental Monitoring Programme. Agreed monitoring guidelines specify methodologies and standards for the whole chain of activities from sampling to data reporting. The recent second application of the Common Procedure showed that eutrophication is still a problem in many areas in OSPAR Regions II and in small coastal embayments and estuaries in Regions III and IV.

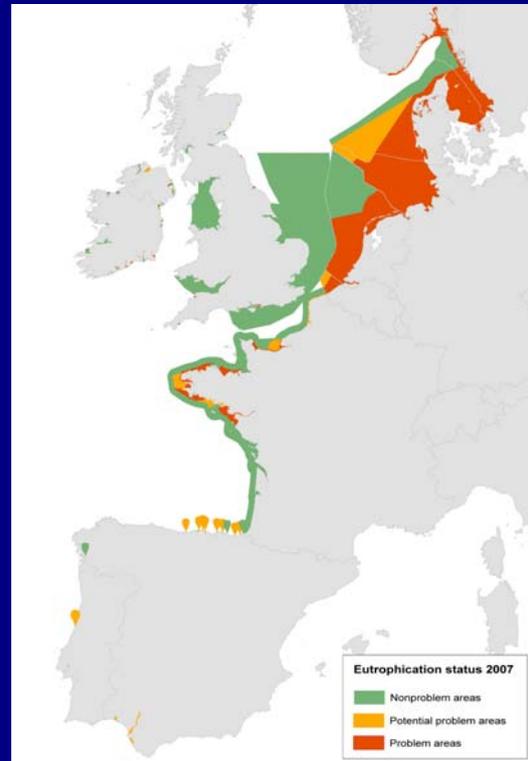
Periodic implementation reporting on Recommendation 88/2 provides evidence on progress made towards the 50% reduction target for nutrient releases related to eutrophication problem areas. A suite of guidelines for harmonised quantification and reporting procedures for nutrients (HARP-NUT) supports the monitoring of nutrient discharges, emissions and losses from main point sources (industry, sewage plants, mariculture) and diffuse sources (agriculture, atmospheric deposition on catchments, run-off).

The latest overview assessment of implementation reporting by Contracting Parties with problem areas showed that the 50% reduction target has mostly been achieved for phosphorus but not for nitrogen. While good progress has been made in the past years in reducing nutrient releases from industry and sewage plants, progress for agriculture is less explicit and consistent. In 2005, agriculture was the main contributor to total nitrogen releases to problem areas in the OSPAR area.

Yet nutrient reduction scenarios suggest that for some problem areas reductions of inputs of nutrients, especially nitrogen, of more than 50% are needed to achieve the desired ecological quality of the OSPAR maritime area in relation to eutrophication.

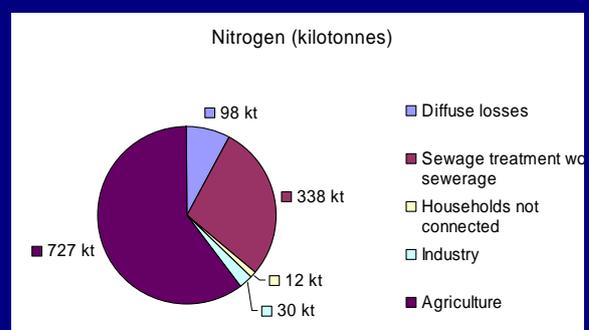
Annual monitoring and periodic regional assessments of nutrient data collected under the OSPAR Comprehensive Study on Riverine Inputs and Direct Discharges (RID) and the OSPAR Comprehensive Atmospheric Monitoring Programme (CAMP) provide indication of trends in pressures from nutrient inputs.

**Eutrophication is still a problem in defined areas of the Greater North Sea, the Celtic Seas and the Bay of Biscay/Iberian Coast.**



The eutrophication status has been last assessed by Contracting Parties in 2007, based on data for 2001 – 2005. The results are summarized in the 2008 OSPAR integrated report on the eutrophication status of the OSPAR maritime area. Source: OSPAR publication 372/2008.

**Agriculture is the main contributor to nitrogen releases to problem areas in the OSPAR maritime area**



Source: Implementation reporting on Recommendation 88/2. OSPAR publication 310/2008)

The latest assessments in 2005 of RID and CAMP data for 1990 – 2001 indicated substantial decreases in waterborne and airborne inputs of nitrogen to most OSPAR Regions (OSPAR publications 233/2005 and 234/2005). Comprehensive trend assessments taking into account RID and CAMP data up to 2006 are currently being prepared by OSPAR and will be published in summer 2009. This will include latest updated model calculations prepared by the European Monitoring and Evaluation Programme (EMEP) of the LTRAP Convention.

This follows a continuous cooperation between OSPAR and EMEP over the past years on nitrogen deposition products. This is to complement OSPAR estimates of atmospheric nitrogen deposition based on measurements of concentrations of nitrogen species in precipitation and to track the main contributing emission sources. Previous model results suggest that deposition of reduced nitrogen is highest in the Greater North Sea, the Celtic Seas and the Bay of Biscay and close to the coasts and land-based sources. A comparison with RID data suggests that atmospheric deposition of nitrogen accounts for a third of the total nitrogen inputs to the Greater North Sea.

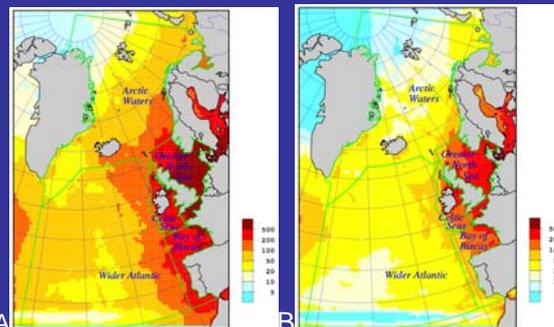
EMEP model calculations suggest that agriculture is the main contributor to total atmospheric nitrogen deposition in Regions II, III, IV, followed by combustion in power plants and industry and transport. International ship traffic on the North Sea and the Atlantic is estimated to account for 16% - 28% of total NO<sub>x</sub> depositions in the OSPAR Regions.

The last assessment of the eutrophication status of the OSPAR maritime area (publication 372/2008) concluded that further efforts are necessary to reduce emissions, discharges and losses of nutrients, especially nitrogen, from the main sources to move towards the objective of the Eutrophication Strategy.

### **Taking work on nutrients forward – Quality Status Report 2010 and Ministerial Meeting**

OSPAR is currently preparing a major holistic assessment of the quality status of the North-East Atlantic – the Quality Status Report 2010. The assessment will report progress made since the last quality status report in 2000 on the implementation of OSPAR Strategies and improvements on the quality of the marine environment. The QSR 2010 will be based on 10 years of OSPAR monitoring and assessment work and will provide the evidence base for the OSPAR Ministerial Meeting in Bergen in September 2010 to formulate actions for the next decade of protection and conservation of the marine environment of the North-East Atlantic. The QSR 2010 will be structured along the OSPAR Strategies. One chapter will be dedicated to eutrophication, summarising the evidence from the assessments referred to in this document and recommending priorities for action within OSPAR or in cooperation with other international fora, such as the UNECE and the LTRAP Convention, to move towards the vision of a healthy marine environment.

### **Model results suggest that deposition of nitrogen is highest in the areas close to the coasts and land-based sources**



EMEP model calculations for atmospheric deposition of (A) total nitrogen and (B) reduced nitrogen in the OSPAR maritime areas in 2004. Source: OSPAR publication 344/2007

### **Comparison of waterborne and airborne inputs of nitrogen to the Greater North Sea**

Year	Total N inputs via water and air	% Contribution of atmospheric inputs to total N inputs		
		Oxidised N	Reduced N	Total atmospheric N
1990	1563	21 %	14 %	35 %
1995	1966	15 %	11 %	25 %
1996	1517	22 %	16 %	38 %
1997	1438	21 %	16 %	36 %
1998	1656	19 %	14 %	33 %
1999	1628	17 %	14 %	31 %
2000	1854	17 %	14 %	31 %
2001	1602	18 %	14 %	32 %
2002	1675	17 %	13 %	30 %
2003	1214	22 %	17 %	39 %
2004	1264	20 %	16 %	36 %

The comparison is based on annual measurement data reported under the OSPAR RID Programme and on emission-based model calculations by EMEP of nitrogen deposition to the Greater North Sea. Source: OSPAR publication 344/2007

## ***OSPAR information***

OSPAR website: <http://www.ospar.org>

OSPAR contact: [secretariat@ospar.org](mailto:secretariat@ospar.org)

Agreements referred to in this document can be accessed under '[Programmes and Measures](#)' on the OSPAR website using the reference number

Publications can be downloaded from the '[Publications](#)' page of the OSPAR website using the publication number

## ***OSPAR publications***

Second OSPAR integrated report on the eutrophication status, 2008, no. 372

Nutrients in the OSPAR Convention area, 2008, no. 310

Nitrogen deposition in the OSPAR maritime area, 2007, no. 344

EcoQO Handbook, 2007, no. 307

Background Document on the EcoQO for eutrophication, 2005, no. 229

RID data assessment, 2005, no. 233

CAMP data assessment, 2005, no. 234

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