

POLICY ASSESSMENT REPORT

Ninth Trilateral Governmental Conference
on the Protection of the Wadden Sea

Esbjerg, 31 October 2001

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EXECUTIVE SUMMARY

Introduction

In the Policy Assessment Report (PAR), progress and deficiencies in the implementation of the Stade Declaration and the Wadden Sea Plan, both adopted at the 8th Trilateral Governmental Wadden Sea Conference in Stade, 1997, are described. The PAR is based upon an analysis of the Joint Progress Report, the 1999 Quality Status Report and supplementary information about the status of the Wadden Sea ecosystem.

I. Implementation of the Stade Declaration

All countries have communicated the Wadden Sea Plan (WSP) to local and regional authorities and interest groups and citizens. Since Stade 1997, there have been numerous discussions with these groups about implementation of and amendments to the Plan. Since 1999, observers of non-governmental organizations have participated in the meetings of the Trilateral Working Group and, in this way, provided an important contribution to the implementation of the Wadden Sea Plan. A detailed record of the implementation of the Wadden Sea Plan is given in Section II below.

Since the Stade Conference in 1997, additional areas have been nominated as habitat areas in the framework of the EU Habitat and Bird Directives.

The large majority of the parameter groups from the Common Package of the Trilateral Monitoring and Assessment Program (TMAP) could be implemented, but gaps still exist for some parameter groups, which could not be implemented in one or two countries because of financial reasons. The implementation of the associated TMAP data handling system is behind schedule for all parameter groups although the major technical parts of the data management has been successfully solved and are ready for use.

A comprehensive inventory of the shipping regulations in the Wadden Sea and the adjacent area was made and, on the basis hereof, a feasibility study carried out into the possibilities for a proposal to the IMO to designate the Wadden Sea and an adjacent zone as a Particularly Sensitive Sea Area (PSSA).

In the period 1997-2001, the collaboration with the English Wash area and with Guinea Bissau continued. Furthermore, an international action plan for the dark-bellied brent goose has been elaborated.

A trilateral working group with representatives from the science and management fields (TSEGplus) has elaborated proposals for a new version of the Seal Management Plan and prepared a report on the status of the common seal and the grey seal.

With regard to cooperation in the field of public information a workshop "Caring for the Wadden Sea as an interactive process" was held in Nieuweschans, the Netherlands, in 1999. At the workshop several aspects of public participation, information and communication were discussed.

In the period 1997-2000, the EU-supported project "Integrated Co-operation on Sustainable Tourism Development and Recreational Use in the Wadden Sea Region" was carried out. During the project, it was recognized that the development of a tourism industry within the Wadden Sea Region based upon the principles of sustainability, integration and subsidiarity and the implementation of Integrated Coastal Zone Management (ICZM) is essential within the entire Region

II. Implementation of the Wadden Sea Plan

Introduction

The Wadden Sea Plan contains all trilateral agreements aiming at implementing the trilateral Targets, together with a large number of projects for the support of policies and management. Both measures and projects have been structured according to the Target categories. The following analysis of progress and deficiencies in the implementation of the Targets also follows this outline.

Landscape and Culture

The current instruments for the protection and conservation of the cultural-historic and landscape elements in the Wadden Sea Area are potentially sufficient to implement the policies in the Wadden Sea Area. In the LANCEWAD project (1998-2001), an inventory of outstanding cultural and landscape elements in the Wadden Sea Area was carried out. It was agreed that the recommendations of the Lancewad project should be considered and a policy assessment made.

Quality of Water, Sediment and Biota

National policies for the reduction of inputs of nutrients and hazardous substances are in line with policies of the North Sea Conferences, OSPAR and the European Union and have, for many substances, resulted in substantial reductions in the levels observed in the Wadden Sea. Because there are still problems, policies will have to be continued, which will in the future result in further reductions of inputs from all sources and thus further implementation of the Targets. Special emphasis should in this respect be given to the harmonized implementation of the EU Water Framework Directive and the OSPAR strategy to combat eutrophication.

With regard to nitrogen, not only the Nitrate and Municipal Waste Water Directives are important, but also policies for the reduction of atmospheric nitrogen inputs. The latter was underlined in the project „Wadden Sea specific eutrophication criteria“ (WSP project 2.2.1).

According to this project the whole Wadden Sea must be regarded as a Eutrophication Problem Area. The outcome of the project will be used as material within relevant OSPAR groups and/or for further consideration by the TWG and the main results included in the Statement to 5th North Sea Conference.

In several surveys, relatively high concentrations of pesticides have been detected. This situation should be reported to the coming North Sea Conference as a rationale for a call for further reductions.

Salt Marshes

All salt marshes in the Wadden Sea Area are protected by national nature protection legislation

Generally it is the aim in all three countries to reduce human interference with salt marshes.

Much has been achieved in the past ten years with regard to improving the natural situation in salt marshes by the reduction, or phasing out, of grazing and artificial drainage.

Salt marsh management guidelines and objectives have been defined for the German national parks and the Dutch PKB area. In Denmark the county councils have started to investigate the situation of salt marshes. Such is also necessary in the framework of the Habitat Directive

Within the TMAP framework common criteria for drainage and grazing, two important parameters determining naturalness of salt marshes, are being developed in the framework of WSP §§ 3.2.2 and 3.2.3. On the basis of these common criteria a survey of the present situation of salt marshes can be carried out. The common criteria may also be used as a starting point for a more precise definition of „naturalness“.

The Tidal Area

Our present understanding of the hydrological and geomorphological processes and their interactions, the role of mussel beds and seagrass meadows in these processes, and the possible impact of sand and shell extraction and mussel fishing is insufficient.

As a result of human interference - most notably fixed coastal constructions but also fisheries, dredging, sand extraction and gas extraction - the ability of the system to compensate for sea level rise may have decreased. Also, the settling conditions for fine-grained sediment may have become worse. The Target of an increased area and a more natural development of natural mussel beds, eelgrass meadows and *Sabellaria* reefs has not been reached. The number and size of stable beds of the blue mussel and of seagrass meadows are still relatively low, although there have been increases in the area of stable mussel beds in recent years.

Mechanical cockle fishing is forbidden in the German part of the Conservation Area. Outside the Conservation Area, it has not been carried out. In Denmark, cockle fishing is allowed in three small areas in the Grådyb. In the Netherlands, cockle fishing is not allowed in permanently closed areas consisting of 26% of the intertidal and, in addition, in areas most suitable for the development of stable mussel beds (additional 5% of intertidal). Non-mechanical cockle fishing (hand digging) is allowed in Denmark and the Netherlands and forbidden in Germany.

In all three countries, considerable parts of the Tidal Area are permanently closed for blue mussel fishing but differences between countries are substantial. Generally, the management of blue mussel fishing should be compared with regard to the protection of *Zostera*, *Sabellaria*, mussel and cockle beds. In particular, the national criteria for allowing fishing of blue mussels in the intertidal should be evaluated.

The impact of shrimp fishing on the bottom fauna has not yet been investigated because no EU support was granted for a trilateral project proposal.

A trilateral working group of coastal defense and nature protection experts has investigated the possible effects of sea level rise. It was concluded that the Wadden Sea system has a high resilience to changes. However, when sea level rises beyond intermediate levels (25cm/50 years) and storminess increases, there will probably be a point at which the capacity of the system to balance the changes will be exhausted and significant changes can be expected. These will be changes in the morphology, which will influence biological parameters. The most notable change will be a reduction in the size of the intertidal area. Consequently the Wadden Sea tidal basins may start to evolve into the direction of tidal lagoons. It is, therefore, recommended to start developing or to further develop, as soon as possible, long-term interdisciplinary policies for coastal defense, nature protection and economic development in the coastal area, in order to anticipate on impacts caused by increased sea level and storminess.

In addition, or, as an alternative to regular coastal defense measures, it is recommended to seriously investigate the feasibility of Best Environmental Practice options for coastal defense.

Furthermore, a detailed sediment budget study should be carried out, encompassing all natural and man-induced inputs and outputs of sediment and other material (sand, mud, shells) and factors affecting transport processes. It is also recommended to start a study into the links between geomorphological and biological changes.

In 1999, a reference area without resource exploitation was designated in the Schleswig-Holstein Wadden Sea in addition to the Danish zero-use reference area, which was designated in 1982, and the Hamburg zero-use area, designated in 1990.

Beaches and Dunes

The status of the dunes in the Wadden Sea Area has been, and still is, determined by conservative measures of coastal protection which preserve directly (planting of marram grass) or indirectly (building of sand dikes, groynes etc.) the zoning patterns. As a result, there is a relatively high percentage of intermediate stages and an underrepresentation of primary and oldest stages.

All dunes are subject to a general protection in all three countries. Additionally, the large majority of the dunes are protected as nature reserves or national parks and are designated under the EU Birds and Habitat Directives.

Current trilateral policies are generally directed towards the implementation of the Targets for beaches and dunes. According to a tentative analysis there is no active coastal defense along about 40% of the sandy coastline. Generally it can be stated that in these areas dynamic dune development is possible. It became also clear that, within the current coastal defense policies, no additional areas can be or will be selected for dynamic dune development. It was furthermore concluded that there exist no common criteria for dynamic dunes and that such criteria would be a prerequisite for evaluating the status of dunes in the Wadden Sea Area.

Estuaries

Only six estuaries have remained in the Wadden Sea area (Ems, Weser, Elbe, Eider, Godel, Varde Å). As a consequence, natural transitions of fresh and salt water hardly exist in the Wadden Sea Area.

The Varde Å and Godel are estuaries which have retained their natural character. The Ems, Weser and Elbe and their tributaries have been modified considerably by diking and deepening. The anthropogenic impact on these estuaries is still increasing as a result of the current deepening of the Elbe and Weser and the construction of a storm surge barrage in the Ems.

A joint report of existing inventories and their results to determine the valuable parts, including river banks and the legal and/or administrative protection of valuable areas in the estuaries could not be drafted, because not all studies could be completed. The issue will be further discussed on a trilateral level.

Offshore Area

The protection status of the Offshore Area has been improved by the extension of large parts of the Conservation Area up to 3 nm (Denmark, Schleswig-Holstein, Hamburg, parts of Lower Saxony) and the implementation of the Birds and Habitats Directive. Because of the many interactions between the Offshore Area and the Tidal Area, the management and protection of these two habitat should be closely tuned. Also the management and protection of the interactions between Offshore Area and adjacent North Sea should be improved.

Coastal protection activities like sand nourishment are, in all countries, based on an integrated approach concerning the mainland coast, the islands and the offshore zone. It is current trilateral policy to extract sand only from outside the Wadden Sea Area, and to issue exemptions for local coastal protection measures only if this is in accordance with the best environmental practice.

It would be useful to look in more detail into the issue of sand extraction. It seems therefore desirable to make an overview of practices with regard to sand extraction, both within and outside the Conservation Area (i.e. procedures, amounts, sources). Such an overview should preferably be carried out in the framework of the sediment budget study proposed under "Tidal Area".

Rural Area

In all countries, sustainable agriculture for improving nature conservation, maintaining typical landscape elements and protection of cultural heritage is supported, amongst others, financially, e.g. by the framework of the EU Agenda 2000 and special national programs. A report has been prepared which gives background information on sustainable agriculture in the Wadden Sea region and possibilities for the combination of agriculture and nature management. The report concludes that, on the islands, agriculture has already adapted to the specific circumstances by applying agro-tourism and nature management. On the mainland, sustainable agriculture aiming also at increasing natural values will probably only be possible in selected areas.

Birds

The populations of many bird species in the Wadden Sea increased in the last decades but also a few declined. The main factors for the increase of breeding birds are an improved protection during the breeding season, a substantial reduction in egg collection and reduced levels of pollutants.

Kentish plover and little tern populations have decreased, which is due to a lack of sufficient undisturbed breeding habitats on beaches and in primary dune areas.

In all three countries, measures have been taken to improve the conditions for breeding birds especially for particularly endangered breeding birds, e.g. on beaches. The main breeding areas have been registered as Birds Directive areas and nominated for the Habitat Directive. To guarantee a favorable food condition for birds, the implementation of relevant measures, as laid down in the trilateral Wadden Sea Plan (restrictions to shellfish fisheries), should be continued, especially with regard to eider duck, brent goose, oyster-catcher and knot.

With regard to moulting conditions for seabirds in the Offshore Area, it is proposed to collect more detailed information as a basis for conservation measures.

An investigation in the shellfish stocks (e.g. *Spisula*) could not be carried out because the WSP project 7.2.2 could not be implemented. Because of the importance of the Offshore Area concerning food availability for birds, there is a need for sustainable management of shellfish stocks in order to prevent negative effects on the bird populations. It is proposed to investigate other funding possibilities.

Marine Mammals

The population size of the common seal is much higher than before the epidemic in 1988. The population may be regarded as viable.

The grey seal population in the Wadden Sea is relatively small. The observed growth is also due to immigration from outside the area. According to recent assessment by the TSEG, the population can not be regarded as viable. In Schleswig-Holstein, temporary grey seal sanctuaries have been installed in cooperation with the local authorities and NGOs. In the Netherlands, certain areas are closed (permanently and temporarily, contours yearly updated) to reduce disturbances of grey seal pups.

The breeding/rearing areas of the harbour porpoise in the Wadden Sea Area and adjacent areas have been protected by the designation of a whale protection area off the islands of Sylt and Amrum in Schleswig-Holstein in 1999 and the implementation of several measures in Danish waters (regulation of gillnet fishing and other activities, action plan to reduce accidental by-catch).

INTRODUCTION

In this Policy Assessment Report, an integrated analysis and an evaluation of the status of the Wadden Sea and the implementation of the Stade Declaration and the Wadden Sea Plan are given.

The background information upon which this analysis is based is contained in the 1999 Quality Status Report, supplemented with recent data, and in the Joint Progress Report.

For a full documentation of the status of the Wadden Sea and the national and trilateral implementation the reader is referred to these documents.

In Part 1 of this report an assessment of the implementation of the Stade Declaration is given. This analysis is wholly based upon the Joint Progress Report.

Part 2 is an integrative assessment of the Status of the Wadden Sea ecosystem and the implementation of policies from the Wadden Sea Plan.

The basis for the description of the Status of the Wadden Sea ecosystem is derived from the 1999 QSR, supplemented with most recent data.

The status of implementation of the Stade Declaration and the Wadden Sea Plan is based upon the Joint Progress Report.

Part 2 has been structured according to the Target groups. For each Target group the following information is provided:

Box: The relevant Targets

1. Status of the Ecosystem according to the QSR, supplemented with new data and additional information;
2. Assessment of the implementation of the WSP policies;
3. Recommendations for management proposed in the QSR and the 10th International Wadden Sea Symposium (IWSS10) and relevant WSP projects. Recommendations for research and monitoring have been forwarded to the Trilateral Monitoring and Assessment Group for further consideration and prioritization;
4. Conclusions and proposals for trilateral action, based upon an analysis of the status of the ecosystem, effects of current policies and relevance of recommendations.

The results of this policy analysis have been an important input to the drafting of the Ministerial Declaration of the 9th Trilateral Wadden Sea Conference.

The publications which have been prepared in the framework of the implementation of the Stade Declaration and the Wadden Sea Plan have been listed in Annex 1.

PART I: IMPLEMENTATION OF THE STADE DECLARATION

1. Assessment of Implementation (according to Joint Progress Report)

Wadden Sea Plan

§§ 1, 2, 3, 4, 5, 6, 10, 12

All countries have communicated the Wadden Sea Plan (WSP) to local and regional authorities and interest groups and citizens. Since Stade 1997, there have been numerous discussions with these groups about the implementation of and amendments to the Plan. The WSP has also been submitted to a broad range of international meetings and has been documented in several publications.

§ 7

Several types of co-management are successfully applied to implement the Wadden Sea Plan. Valuable experiences have been made with running co-management schemes.

§8

The necessity of coastal protection and safety of the local population is legally implemented in all three countries and has been further specified in national policy and management.

§9

The safety of international and national shipping routes has been implemented by the competent authorities in the countries amongst others by implementing shipping regulations in the Wadden Sea (Conservation) Area, establishment of traffic separation schemes in the adjacent areas of the Wadden Sea and information systems for ships carrying dangerous goods (See further this Chapter, PSSA and Part II, implementation WSP).

§11

The implementation of the Wadden Sea Plan is comprehensively documented in the Joint Progress Report. An assessment of the implementation of the WSP is in Part II.

External impacts

§§14, 15, 16

Considerable progress has been made in reducing the inputs of most hazardous substances and nutrients through comprehensive national reduction programs which are consistent with international agreements (North Sea Conference, OSPAR, EU). Further reductions are expected in the coming year as a result of the continued implementation of these programs and the introduction of new regulations. With regard to oil pollution by shipping all three countries are party to the MARPOL Convention, according to which the North Sea is, since 1999, a Special Area with regard to oil pollution. Moreover, the three countries will implement the EU Directive on "Port Reception Facilities for Ship Generated Waste and Cargo Residues.

§17

With regard to activities in the area adjacent to the Wadden Sea, relevant national procedure, amongst which EIA, take into consideration the interests of the Wadden Sea (see further relevant parts of Part II).

EC Bird and Habitat Directives

§§ 18,19

Since the State Conference in 1997 additional areas have been nominated as habitat areas in the framework of the EU Habitat and Bird Directives. In the framework of the selection procedure, as entailed in Art. 4 (2) of the Habitat Directive, the proposed sites will be assessed from a European perspective in terms of their completeness, after which sites of common interest will be selected. This phase of the selection procedure offers the possibility of leveling out the differences in terms of delimitation and ensure the coherence of the Natura 2000 area for the entire Wadden Sea.

Trilateral Monitoring and Assessment Program

§§ 20, 21, 22

The large majority of the parameter groups from the TMAP Common Package could be implemented but gaps still exist for some parameter groups, which could not be implemented in one or two countries because of financial reasons. The implementation of the associated TMAP data handling system is behind schedule for all parameter groups although the major technical parts of the data management have been successfully solved and are ready for use.

Particularly Sensitive Sea Area Wadden Sea

§§ 23, 24, 25

In 1998-99, a comprehensive inventory was made of the shipping regulations in the Wadden Sea and the adjacent area. On the basis hereof it was decided to carry out a feasibility study on the possibilities for a proposal to the IMO, to designate the Wadden Sea and an adjacent zone as a Particularly Sensitive Sea Area (PSSA). This study was carried out by the Marine Research Center, Southampton Institute and served as a background paper for the consultations and decision regarding a joint proposal for a PSSA Wadden Sea.

Environmental Impact Assessment

§§ 26, 27, 28, 29

EIA Directive

Denmark completed the full implementation of the most recent amendments of the EIA-directive (97/11/EEC), which came into force on 14 March 1999. Among other things, these amendments involve the introduction of a screening process for all projects, and a number of improvements in terms of the information provided to the public.

The Directive 97/11/EEC has so far not been fully implemented in German legislation. The implementation will follow in the framework of the Law on the Implementation of the EIA-Directive, the IVU-Directive and further relevant Directives.

The Directive 97/11/EEC has been implemented in The Netherlands.

Espoo Convention

Germany signed the ECE-Convention on Environmental Impact Assessment in a Trans-boundary Context (Espoo Convention) in 1997 but has not yet ratified it. A ratification is aimed at shortly. Practically, however, the Convention is taken into account. Denmark has ratified the Espoo Convention. The stipulations of the Convention have been fully integrated in the Danish relevant legislation. The Netherlands ratified the Espoo Convention in 1995 and has now fully implemented the Convention in the EIA regulations.

International Cooperation

Wash-Wadden Sea

§30

For the period 1998 – 2001, the joint activities focused on information exchange concerning monitoring in connection with the Habitat Directive, and the management of blue mussels. Other aspects concerned sustainable sea defense and development of eutrophication criteria.

Guinea-Bissau

§31

The three-year work program signed at the State Conference had to be postponed because of the outbreak of the civil war in Guinea Bissau in June 1998. In 2000, the situation was such that it was assessed that the work in the country could be resumed by the cooperation. A contract was signed with Wetlands International to act as a more local African consultant from their regional office in Dakar, Senegal, to implement the work program on research, monitoring and surveys on waterbirds and important bird areas in Guinea-Bissau.

Brent Goose Management Plan

§32

At the first AEWA meeting (Capetown 1999) a draft version of the International Action Plan for the Dark-bellied Brent Goose was submitted and welcomed by the meeting. Further consultations regarding the draft Action Plan are taking place within the Technical Committee of the AEWA with the aim to adopt the Final Action Plan at the second AEWA meeting (Bonn 2002).

Conservation of Seals and Small Cetaceans

§§ 33, 34

A trilateral working group with representatives from scientific and management fields (TSEGplus) has elaborated a comprehensive background report and a new draft Seal Management Plan which will be submitted for endorsement at the TGC-9.

The information on small cetaceans, compiled by the ASCOBANS, is being exchanged on the expert level in the framework of the TSEG.

Cooperation in the Field of Public Information

§35

The Dutch Ministry of Agriculture, Nature Management and Fisheries organized the workshop "Caring for the Wadden Sea as an interactive process" in Nieuweschans in the Netherlands in October 1999. The workshop aimed at concrete results with regard to:

- A common language with regard to the concept of 'public participation', 'information' and 'communication',
- Clarification and mutual understanding of personal and institutional motives for participation,
- A set of guidelines on participation as an educational tool in Wadden Sea issues, which should contribute to the 9th Trilateral Governmental Wadden Sea Conference.

Tourism Development

§36

In the period 1997-2000, the EU-supported project "Integrated Co-operation on Sustainable Tourism Development and Recreational Use in the Wadden Sea Region" was carried out.

During the project, it was recognized that the development of a tourism industry within the Wadden Sea Region based upon the principles of sustainability, integration and subsidiarity and the implementation of Integrated Coastal Zone Management (ICZM) is essential within the entire Region

The project was formed as a joint venture between stakeholders and politicians (regional and governmental), in which the two levels were integrated into a "feed-back process". In this way the democratic procedures were not overruled, and the motivation of the participants was maintained throughout the project.

Cultural Heritage

§37

The LANCEWAD-Project (see further Part II) encompasses an inventory of the landscape and cultural heritage of the Wadden Sea region and covers the Wadden Sea Area and the relevant adjacent area.

Future Cooperation

Scientific Wadden Sea Symposium

§38

The 10th International Scientific Wadden Sea Symposium was held in Groningen, The Netherlands, 31 October – 2 November 2000. It was devoted to the “Integration of Ecology and Economy”. The recommendations of the Symposium have been taken into consideration in the formulation of proposals for future trilateral action (see Part II).

9th Wadden Sea Conference

§39

The 9th Trilateral Governmental Conference on the Protection of the Wadden Sea will be held in Esbjerg, Denmark on 31 October 2001.

2. Conclusions and Proposals for Trilateral Action

Explanatory note: In this section proposals for trilateral action are given on the basis of the assessment in the previous section 1. Reference is made to the relevant paragraph from section 1.

Re. §2. It is proposed to address the issue of amending the WSP at TGC-9.

Re §§3-6, 10. It is proposed to address the issue of involvement of inhabitants, users, visitors and other stakeholders in implementing and amending the WSP at TGC-9.

Re §7. It is proposed to address the issue of co-management at TGC-9.

Re §9. It is proposed to address the issue of safety of shipping at TGC-9.

Re §§13-16. It is proposed to address external impacts, in particular land-based inputs of nutrients and hazardous substances and oil inputs from shipping activities, at TGC-9.

Re §17. It is proposed to address the relevance of environmental impact assessment for assessing possible external impacts of human activities, at TGC-9.

Re §§18-19. It is proposed to address the consequences of the designation of areas under the Habitats and Bird Directives in the Ministerial Declaration at TGC-9.

Re §§20-22. It is proposed to address the evaluation of the Trilateral Monitoring and Assessment Program and, in particular, the data handling part at TGC-9.

Re §30, 31. It is proposed to address the continuation of the international cooperation with the Wash and Guinea Bissau at TGC-9.

Re §32. It is proposed to address the progress made in the development of an international Brent Goose management plan, at TGC-9.

Re §§33-34. It is proposed to address the issue of the conservation of seals and small cetaceans, in particular the adoption of the amended Seal Management Plan, at TGC-9.

Re §35. It is proposed to address the outcome of the workshop on public participation and further initiatives to strengthen the cooperation in the field of public information at TGC-9.

Re §36. It is proposed to address the results of the IRWC project on sustainable tourism at TGC-9.

Re §37. It is proposed to address the results of the LANCEWAD project on mapping the cultural heritage of the Wadden Sea at TGC-9.

PART II: IMPLEMENTATION WADDEN SEA PLAN

Integrated Management of the Wadden Sea Area

The Wadden Sea Plan

The Wadden Sea Plan has been adopted in order to further substantiate the joint coherent protection. The principles of sustainable development and use of the Wadden Sea including an impartial weighing of the relevant interests and avoiding the impairment of traditional interests of the local population are cornerstones in all national, regional and local regulations, policies and management with regard to the protection of the Wadden Sea. The necessity of coastal protection and safety of the local population is legally implemented in all three countries and has been further specified in national policy and management (§ 1,1-3).

Status

The Plan is a political agreement and has been implemented by the three countries, as outlined in the Joint Progress Report, in cooperation and individually by the competent authorities on the basis of existing legislation and through the participation of interest groups (§ 1,4-6).

Delimitation

The delimitation of the Trilateral Cooperation Area (the Wadden Sea Area) and the Conservation Area is defined in §1,7 of the Wadden Sea Plan. Since the State Conference in 1997, the extensions of the Danish Wadden Sea Wildlife and Nature Reserve in 1998, the Schleswig-Holstein Wadden Sea National Park in 1999, the Hamburg and Lower Saxony National Park in 2001, have resulted in an extension of the Wadden Sea Conservation Area. Parts of the national parks of Schleswig-Holstein and Lower Saxony now exceed the three-nautical-mile line, which is the boundary of the Wadden Sea Area.

Since the State Conference in 1997, additional Special Protection Areas have been designated in accordance with the Bird Directive, and additional habitat site nominations have been submitted to the European Commission in accordance with the Habitat Directive, establishing a comprehensive Natura 2000 area for the Wadden Sea. The consequences of the delimitation of the Wadden Sea Area should be considered in light of the establishment of a coherent Natura 2000 area for the Wadden Sea.

Shared Principles

The Guiding Principle of the trilateral Wadden Sea policy "to achieve, as far as possible, a natural and sustainable ecosystem in which natural processes proceed in an undisturbed way" (ED §1) and the additional seven Management Principles (LD §8) are basic elements of the common policy in all three countries (§ 1,8).

Zoning

In order to be able to compare the implementation of the Targets in the different parts of the Wadden Sea Area, an inventory of the various protection regimes and the way they are applied in the three countries has been prepared by a Trilateral Working Group on Zoning (TZG) and laid down in an interim report in 2000. The interim report also contains a proposal on how the different national protection regimes can be compared and assessed on

the basis of a common classification tool. The report is an important contribution to the discussion on how to use zoning as valuable management instruments (§ I, 10-11).

Economic development and potentials

The sustainable tourism project of the Inter-regional Wadden Sea Cooperation (IRWC) has illustrated how economic activities can be further developed within the constraints of a suitable protection and a natural development of the Wadden Sea (§ 1,12). At a joint meeting of the cabinets of the three federal states of Hamburg, Schleswig-Holstein and Lower Saxony in November 2000, it was agreed to evaluate the IRWC-NetForum report as a basis for an environmentally friendly tourism concept for the German Wadden Sea national parks.

Communication and information

The communication and information efforts of the countries enhancing the quality of public participation have been outlined in the implementation statements to the State Declaration §§1-12, to which reference is made (I,13-14, 15,1).

The results of the Trilateral Monitoring and Assessment Program (TMAP) have been published regularly in reports and have also been available also in electronic format via the website of the Wadden Sea Secretariat since 1997 (I, 15,2).

The website of the Secretariat entails comprehensive information of all aspects of the trilateral cooperation (policy, management, monitoring) and enables access to trilateral documents. The possibilities of a trilateral information and communication site on the Internet has been explored in collaboration with the Dutch Interwad project (I, 15,3).

Information on Environmental Impact Assessments in the Wadden Sea region is compiled by the Inter-regional Wadden Sea Cooperation (IRWC). The IRWC has accepted to carry out this task and is recognized by the trilateral cooperation as the body responsible for collecting, assessing and dissemination the information to a wider audience. In the past, the EIA information was delivered automatically by Denmark.

An IRWC Workshop on EIA was held on 31 May 2001. It was recommended that the information exchange should be intensified with more cooperation and coordination. Furthermore information collected in the preparation of EIAs (screening) and EIAs for offshore windmill farms should be put on the Internet.

THE TARGETS

1. Landscape and Culture

- Identity - to preserve, restore and develop the elements that contribute to the character, or identity, of the landscape.
- Variety - to maintain the full variety of cultural landscapes, typical for the Wadden Sea landscape.
- History - to conserve the cultural-historic heritage.
- Scenery - to pay special attention to the environmental perception of the landscape and the cultural-historic contributions in the context of management and planning.

1.1 Status

In the framework of the LANCEWAD-Project, initiated in accordance with project 1.2.2, an inventory and assessment has been made of the landscape and cultural heritage of the Wadden Sea Region with a view to develop recommendations and guidelines for the sustainable management and use of the heritage.

In the framework of the project an information campaign has been initiated which has raised the awareness of the region's remarkable heritage. This has been done by publishing an information brochure about the project and by holding information meetings and establishing regional expert and sounding board groups to also obtain the locally available knowledge of the heritage.

1.2 Assessment of Implementation of WSP Policies

WSP §1.1.1. As to the aim to nominate the Wadden Sea Area, or parts thereof, as a World Heritage Site, taking into account the natural and cultural-historic values of the area, the nomination of the Wadden Sea Conservation Area as a natural World Heritage Site will be considered at the 2001 Esbjerg Conference. It is anticipated that the potential nomination as a cultural site will be discussed in the light of the results of the Lancewad project.

WSP §1.1.2. With regard to the protection and conservation through appropriate planning and management of the cultural-historic and landscape elements in the Wadden Sea Area the current instruments potentially suffice to implement the policy in the Wadden Sea Area. The LANCEWAD Project will deliver recommendations for the sustainable management and use of the heritage in the Wadden Sea Region on the basis of which further appropriate proposals for policies can be developed and implemented.

WSP §1.1.3. The awareness of the heritage has been enhanced in the past period both on a joint and a national basis. The awareness and information activities will and should continue to consolidate and extend the understanding for policies in this field.

WSP §1.1.4. The construction of wind turbines has, since the Stade Conference, at which it was only partly prohibited, been legally prohibited in the entire Conservation Area. Exemptions for construction of wind turbines along the Afsluitdijk, which is within the Dutch

Conservation Area, are currently being investigated on the basis of the outcome of an environmental impact assessment.

WSP §1.1.5. The construction of wind turbines outside the Conservation Area within the Wadden Sea Area is strictly regulated in the entire area. The plans for offshore wind turbine parks adjacent to the Wadden Sea Area, which may have an impact on the natural values of the Wadden Sea Area, underlines the need to consider such plans in relation to the Wadden Sea Plan policies in order to establish an overall coherent policy.

1.3 Recommendations for Management

i. The main recommendations by the trilateral WADCULT group on the basis of the results of the LANCEWAD project are:

- to apply the Targets for landscape and culture to the Wadden Sea region;
- to use the landscape and cultural heritage as an opportunity for enhancing the spatial quality and improving and reinforcing the social-economic structure of the region;
- to integrate policy and management of the natural, environmental and cultural environment;
- to involve stakeholders in the management of the heritage through a participatory and interactive process;
- to examine how the existing legal instruments and regulations for the protection of the landscape and cultural heritage can be more effectively implemented;
- to aspire the nomination of the Wadden Sea region or parts hereof for inscription in the World Heritage List;
- to maintain, update and, where necessary, extend the LANCEWAD database.

1.4 Conclusions and Proposals for Trilateral Action

Explanatory note. In this section proposals for trilateral action are given on the basis of an evaluation of the assessment in the previous section 1.2 (references [Re.] to relevant WSP paragraphs) and the recommendations in 1.3 (references [Re. roman figures] to relevant recommendation).

Re. i. The nomination of the Wadden Sea region for its cultural heritage should be considered following a policy assessment of the recommendations of the LANCEWAD-Project and after consultation of the stakeholders. Also the potential further development of the management and planning, including awareness building, for the cultural and landscape heritage should take account of the recommendations of the LANCEWAD/WADCULT-Project.

Re. WSP §§1.1.4; 1.1.5. The construction of wind turbines offshore of the Wadden Sea Area should take account of the natural and environmental values of the Wadden Sea Area and the agreed policies for the Wadden Sea Area.

2. Quality of Water, Sediment and Biota

- A Wadden Sea which can be regarded as a eutrophication non-problem area.
- Background concentrations of natural micropollutants in water, sediment and indicator species.
- Concentrations of Man-made Substances as resulting from zero discharges.

2.1 Status Ecosystem

According to QSR99

Nutrients and eutrophication

- Phosphate loads and concentrations decreased in the past ten years (1985-1996).
- So far, this has not led to a reduction of biological phenomena which may be related to nutrient loading, notably average chlorophyll concentrations, the duration of *Phaeocystis* blooms in the Marsdiep and growth of macrozoobenthos.
- Moreover, because nitrate loads and concentrations show no consistent decline, the ratio between nitrate and phosphate has increased. So far, this has not caused a notable increase in the proliferation of toxic algae.
- With regard to undesired eutrophication effects, it must, therefore, be concluded that the target has not yet been reached.

Hazardous substances

Natural micropollutants:

- The loads of heavy metals from the Elbe, the major source of inputs to the Wadden Sea, decreased significantly in the period 1985-1996.
- Also, concentrations of metals in sediment have decreased and are approaching background levels. An exception is mercury for which levels are three to ten times higher than background levels.
- The concentrations of all investigated heavy metal concentrations in sediment are lower than the provisional OSPAR ecotoxicological assessment criteria.
- Concentrations of heavy metals in blue mussels generally show significant reductions in areas with previously high pollution levels. Zinc concentrations are within background range. Lead, copper, and cadmium concentrations are up to two times, mercury up to six times higher than the upper value of the OSPAR background range.
- Mercury levels in bird eggs have significantly decreased in the Elbe estuary but average levels in 1996 in common tern were still three to five times higher than in other regions.

Man-made substances (xenobiotics):

- Inputs of PCBs from the Elbe decreased significantly between 1985 and 1996. Lindane inputs significantly decreased for most riverine sources.
- Concentrations of PCBs in sediment show a steady decrease and organochlorine pes-

ticides in bird eggs decreased in all investigated areas. PCBs in sediments in investigated Wadden Sea areas are within the OSPAR provisional ecotoxicological criterion range. The maximum of the firm ecotoxicological criterion for mussel, however, is exceeded with a factor of 3 in the Elbe estuary.

- Hexachlorobenzene levels in eggs of the common tern in the Elbe estuary are up to 40-fold the prevalent Wadden Sea level.
- The concentration of lindane in water in all estuaries is within the provisional OSPAR ecotoxicological assessment criterion range.
- PAH levels are within the range of proposed background levels and well below the ecotoxicological assessment criteria.
- In several surveys, relatively high concentrations of xenobiotics have been detected. There is increasing evidence that certain pesticides hamper the grazing ability of zooplankton. Pesticides of the herbicide type interfere with the photosynthesis of phytoplankton. Pesticides may be a factor in the decline of littoral eelgrass.
- TBT is highly toxic for several marine organism, amongst others whelks (*Nucella lapillus*, *Buccinum undatum*) and zooplankton species. Levels in sediment have been shown to exceed the provisional OSPAR ecotoxicological assessment criterion up to a factor of 1000, even in the open Wadden Sea.

Oil

- Oil rates of birds washed ashore along the Wadden Sea coast show a long term decline but are still higher than in relatively clean areas.
- The results of chemical analysis of oil from polluted feathers suggest that mainly fuel residues from shipping are responsible for the pollution along the Danish-German-Dutch Wadden Sea and North Sea coasts.

Recent Data and Additional information

Nutrients and eutrophication

The development of total phosphate and nitrate loads has shown no consistent trend since 1996. Total phosphorus and nitrogen inputs from the river Elbe remained unchanged and increased slightly for the river Weser.

Since 1996, the concentrations of phosphate and nitrogen compounds have shown a slight decrease in some Wadden Sea areas or remained more or less unchanged.

Extraordinary biological phenomena which may be related to nutrient loading, notably mass blooms of phytoplankton, e.g. *Phaeocystis* or potentially toxic species, have not been recorded since 1996. In the Schleswig-Holstein Wadden Sea, macroalgae densities increased in 1999 and 2000 compared to values in the mid 1990s but were lower than in the period 1989-1992, when mass occurrences were recorded.

Sources: Jaarboek Waddenzee 1999, Dutch JAMP Report 1999, Niedersächsischer Umweltbericht 2001, NLÖ Jahresbericht 1998, Schleswig-Holstein TMAP Workshop 2000, LANU-Algfes Reports, Danish Status Report Vadehavet 2000.

Hazardous substances

Natural micropollutants (heavy metals, PAH):

- Inputs and concentrations of heavy metals in water, sediment and blue mussels show no major changes compared to the situation in 1996.
- In Denmark, the concentrations of PAH in blue mussels showed high values in one tidal area whereas in the Netherlands, a decreasing trend of PAH in mussels was observed in the Ems-Dollard Estuary.
- The concentrations of mercury in birds eggs has continued to decrease or remained unchanged at most sites in the period 1996 – 2000. However, mercury concentrations in common tern eggs from the Elbe estuary in 2000 were still three to four times higher than in other regions (Becker et al. 2001). Furthermore, mercury levels in oystercatcher eggs from the Elbe estuary increased significantly in the last decade.

Man-made substances (xenobiotics) (PCB, HCB, Pesticides, Lindane, TBT):

The inputs and concentrations of organochlorine substances (PCB, HCB, pesticides) and TBT showed no major changes compared to the situation in 1996. For the rivers Weser and Ems a clear decrease in PCB loads could be observed, whereas PCB loads of the river Elbe slightly increased in 1999.

Recent data confirm that organic tin compounds (TBT and related compounds) occur in high concentrations in sediment and blue mussels and still exceed national and international target values (e.g. Dutch target values, OSPAR ecotoxicological assessment criteria).

Residues of organochlorines in bird eggs decreased at most study sites from 1991 to 2000. The strongest declines in contaminant levels in eggs occurred during the late 1980s and early 1990s.

Slight increases have been observed in levels of HCB, DDT and HCH in common tern samples from the Elbe estuary.

Sources: Jaarboek Waddenzee 1999, Dutch JAMP Report 1999, Niedersächsischer Umweltbericht 2001, NLÖ Jahresbericht 1998, Danish Status Report Vadehavet 2000, Becker et al. 2001.

Oil

The oil rates of birds washed ashore along the Dutch and German Wadden Sea coasts show a long-term decline but the current oil rates are still higher than in relatively clean waters. Oil rates found in the Danish part of the Wadden Sea have also decreased but, because of financial restrictions, Danish data from after 1995 have not been evaluated yet.

Source: Trilateral Beached Bird Survey (TBBS) Expert meeting, Hamburg, 18 May 2001.

2.2 Assessment of WSP Policies (based upon Joint Progress Report)

2.2.1 Land-based inputs

WSP § 2.1.1. National policies for the reduction of inputs of nutrients and hazardous substances are in line with policies of the North Sea Conferences, OSPAR and the European Union and have, for many substances, resulted in substantial reductions in the levels observed in the Wadden Sea.

WSP § 2.1.2. With regard to the reduction of nutrient inputs all countries are in the process of implementing the conditions for sensitive areas under the Urban Waste Water Directive and vulnerable zones under the Nitrate Directive.

WSP § 2.2.1. In WSP project 2.2.1 Wadden Sea specific eutrophication criteria were developed. On the basis of these criteria, it was concluded that the whole Wadden Sea must still be regarded as a eutrophication problem area. A brief summary of the outcome of the project is in Annex 2.

2.2.2 Pollution from ships

WSP § 2.1.3. In port entrances in all three countries, national information and guiding systems for ships carrying hazardous substances are in operation.

An inventory of such systems has been carried out in the framework of WSP project 2.2.2.

WSP § 2.1.4. The harbors in the Wadden Sea Area generally meet the requirements of the MARPOL Convention regarding shore reception facilities. An inventory of the availability and accessibility of the facilities is being carried out in WSP project 2.2.4.

WSP § 2.1.5. Maritime surveillance of spills of oil and hazardous substances is carried out on a national basis.

2.2.3 Dredged material

WSP § 2.1.6. In all three countries, national criteria for dredging and dumping of dredged material are in operation. Generally these follow the guidelines regarding dredging as developed within the OSPAR framework.

WSP § 2.1.7. Dredged material is dumped back into the system unless national criteria level are exceeded.

An inventory of national dumping and dredging practices is in progress in the framework of WSP projects 2.2.3 and 4.2.7.

2.2.4 Oil and gas exploration and exploitation

WSP § 2.1.8. Oil based muds and cuttings are not being discharged.

WSP § 2.1.9. The leaching of toxic substances from coatings of pipes and installations is prevented by appropriate techniques.

WSP § 2.1.10. In the Conservation Area, zero discharges are applied, and in the Cooperation Area outside the Conservation Area, muds and cuttings are not discharged and production water is treated with Best Available Technology before being discharged.

2.3 Recommendations for Management

Recommendations from QSR99

i. It is recommended to continue to implement current policies in the framework of the OSPAR Convention, The North Sea Conferences and the EU Nitrate and Municipal Waste-water Directives, especially with regard to nitrogen compounds.

ii. It is recommended to continue to implement current policies for the reduction of inputs of natural micropollutants, especially in view of the still elevated levels in biota.

iii. Of the different categories of pollutants, xenobiotics must be judged as the one that may be most dangerous to the ecosystem. It is recommended to intensify relevant policies for the reduction of the application of pesticides and other xenobiotic compounds in the framework of OSPAR, the North Sea Conferences and the EU.

2.4 Conclusions and Proposals for Trilateral Action

Explanatory note. In this section proposals for trilateral action are given on the basis of an evaluation of the assessment in the previous section 2.2 (references [Re.] to relevant WSP paragraphs) and the recommendations in 2.3 (references [Re. roman figures] to relevant recommendation).

Re WSP §2.1.1, 2.1.2. Re. i, ii, iii. Continuation of policies for the reduction of nutrients and hazardous substances will in the future result in further reductions of inputs from all sources and thus further the implementation of the Targets. Special emphasis should in this respect be given to the harmonized implementation of the EU Water Framework Directive and the OSPAR strategy to combat eutrophication.

Re WSP §2.1.2, 2.2.1. Re. i. With regard to nitrogen not only the Nitrate and Municipal Waste Water Directives are important, but also policies for the reduction of atmospheric nitrogen inputs. The latter was underlined in the project "Wadden Sea specific eutrophication criteria" (WSP project 2.2.1).

Re WSP § 2.2.1. Re. i. According to project 2.2.1 (see Annex 2) the whole Wadden Sea must be regarded as a eutrophication problem area. The outcome of the project will be used within relevant OSPAR groups and/or for further consideration by the TWG and the main results included in the Statement to the 5th North Sea Conference.

Re. iii. The situation regarding pesticides should be reported to the coming North Sea Conference as a rationale for a call for further reductions. Especially relevant in this respect is the discussion about the selection of priority substances to be phased out within 25 years.

3. Salt Marshes

- An increased area of natural salt marshes.
- An increased natural morphology and dynamics, including natural drainage patterns, of artificial salt marshes, under the condition that the present surface is not reduced.
- An improved natural vegetation structure, including the pioneer zone, of artificial salt marshes.

3.1 Status Ecosystem

According to QSR99

- Much has been achieved in the past ten years with regard to improving the natural situation in salt marshes by the reduction, or phasing out, of grazing and artificial drainage, but there are differences in policies among the Wadden Sea countries. In The Netherlands, the goal is to achieve a diverse vegetation structure through differentiated grazing and the reduction of heavy grazing. In the German National Parks, the main aim is to gain a more natural distribution and development of flora and fauna in relation to local biotic and abiotic conditions by increasing the non-grazed area and reducing artificial drainage.
- A precise comparison of the situation regarding the natural situation of salt marshes in the different parts of the Wadden Sea is presently not possible because of a lack of actual data and of common criteria.
- The outbanking of summer polders has, so far, only been applied in the Dutch Wadden Sea¹. This practice not only increases the salt marsh area, but could also be favorable for creating new fresh-salt transitions and for maintaining the sediment balance of the Tidal Area.
- The erosion of salt marshes does not yet seem to have increased as a result of sea level rise, bottom subsidence and higher wave energy, but a close monitoring of sedimentation patterns remains necessary.

Recent Data and Additional Information

Supplementary relevant information concerning the status of salt marshes additional to the QSR 1999 is not available.

3.2 Assessment of WSP Policies (based upon Joint Progress Report)

3.2.1 Nature protection and natural dynamics

WSP § 3.1.1. All salt marshes in the Wadden Sea Area are protected by national nature protection legislation.

¹ There are no summer polders in Denmark and Schleswig-Holstein.

WSP § 3.1.3. Generally, it is the aim in all three countries to reduce human interference with salt marshes.

WSP § 3.1.10, 3.1.11. Natural salt marsh development has been and is enhanced by reducing drainage and reducing and diversifying grazing.

WSP § 3.1.12. Disturbance by recreation and tourism is regulated by appropriate regulations and information systems.

WSP § 3.1.13. The application of fertilizers and pesticides is forbidden in Germany and has, to a large extent, been phased out in Denmark, where, on privately owned salt marshes voluntary agreements are established. In the Netherlands application of fertilizers and pesticides is not carried out in nature reserve areas. On 84% of the island salt marshes the management is fully natural and no fertilizers or pesticides are used. To phase out still existing applications, new permits will not be granted.

WSP § 3.2.2 /3.2.3. An overview of the current situation regarding drainage and agricultural use of salt marshes is being prepared within the TMAP framework (WSP projects and 3.2.2 /3.2.3).

3.2.2 Salt marsh area

WSP § 3.1.2. Generally, policies aim at maintaining and, where possible, extending the area of salt marshes.

WSP § 3.1.3, 3.1.4. Protection of the salt marsh edges is in most cases done for areas vulnerable to erosion.

WSP § 3.1.5. In areas with summer polders (the Netherlands and Lower Saxony) outbanking and/or increasing salt water influence has been carried out or is planned.

3.2.3 Coastal Protection

WSP § 3.1.6. In all three Wadden Sea countries there is coordination between coastal protection and nature protection.

WSP § 3.1.7. New embankments are in principle forbidden in all three countries. Generally, reinforcement of dikes is done on the landward side, but some small losses of Wadden Sea biotopes have occurred in dike enforcement activities.

WSP § 3.1.8. The application of Best Environmental Practice in coastal protection works is increasing. In the trilateral project on effects of sea level rise (3.2.1) the application of brushwood groynes was judged as Best Environmental Practice for maintaining salt marshes.

WSP § 3.1.9. Clay for dike reinforcement is in all three countries, in principle, taken from behind the dikes.

3.2.4 Infrastructural works

WSP § 3.1.14. New infrastructural works, other than necessary for the protection of salt marshes, have not been established.

WSP § 3.1.15. Infrastructural works for the islands and Halligen are, in all three countries, carried out according to national regulations which also aim at minimizing environmental impacts.

WSP § 3.1.16. No new pipelines for oil and gas transport have been constructed since 1997.

3.3 Recommendations for Management

Recommendations from QSR99

i. In order to get a better overview of salt marsh policies, it is recommended that all partners in the trilateral cooperation prepare salt marsh policy plans, if they have not yet done so. The plans should contain the main principles and aims of salt marsh policies and man-

agement with regard to grazing, drainage, coastal protection, tourism and recreation, hunting and agriculture.

ii. The possibilities for outbanking summer polders should be investigated more thoroughly and consistently.

iii. All aspects of salt marshes should be included in coastal protection and nature protection policies, i.e. also their possible relevance for the sediment budget of the Wadden Sea and their possible role as areas with natural fresh-salt transitions.

Recommendations by IWSS10

iv. Salt marsh management, as already recommended at earlier symposia, should be based on clearly defined aims according to which appropriate management measures should be taken.

Recommendations from WSP Project 3.2.1

v. to investigate the feasibility of the outbanking of summer polders in estuaries as a best environmental practice option for coastal defense.

3.4 Conclusions and Proposals for Trilateral Action

Explanatory note. In this section proposals for trilateral action are given on the basis of an evaluation of the assessment in the previous section 3.2 (references [Re.] to relevant WSP paragraphs) and the recommendations in 3.3 (references [Re. roman figures] to relevant recommendation).

Re. i, iv. Salt marsh management guidelines and objectives have been defined for the German national parks and the Dutch PKB area. In Denmark the county councils have started to investigate the situation of salt marshes. Such is also necessary in the framework of the Habitat Directive.

Re. iv. Within the TMAP framework common criteria for dredging and grazing, two important parameters determining naturalness of salt marshes, are being developed in the framework of WSP §§ 3.2.2 and 3.2.3. On the basis of these common criteria a survey of the present situation of salt marshes can be carried out.

The common criteria may also be used as a starting point for a more precise definition of "naturalness".

Re. ii. Currently several activities related to the outbanking of summer polders are carried out or planned in the Netherlands and Lower Saxony.

Re. iii. The role of salt marshes for coastal defense has been investigated in trilateral project 3.2.1.

Re. v. It is proposed to investigate the feasibility of outbanking summer polders in estuaries, in combination with additional best environmental practice techniques proposed in 4.4, 5.4 and 7.4.

4. Tidal Area

- A natural dynamic situation in the Tidal Area.
- An increased area of geomorphologically and biologically undisturbed tidal flats and subtidal areas.
- An increased area of, and a more natural distribution and development of natural mussel beds, *Sabellaria* reefs and *Zostera* fields.

4.1 Status Ecosystem

According to QSR99

- As a result of human interference, most notably fixed coastal constructions, but also fisheries, dredging sand extraction and gas extraction, the ability of the system to compensate for sea level rise may have decreased. Also, the settling conditions for fine-grained sediment may have become worse.
- The implementation of the Targets should be based on an integrated assessment of all interfering human activities under different sea level rise scenarios. It is essential that the Tidal Area, the Salt Marshes and the Offshore Zone are considered as one system when dealing with hydrology and geomorphology.
- The Target of an increased area and a more natural development of natural mussel beds, eelgrass meadows and *Sabellaria* reefs has not been reached. The decline in number and size of mature beds of the blue mussel and seagrass meadows has continued in this decade.
- The decrease of these structure-building communities may also influence hydrology and sedimentology in the Tidal Area.

The status of birds and marine mammals is addressed in chapters 9 and 10.

Recent Data and Additional Information

No major changes have been recorded concerning hydrological and geomorphological developments since 1996. The worsening of the settling condition of fine-grained sediment and the loss of silt is still a matter of concern.

The distribution of eelgrass has not changed compared to the situation in 1996. Positive developments were recorded at the Groningen coast, where small fields of eelgrass started to grow in 1999 and continued to grow in 2000 and 2001. A positive development of eelgrass could also be recorded at the coast of Ameland.

In 1999, the area of intertidal mussel beds increased in most part of the Wadden Sea compared to 1997 and the early 1990s but is, in most cases, still far below the area recorded in the late 1970s. Since 1999, a slight decrease in total area and biomass has been observed (see Table 1). However, in Germany and Denmark, the mussel cohort is still depending on the spatfall of 1996 and has not recovered significantly since then.

Table 1:

Development of blue mussel beds (ha) and total biomass of blue mussels (tons fresh weight).

¹⁾ Surface area and biomass data based upon spring measurements. ²⁾ Data from the period 1989–1991.

Sources: QSR 1999, TMAP Blue Mussel Workshop 2000; NL: RIVO, 2001, DK: DFU Report no. 87-01, June 2001, Blåmuslingebestanden i det danske Vadehav efteråret 2000, by Per Sand Kristensen & Niels Jørgen Pihl; SH: Yearly reports, G. Nehls, Nds: data submitted by G. Millat, NLPV.

Area (ha)					Biomass (tons fresh weight)				
Year	NL ¹⁾	Nds.	S-H	DK	Year	NL ¹⁾	Nds.	S-H	DK
before 1980	4120	5000		4000	before 1980	100,000		60,000	23,500
1987			1250		1987				
1988			3000		1988			53,000	
1989			3000		1989			60,000	
1990		2700 ²⁾	2000		1990			25,000	
1991			1800	1100	1991		46,000	20,000	27,300
1992			1900		1992			35,000	62,000
1993			1900	950	1993			35,000	90,000
1994		1300	2000		1994		9000		117,000
1995	1100			1020	1995				66,400
1996	400	170		1000	1996		1000		47,600
1997	700	1280			1997		25,000		11,800
1998	200		600		1998			26,850	66,200
1999	300	2895	1000	1050	1999	11,600	100,000	39,530	44,000
2000	1000	2342	800		2000	17,600	70,000		49,000
2001	800	1918			2001	15,500	55,000		

4.2 Assessment of WSP Policies (based upon Joint Progress Report)

4.2.1 Natural dynamics and coastal protection

WSP § 4.1.1. Coastal protection policies in all three countries take account of the interrelationships between tidal area, offshore area, islands and mainland.

WSP § 4.1.2. New embankments are in principle forbidden in all three countries. Generally reinforcement of dikes is done on the landward side, but some small losses of Wadden Sea biotopes have occurred in dike enforcement activities.

WSP § 4.1.3. Generally, in all three countries small-scale infrastructural works are only carried out after careful review of all interests.

WSP § 4.1.4. New, permanent structures, which may influence natural dynamics in the Conservation Area, have not been made, with the exception of the Ems storm surge barrage which is presently under construction and has been subject to an EIA procedure.

In the framework of WSP project 4.2.1 the possible effects of sea level rise have been investigated. It was concluded that the Wadden Sea system has a high resilience to changes and will, up to intermediate increases in sea level (25 cm/50 years), which is the most realistic scenario, be able to compensate the increased levels. Within this most realistic scenario costs for coastal defense will be higher than today. Also changes in the ecosystem are expected but these will not be substantial.

When sea level rises beyond intermediate levels and storminess increases, there will probably be a point between the intermediate and the worst-case scenarios at which the capacity of the system to balance the changes will be exhausted (breakpoint) and after which significant changes in the system can be expected. These will be changes in the morphology, which will influence biological parameters. The most notable change will be a reduction in the size of the intertidal area. Consequently the Wadden Sea tidal basins may start to evolve into the direction of tidal lagoons.

The reduction of intertidal area will cause a reduction in population sizes of some bird species. Also the costs for coastal defense will increase substantially after the breakpoint has been passed.

4.2.2 Shipping, harbor and industrial facilities

WSP § 4.1.5. The extension and modification of existing harbor and industrial facilities and new constructions is, according to national procedures, carried out in such a way that the environmental impact is kept to a minimum and long-lasting effects compensated for.

In none of the countries new constructions and major or extensions modifications of existing constructions and facilities in the Conservation Area have been carried out or are planned.

WSP § 4.1.6. It is normal practice in the three countries to manage shipping routes and harbors in such a way that negative impacts are, as far as possible, avoided, and that dredging operations aim at allowing natural processes to run their course. An overview of national dredging practices is being prepared in the framework of WSP project 4.2.7.

WSP § 4.1.7. Shipping routes to the harbors and the islands are only dredged if the present routes threaten to disappear. Shipping routes across water sheds are not maintained by dredging.

WSP § 4.1.9. In all countries speed limits of 15 to 20 km/h have been imposed for shipping outside the main shipping lanes. In Germany, there is, additionally, a speed limit in navigation routes.

4.2.3 Mineral extraction and infrastructure

WSP § 4.1.10. No new exploitation and exploration installations for oil and gas have been placed in the Conservation Area.

WSP § 4.1.11. In accordance with WSP §4.1.11 sand extraction in the Dutch Conservation Area is only done in conjunction with the dredging and maintenance of shipping lanes. In Germany, sand is also extracted for sea defense purposes.

WSP § 4.1.13. No new pipelines for oil and gas transport have been constructed since 1997.

WSP § 4.1.14. Infrastructural works for the islands and Halligen are, in all three countries, carried out according to national regulations which also aim at minimizing environmental impacts.

4.2.4 Dredged material

WSP § 4.1.15. In the framework of WSP project 4.2.7 an inventory and evaluation of national dredging practices is being carried out. Because the project has not yet been finalized it is unclear whether the results will allow for a validation of § 4.1.15 "The impact of dumping of dredged material will be minimized".

4.2.5 Mussel, cockle and shrimp fishery

WSP § 4.1.16. Mechanical cockle fishing is forbidden in the German part of the Conservation Area. Outside the Conservation Area, it has not been carried out. In Denmark, cockle fishing is allowed in three small areas in the Grådyb. In the Netherlands cockle fishing is not allowed in a permanently closed area consisting of 26% of the intertidal and, in addition, in areas most suitable for the development of stable mussel beds (additional 5% of intertidal)

Non-mechanical cockle fishing (hand digging) is allowed in Denmark and the Netherlands and forbidden in Germany.

WSP § 4.1.17. In all three countries, considerable parts of the Tidal Area are permanently closed for blue mussel fishing but differences between countries are substantial.

In areas in the Dutch and Lower Saxon Wadden Sea, where mussel fishing is allowed, management plans aim at protecting and enhancing the growth of wild mussel beds and

Zostera fields. In Schleswig-Holstein, the whole intertidal area is closed for mussel fishing. In Denmark, there is no specific protection of stable mussel beds and *Zostera* in mussel fishing areas.

An overview of knowledge regarding *Zostera*, *Sabellaria*, mussel and cockle beds has been prepared in the framework of WSP projects 4.2.2 and 4.2.3. Furthermore, a comprehensive overview document of mussel fishing policies has been elaborated (see Annex 1).

WSP § 4.1.18. In Schleswig-Holstein, mussel fishing in the intertidal area is not allowed. In the Netherlands and Lower Saxony, the fishing in parts of the intertidal is allowed in accordance with management plans and fishing of consumable mussels is not allowed. There are, however, substantial differences in the conditions under which fishing is allowed in the intertidal. In Denmark, yearly quota are fixed for mussel fishing and there is a minimum size for mussels. A comprehensive overview document of mussel fishing policies has been prepared (see Annex 1).

WSP § 4.1.19. The area of mussel culture lots has not been enlarged and in Schleswig-Holstein it has been reduced.

WSP § 4.2.4. The impact of shrimp fishing on the bottom fauna has not yet been investigated because no EU support was granted for a trilateral project proposal.

4.2.6 Tourism and recreation

WSP § 4.1.21. In all three countries, zones have been established in which recreational activities are forbidden or restricted in order to protect ecologically most sensitive areas.

The use of jet skis and water skis is forbidden in the Danish conservation area and in the core zone of the German national parks. This is not in agreement with §4.1.21. The use of water skis is only allowed in one small area in the Dutch PKB area, but will be phased out completely within a three-year period. The use of jetskis is forbidden in 90% of the Dutch Conservation Area. A complete ban is planned.

Wind surfing in Denmark is confined to specifically designated areas. In the Netherlands, windsurfing is subject to regulations and guidelines for recreational shipping. In Schleswig-Holstein windsurfing is forbidden in seal and bird protection areas.

WSP § 4.1.22. In all countries, speed limits of 15 to 20 km/h have been imposed for shipping outside the main shipping lanes.

WSP § 4.1.23. The use of hovercraft and hydrofoil craft is forbidden in the Dutch Conservation Area and does not take place in the Danish Conservation Area. Hovercrafts are forbidden in the German Conservation Area. Hydrofoil craft sailing in the German Conservation area is practically not possible because of the speed limits.

WSP § 4.1.24. In all three countries there are zoning regulations in operations to reduce disturbance (for example in breeding seasons of birds and seals). In addition targeted information, provided by visitor centers, raises awareness of nature protection measures.

4.3 Recommendations for Management

Recommendations from QSR99

i. Our present understanding of the hydrological and geomorphological processes and their interactions, together with the role of mussel beds and seagrass meadows, is still insufficient to warrant reliable prognoses but several management implications may be considered, such as:

- outbanking of former salt marshes, wherever feasible, in order to maintain the sediment balance and a high fine particle content;
- reduction or cessation of the extraction of sand, gravel and shells in the channels because this may result in sediment losses on adjacent tidal flats;
- cessation of fishery on shellfish in the littoral because this may initiate irreversible changes in the sediment and the biota and hamper recovery;

- the further designation of undisturbed areas. There may be important differences in the interactions and the effects of human interference between different tidal basins in the Wadden Sea. Management should, therefore, be based upon the Tidal-basin approach.
- ii. Areas where old mussel beds used to occur or where remnants are left provide the best chances for the settlement of new beds. Management should, therefore, focus on the protection of such sites.
- iii. Areas excluded from mussel and cockle fisheries may also serve to protect littoral *Zostera* meadows.
- iv. Conservation management of *Sabellaria* must be directed towards the protection of both living and dead reefs because settlement of larvae is stimulated by the presence of these structures.

Recommendations by IWSS10

Concludes that:

Intertidal mussel beds, after having been destroyed, require much more time to restore naturally than earlier assumed;

There are indications that recruitment of cockles is negatively influenced by mechanized cockle fisheries;

Recommends that:

iv. These new findings will be made subject of further research and that the available evidence will be used in the management of the shellfish fisheries.

Recommendations from WSP Project 4.2.1

v. It is recommended to start developing or to further develop, as soon as possible, long-term interdisciplinary policies for coastal defense, nature protection and economic development in the coastal area, in order to anticipate on impacts caused by increased sea level and storminess.

vi. In addition or, as an alternative to regular coastal defense measures, it is recommended to seriously investigate the feasibility of the following Best Environmental Practice options for coastal defense: brushwood groynes, dredging reduction, gully damming, re-installing mussel beds, building/strengthening of a second dike line, dike relocation in estuaries, creation of fresh water storage basins and spatial planning, aiming at creating buffer zones where no building is allowed.

vii. It is recommended to start a research project in which a detailed sediment budget study is carried out, encompassing all natural and man induced inputs and outputs of sediment and other material (sand, mud, shells) and factors affecting transport processes.

It is furthermore recommended to start a study into the links between geomorphological and biological changes.

4.4 Conclusions and Proposals for Trilateral Action

Explanatory note. In this section proposals for trilateral action are given on the basis of an evaluation of the assessment in the previous section 4.2 (references [Re.] to relevant WSP paragraphs) and the recommendations in 4.3 (references [Re. roman figures] to relevant recommendation)

Re. WSP § 4.1.11; 4.2.1; Re. vii. It is desirable to make an overview of practices with regard to sand extraction, both within and outside the Conservation Area (i.e. procedures, amounts, sources). Such an overview should be done in the framework of the elaboration of a total Wadden Sea sediment budget.

Re. WSP § 4.1.17; Re. iii, iv. National management of blue mussel fishing in relation to the protection of *Zostera*, *Sabellaria*, mussel and cockle beds should be compared and evaluated.

Re. WSP § 4.1.18. The national criteria for allowing fishing of blue mussels in the intertidal should be evaluated with regard to the implementation of the Targets.

Re. i, vii. It is proposed to evaluate the situation with regard to the geomorphology of the Tidal Area. Such an evaluation should preferably be carried out in relation to the budget study proposed above.

Re. i; vii. It is proposed to carry out a study into the interactions between geomorphology and biology in the Tidal Area.

Re. ii. It is proposed that the management of mussel beds be based on sites where stable beds occur and on sites with a high potential for the development of stable beds.

Re. v. It is proposed to investigate integrated nature protection and coastal defense policy options suitable for dealing with increased sea level and storminess.

Re. vi. It is proposed to investigate the feasibility of a number of alternative best environmental practice techniques for coastal defense, in combination with additional techniques proposed in 3.4, 5.4 and 7.4.

5. Beaches and Dunes

- Increased natural dynamic of beaches, primary dunes, beach planes and primary dune valleys in connection with the offshore zone.
- An increased presence of a complete natural vegetation succession.
- Favorable conditions for migrating and breeding birds.

5.1 Status Ecosystem

According to QSR99

- The status of the dunes in the Wadden Sea Area has been, and still is, determined by conservative measures of coastal protection which preserve directly (planting of marram grass) or indirectly (building of sand dikes, groynes etc.) the zoning patterns. As a result, there is a relatively high percentage of intermediate stages and an underrepresentation of primary and oldest stages.
- There are considerable differences in the percentage of primary dune area between the different barrier islands but, generally, it may be concluded that there is a considerable potential for implementation of the Targets.
- It is expected that an increase in natural dynamics will also lead to a more natural vegetation succession.
- The vegetation in dune valleys can be negatively influenced by increased groundwater extraction.

Recent Data and Additional Information

On the basis of the data, submitted in the framework of WSP project 5.2.1, it was concluded that along 40% of the sandy coast there is no active coastal defense. Hence the dune areas along these coasts will generally be of a dynamic nature.

5.2 Assessment of WSP Policies (based upon Joint Progress Report)

WSP § 5.1.1. In all three countries, all dunes are subject to general protection. Additionally, the large majority of the dunes are protected as nature reserves or national parks and have been designated under the EU Bird and Habitat Directives.

WSP § 5.1.2. A harmonization of the interests of nature protection and sea defense measures is common practice in all three countries.

WSP § 5.1.3. Policies in all three countries take into account the demands of recreation and tourism, coastal protection and natural values (e.g. geomorphological dynamics, important breeding areas). Where possible, "hands-off" management is carried out.

WSP § 5.1.4. In order to prevent a further loss of dune areas, the existing infrastructure will, in all three countries, in principle, not be extended, and new constructions will, in principle, not be allowed.

WSP § 5.1.5. Coastal management in all three countries aims at a natural dynamic development taking into account the necessity to protect the security of the inhabitants on the islands and safeguarding the stability and the infrastructure of the islands.

WSP § 5.1.5 / 5.1.7. The loss of biotopes is minimized and Best Environmental Practice is applied.

WSP § 5.1.8. Disturbance by recreation and tourism is regulated by appropriate regulations and information systems.

WSP § 5.1.9. The natural dynamics of dunes and beaches has been restored by different measures. In all three countries, natural dynamics through sand drift is allowed when it does not infringe on buildings or infrastructure.

WSP § 5.2.1. On the basis of information about areas where dynamic dune development is possible it was concluded that currently along about 40% of the sandy coastline there is no active coastal defense. Generally it can be stated that in these areas dynamic dune development is possible. The information also made clear that, within the current coastal defense policies, no additional areas can be or will be selected for dynamic dune development. It was furthermore concluded that there exist no common criteria for dynamic dunes and that such criteria would be a prerequisite for evaluating the status of dunes in the Wadden Sea Area.

WSP § 5.1.10. In all three countries, management of ground water extraction is common practice in order to avoid negative effects on wet dune valleys, e.g. supply via water pipelines from the mainland, extraction of ground water outside the dunes and replacement of the extraction sites.

WSP § 5.2.1. A study into the possible effects of enhanced sea level rise has been prepared by a Trilateral Expert Group (CPSL). On the basis of this study, proposals for future integrated coastal defense and nature protection policies will be developed (identical with 3.2.1, 4.2.1 and 7.2.1).

WSP § 5.2.3 / 5.2.4. The above study also concerns aspects regarding offshore sand suppletion and the assessment of existing Best Environmental Practices for coastal protection.

5.3 Recommendations for Management

Recommendations from QSR99

- i. An increase in natural dynamics in the dunes of most islands may be achieved by abandoning, reducing or modifying coastal protection maintenance works, depending upon local conditions, and as far as safety is not impaired.
- ii. In those areas where vegetation is impacted by a low groundwater table, the aim should be to reduce groundwater extraction.
- iii. The suppression of *Pinus* spp. and *Rosa rugosa* may be forced, as these species act as main competitors for autochthonous species.

Recommendations by IWSS10

- iv. To use sand nourishment on beaches and foreshore areas as the preferred technique for coastal protection.

Recommendations from WSP Project 5.2.1

- v. To develop common criteria for the classification of the status of dunes as a basis for a trilateral evaluation of the status of dunes in the Wadden Sea Area.

Recommendations from WSP Project 5.2.2

- vi. To investigate the feasibility of beach drainage, dune relocation, overwash creation and natural dune dynamics as best environmental practice options for coastal defense.

5.4 Conclusions and Proposals for Trilateral Action

Explanatory note. In this section proposals for trilateral action are given on the basis of an evaluation of the assessment in the previous section 5.2 (references [Re.] to relevant WSP paragraphs) and the recommendations in 5.3 (references [Re. roman figures] to relevant recommendation)

Re i. Current trilateral policies are generally directed towards the implementation of the Targets for beaches and dunes. As indicated in 5.3, the results of WSP project 5.2.1 made clear that the present coastal defense policies do not allow for an extension of the present area with dynamic dunes.

Re ii. It is common policy in all three countries to reduce groundwater extraction in sensitive areas. This is being done by water transport from the mainland, water pipelines and replacement of extraction sites. The current situation (effected areas and extent of the disruption) should be investigated. Because wet dune valleys are endangered and vulnerable biotopes, this aim is of considerable significance and it is already trilateral policy (5.1.10).

Re. iii. The suppression of *Pinus* spp. is already part of the management in Denmark and the Netherlands. In Germany, the suppression of *Pinus* spp. is, in principle, aimed for in order to secure, in the long term and wherever possible, semi-natural characteristics, also in the context of the suppression of autochthonous species. The effort is, however, very high and the success questionable.

Re iv. A trilateral working group (CPSL) has evaluated several coastal defense practices (WSP project 5.2.1) and concluded that sand nourishment must be regarded as a Best Environmental Practice option. Large scale sand extraction is subject to environmental impact assessment. So far, studies into the effects have indicated little damage to marine life. The use of sand nourishment for coastal defense deserves further support and stimulation, certainly in view of the expected increase in sea level.

Re. v. It is proposed that the TMAG elaborates trilateral criteria for assessing the status of dunes in the Wadden Sea Area.

Re. vi. It is proposed to investigate the feasibility of a number of alternative Best Environmental Practice techniques for coastal defense, in combination with additional techniques proposed in 3.4, 4.4 and 7.4.

6. Estuaries

- Protection of valuable parts of the estuaries.
- Maintaining and, as far as possible, restoring the river banks in their natural state.

6.1 Status Ecosystem

According to QSR99

- Only six estuaries have remained in the Wadden Sea area (Ems, Weser, Elbe, Eider², Godel, Varde Å). As a consequence, natural transitions of fresh and salt water hardly exist in the Wadden Sea Area.
- The Varde Å and Godel are estuaries which have retained their natural character. The Ems, Weser and Elbe and their tributaries have been modified considerably by diking and deepening. The anthropogenic impact on these estuaries is still increasing as a result of the current deepening of the Elbe and Weser and the anticipated construction of a storm surge barrage in the Ems.
- It must, therefore, be concluded that these estuaries are moving farther away from the Targets.

Recent Data and Additional Information

The construction of a storm surge barrier in the Ems estuary started in 1999 and will be completed in 2002.

6.2 Assessment of WSP Policies (based upon Joint Progress Report)

6.2.1 Harbors

WSP § 6.1.1. Extensions, or major modifications, of existing harbors and industrial facilities or new constructions have not been carried out in the Wadden Sea Area.

WSP § 6.2.5. A project in close cooperation with responsible port authorities with the aim of investigating how harbor developments and environmental protection can be reconciled was not initiated because national action so far was insufficient as a basis for starting a trilateral project.

6.2.2 Deepening

WSP § 6.1.2. In all three countries, the deepening of shipping lanes in the estuaries is carried out in conjunction with an overall assessment of how to compensate and mitigate the measures.

² The Eider estuary has been added to the list of estuaries mentioned in the QSR 1999.

6.2.3 Dredged material

WSP § 6.1.3. In the framework of WSP project 4.2.7 an inventory and evaluation of national dredging practices is being carried out. The project has not yet been finalized and it is, therefore, unclear whether the results of the project will allow for an assessment of whether the impact of dumping of dredged material has been minimized.

6.2.4 Protection and restoration

WSP § 6.1.4 / 6.1.5. It is common practice in all countries that valuable parts of the estuaries are protected and river-banks remain in or be restored to their natural state, as far as possible, and the transition zone between fresh and saltwater are as natural as possible.

WSP § 6.2.2 / 6.2.3 / 6.2.7. A Dutch study into the best locations for the restoration of estuarine transition zones has identified a number of potential areas. As preference area the IJsselmeer (Afsluitdijk) was selected. In Germany, a concept for the protection and restoration of valuable parts of the estuaries of Ems, Weser and Elbe could not be worked out. In Denmark, an extensive project on the restoration of the Varde Å estuary has been launched. It is the aim of the project to restore the natural situation in the Varde Å valley and the Ho Bay in an area of 2,500 ha, through extensifying agricultural use and restoring natural hydrological conditions (extensification of agriculture, raising water level, ceasing the application of fertilizer and pesticides). The project will be implemented over a period of 20 years.

WSP § 6.2.1. A joint report of existing inventories and their results to determine the valuable parts, including river banks and the legal and/or administrative protection of valuable areas in the estuaries could not be drafted, because not all national studies have been completed yet (see below). After finalization of the studies, the results will be discussed on a trilateral level, for example, to determine possibilities for restoration projects including the restoration of transition zones.

WSP § 6.2.4. A trilateral evaluation of the results of the above mentioned studies (joint report 6.2.1, Dutch study 6.2.2, Lower Saxony study 6.2.3) which will be taken into consideration in the further elaboration of the Plan has not yet been started because not all studies have been completed.

WSP § 6.2.6. An evaluation of the national activities concerning the reintroduction project of the houting in Denmark and Germany has not yet been carried out. Consequently, the consideration of further actions in other rivers of the Wadden Sea has been postponed.

6.3 Recommendations for Management

Recommendations from QSR99

- i. Further elaboration of the Target for estuaries is necessary, taking account of the special character of each estuary and specifying the notion 'valuable parts'.
- ii. The consequences of further impact due to further deepening, barriers and harbor extension should be evaluated very carefully, taking into account the historical deterioration of the estuaries and the uniqueness of each estuary. There are still possibilities to restore estuarine habitats that have been lost by diking. The first step could be an inventory of the most suitable sites for de-embankment.
- iii. Improvement of the physical conditions, such as restoration of smooth gradients of salinity and tidal amplitude in small creeks along the Wadden Sea coast and in the estuaries, would be beneficial for endangered migrating species like salmonids.

6.4 Conclusions and Proposals for Trilateral Action

Explanatory note. In this section proposals for trilateral action are given on the basis of an evaluation of the assessment in the previous section 6.2 (references [Re.] to relevant WSP paragraphs) and the recommendations in 6.3 (references [Re. roman figures] to relevant recommendation)

Re. i. The preparation of management plans for estuaries, also concerning a specification of "valuable parts", should be carried out in conjunction with the implementation of the Water Framework Directive and the Habitat Directive.

Re. ii. The evaluation of further impacts concerning deepening, barriers and harbor extension is required under the EIA Directive and/or the Habitat Directive and carried out in all estuaries. An investigation of possibilities for restoration is part of trilateral projects but could not yet be finalized. These projects should be implemented in close coordination with the Water Framework Directive.

Re. iii. The improvement of the physical conditions of estuaries or small creeks, such as restoration of smooth gradients of salinity and tidal amplitude, is already trilateral policy. In all countries activities are carried out to establish management plans for estuaries. In the Netherlands, an evaluation is carried out into possibilities for restoring salinity gradients.

A consideration of further activities regarding the reintroduction of houting could not yet be carried out. This should be done after the national activities have been evaluated.

7. Offshore Area

- An increased natural morphology, including the outer deltas between the islands.
- A favorable food availability for birds (see 8).
- Viable stocks and a natural reproduction capacity of common seal, grey seal and harbour porpoise (see 9).

7.1 Status Ecosystem

According to QSR99

- Both from physical and biological perspectives, the Offshore Area and Tidal Area are closely connected.
- From a geomorphological point of view, the Offshore Area and Tidal Area can be considered as one system.
- The Offshore Area is an important source of organic material for the Tidal Area.
- It is also a food source and refuge for many invertebrate, fish and bird species and its role as breeding and nursing ground for the harbour porpoise has become more obvious in recent years.

Recent Data and Additional Information

Since 2001, several plans to install offshore wind parks in the North Sea and the adjacent areas of the Wadden have been discussed.

In Denmark, a wind park is planned 14 km off the coast of Horns Rev. The start of the operation is expected in 2001.

In Germany, applications for wind parks were made in the EEZ in the North Sea (outside 12 nautical miles) in two key planning areas (north of Helgoland and Borkum Riff). Within the territorial zone of Germany (inside 12 nautical miles), five applications for wind parks exist in Schleswig-Holstein (between 15-km-line and 22-km(12-nm)-line north of Helgoland) and one in Lower Saxony (near the Weser navigable water). Final decisions on the applications have not yet been taken.

In the Netherlands, a location for a near-shore wind park site was already selected in 1999 (8 – 10 km off the coast of IJmuiden). An EIA and a Planological Key Decision have been made.

It should be considered that these wind parks may also have effects on the Wadden Sea ecosystem. Currently, projects are carried out in Germany and Denmark to investigate possible negative impacts on invertebrates, fish, birds and marine mammals.

Since 1995, annual surveys of *Spisula subtruncata* stocks have been carried out in Dutch coastal waters by the Dutch Institute for Fishery Research (RIVO). The occurrence of this bivalve is largely restricted to the 3-mile zone, where it occurs in local banks. The surveys north of the Dutch Wadden Sea have shown great interannual variations, and also varia-

tions in spatial distribution of the banks. Due to this variation no trend can be discerned. The annual stock assessments are used for fixing quota for fishery, taking into account food reservation for diving ducks that are dependent on this bivalve.

In Germany and Denmark, no data about *Spisula* are available because there is no fishery on *Spisula*. Along the German Wadden Sea coast, the species *Spisula solida* occurs. A pilot study was undertaken by the University of Kiel in the framework of the EU-funded research program PESCA. The report is due at the end of 2001.

Source: ICES, 2001. Report of the Benthos Ecology Working Group. ICES CM 2001/E:08, H. Rumohr, IfM Kiel.

7.2 Assessment of WSP Policies (based upon Joint Progress Report)

WSP § 7.1.1. In all three countries, the coastal protection policies are, as a principle, based on an integrated approach to coastal defense activities on the mainland coast, the islands and in the offshore zone.

WSP § 7.1.2. In all three countries, increased attention is given to the role of the offshore zone in the total Wadden Sea sand balance.

WSP § 7.1.3. Sand extraction is only carried out outside the Wadden Sea Area. Exemptions for local coastal protection measures can be granted, provided it is the Best Environmental Practice for coastal protection.

WSP § 7.2.2. A proposal for a trilateral project with EU support was prepared, concerning the investigation on shellfish stocks (e.g. *Spisula*) and the impact of fishery on the benthic stocks seaward of the islands. The proposal was declined by the EU Commission. It was investigated whether a project was possible without EU funding, but without a positive result. As a consequence, a further trilateral discussion of the results on a trilateral basis, with the aim to safeguard the food stock for birds, could not be carried out.

7.3 Recommendations for Management

Recommendations from QSR99

- i. Because of the many interactions between Offshore Area and Tidal Area, it is recommended that the management and protection of these two habitats be closely tuned. The evaluation of impacts in the Offshore Area should also take into consideration effects in the Tidal Area and vice versa.
- ii. The removal of sand from the Offshore Area should be limited as much as possible. Sand for nourishment purposes and other coastal protection activities should, preferably, be extracted from beyond the 20-m isobath.
- iii. *Spisula* fishery may affect food stocks that are essential for diving ducks in winter. Appropriate management is necessary to prevent negative effects on the bird populations.
- iv. Discards from fisheries in the coastal area should be reduced.
- v. Considering the high densities of harbour porpoises in the coastal zone off Amrum and Sylt, it is recommended to designate a marine reserve in this area.

Recommendations by IWSS10

- vi. To extract the sand needed for nourishment from places in the North Sea where the least damage to the underwater ecosystem is anticipated.
- vii. To better understand the apparent reduction of the carrying capacity of the Wadden Sea for shellfish consuming birds and to enable a successful food reservation policy, more and reliable data about the shellfish resources have to be on hand, such as data on food quality of shellfish, stock assessments of blue mussels on the cultivation plots, intertidal and subtidal resources, as well as accurate counts of eiders ducks and other shell eating birds.

Recommendations from WSP Project 4.2.1

viii. It is recommended to start a research project in which a detailed sediment budget study is carried out, encompassing all natural and man-induced inputs and outputs of sediment and other material (sand, mud, shells) and factors affecting transport processes.

7.4 Conclusions and Proposals for Trilateral Action

Explanatory note. In this section proposals for trilateral action are given on the basis of an evaluation of the assessment in the previous section 7.2 (references [Re.] to relevant WSP paragraphs) and the recommendations in 7.3 (references [Re. roman figures] to relevant recommendation)

Re i. The protection status of the Offshore Area has improved by the extension of large parts of the Conservation Area up to 3 nm (Denmark, Schleswig-Holstein, Hamburg, parts of Lower Saxony) and by the implementation of the Bird and Habitat Directives. Because of the many interactions between the Offshore Area and the Tidal Area, the management and protection of these two habitat should be closely tuned.

Re ii, vi, viii. Coastal protection activities like sand nourishment are based on an integrated approach concerning the mainland coast, the islands and the offshore zone in all countries. It is current trilateral policy to extract sand only from outside the Wadden Sea Area, and to issue exceptions for local coastal protection measures only if this is in accordance with the best environmental practice.

It would be useful to look in more detail into the issue of sand extraction and it seems, therefore, desirable to make an overview of practices with regard to sand extraction, both within and outside the Conservation Area (i.e. procedures, amounts, sources). Such an overview should be done in the framework of the elaboration of a total Wadden Sea sediment budget (see also 4.4 and 5.4).

Re iii, vii. An investigation of shellfish stocks (e.g. *Spisula*) could not be carried out because WSP project 7.2.2 could not be implemented. Because of the importance of the Offshore Area for food availability for birds, there is a need for sustainable management of shellfish stocks in order to prevent negative effects on bird populations. It is proposed to investigate other funding possibilities necessary for implementing the project.

Re iv. Discards from fisheries should be reduced and, therefore, there is the need for the further development of proper techniques and practices to reduce by-catch in the Offshore Area and in the Tidal Area as part of the future fishery policy.

Re v. The designation of an area for the protection of small cetaceans in the offshore part of the Schleswig-Holstein Wadden Sea National Park is a valuable contribution to the implementation of the Target regarding the harbour porpoise.

In Denmark, other instruments have been used for the implementation of the Target. This concerns regulation of sailing, hunting and other activities, ban or limitation of fishing with gillnets, an action plan for the modification of fishing equipment, periodic regulation of fishing in certain areas, and the development and use of environmentally friendly acoustic alarms.

See also Chapter 10 (Mammals).

8. Rural Area

- Favorable conditions for flora and fauna, especially migrating and breeding birds.

8.1 Status Ecosystem

See Chapter 9 (Birds).

8.2 Assessment of WSP Policies (based upon Joint Progress Report)

WSP § 8.1.1. In all countries, sustainable agriculture for improving nature conservation, maintaining typical landscape elements and protection of cultural heritage is supported, amongst others, financially, e.g. in the framework of the EU Agenda 2000 and special national programs.

WSP § 8.1.2. There is voluntary cooperation with and active participation of the owners to restore nature areas. Examples are the projects in the Varde Å and the Tønder Marsh in Denmark and voluntary cooperation of landowners in nature conservation programs in Germany and the Netherlands.

WSP § 8.1.3. Initiatives of the agricultural sector aiming at reducing the application and unintended impacts of pesticides and other toxic substances and fertilizers in the rural area are supported in all countries by special programs, voluntary agreements and in the context of the EU Directive on Rural Areas.

WSP § 8.2.1. Discussions with local farmers in the polder areas to decide on the most promising farming methods for the long and the short term with the aim of combining the Targets with sustainable agriculture have been carried out on the national basis in Germany, Denmark and the Netherlands.

WSP § 8.2.2. In the framework of this project a report has been prepared which gives background information on possibilities for sustainable agriculture and for the combination of agriculture and nature management in the rural area. The report concludes that island agriculture has already adapted to specific circumstances by applying agro-tourism and nature management. On the mainland, sustainable agriculture, also aiming at increasing natural values, will only be possible in selected areas

8.3 Recommendations for Management

No specific recommendations regarding the rural area have been given.

8.4 Conclusions and Proposals for Trilateral Action

See Chapter 9 (Birds).

9. Birds

Favorable conditions for migrating and breeding birds:

- a favorable food availability,
- a natural breeding success,
- sufficiently large undisturbed roosting and moulting areas,
- natural flight distances.

9.1 Status Ecosystem

According to QSR99

- The populations of many bird species in the Wadden Sea increased in the last decades and a few declined. The main factors for the increase of breeding birds are an improved protection during the breeding season, a substantial reduction in egg collection, and reduced levels of pollutants.
- Kentish plover and little tern populations have decreased, which is due to a lack of sufficient undisturbed breeding habitats at beaches and in primary dune areas.
- Important factors influencing population sizes within the Wadden Sea Area are weather conditions, mussel fisheries, hunting, and the availability of undisturbed breeding, feeding and moulting areas.
- Mussel fishery interferes with the food availability of some bird species and is judged to be currently operating beyond sustainability levels in some parts of the Wadden Sea.
- The reduced hunting pressure has a positive effect on the condition of birds.
- Through disturbance by wind turbines, the number and size of roosting areas behind the dike have decreased.

Recent Data and Additional Information

Eider ducks

In winter 1999/2000, an unusually high mortality of Eider ducks was observed in the Dutch Wadden Sea (estimated to about 21,000 birds). A high mortality was also observed in the German Wadden Sea, but the numbers (both absolute and relative) were lower than in the Netherlands.

Also in winter 2000/2001, more than average numbers of dead Eiders were found, but not as many as in the year before.

In 2000, three expert meetings were organized to discuss the causes of the mortality (Wadden Sea Newsletter No. 1, 2001). Oil or other pollutants, as well as diseases could be excluded as causes of the mortality. Evidence from existing data supported the hypotheses that changes in shellfish populations (blue mussel, cockle, *Spisula*) in combination with a parasite infection resulted in an unfavorable food situation for eiders and caused the mass mortality. Because of food shortage, the birds could not consume enough food to overcome the parasite infection.

Other birds

Since 1996 the situation of most breeding and migratory bird species has basically remained unchanged.

Some bird populations (e.g. brent goose, eider duck, oystercatcher and knot) have shown considerable decreases for a few years. Therefore, favorable food conditions should be secured in the future, especially for shellfish-eating birds.

Some breeding bird species such as kentish plover and little tern and some moulting bird species such as shelduck and common scoter are particularly vulnerable during breeding respectively moulting, and, therefore, it is necessary to undertake efforts to reduce the amount of disturbance at the sites used for these activities.

An evaluation of the available knowledge concerning moulting areas for seaducks in the offshore has been prepared as part of the implementation of the Wadden Sea Plan. It shows the high importance of this area for birds and reveals the necessity of undisturbed moulting areas in the offshore area.

Sources: Wadden Sea Newsletter 2001-No.1, JMBA and JMBA report to TWG 01/3, Henning 2001.

9.2 Assessment of WSP Policies (based upon Joint Progress Report)

9.2.1 Site Protection

WSP § 9.1.1. In all three countries, measures have been taken to improve the conditions for breeding birds especially for particularly endangered breeding birds, e.g. on beaches. The main breeding areas have been registered as Bird Directive areas and have been nominated for the Habitat Directive.

WSP § 9.1.2. The implementation of the Bird and Habitat Directives has, through integrated management, also improved the conditions for migratory birds during roosting and feeding, as well as for seaducks in the offshore area during moulting.

In Germany, the extension of the national parks or parts thereof up to the 3-nautical mile zone resulted in a better protection of the offshore areas, which are important roosting, moulting and also feeding areas for seaducks.

WSP § 9.2.1 An inventory of all important and potential roosting sites along the coastline of each country, in conjunction with an evaluation of available knowledge on the necessity for undisturbed roosting sites, in order to investigate the possibilities for creating undisturbed roosting sites, is in progress but will not be finalized before the TGC-9.

WSP § 9.2.2. A WSP project has been carried out, evaluating available knowledge on the necessity of undisturbed moulting sites for seaducks in the offshore area, in order to investigate the possibilities for creating such undisturbed moulting sites, aiming at improving the conditions during moulting. One of the main conclusions was that more information is needed on moulting conditions in the offshore area.

WSP § 9.2.3. An investigation has been carried out into the possibilities to come to a coordinated management for herbivorous species (e.g. ducks and geese) on inland sites. National information has been compiled and the assessment is in progress but will not be finalized before the TGC-9.

WSP § 9.2.4. Preparations for a WSP project to explore the possibilities for improving the conditions for breeding birds in dunes and on beaches are being carried out.

9.2.2 Interference with the food conditions for birds

Mussel and cockle fishery WSP § 9.1.3 – 9.1.5 identical with WSP § 4.1.16 – 4.1.18.

9.2.3 Disturbance due to recreational and other human activities

WSP § 9.1.6. Measures have been taken to reduce disturbance in significant breeding areas in all countries by specific projects, by the implementation of appropriate regulations or the establishment of visitor information and guiding systems, partly with co-funding by the EU.

WSP § 9.1.7. In significant breeding areas in all three countries, the disturbance, caused by grazing, has been reduced, with the exception of those areas where a certain intensity of grazing is necessary for coastal protection measures.

WSP § 9.1.8. Driving cars in breeding areas on beaches and in dunes is prohibited in Germany and Netherlands. In Denmark, measures have been taken on the islands within special projects, and in the framework of the regional plan to close certain vulnerable areas for breeding birds on beaches for public access.

9.2.4 Wind energy

WSP § 9.1.9 and 9.1.10 identical with WSP § 1.1.4 and 1.1.5.

9.2.5 Hunting

WSP § 9.1.11. Measures have been taken to phase out hunting of migratory species in the Conservation Area or in an other ecologically and quantitatively corresponding areas in the Wadden Sea Area. In Denmark, hunting of migratory birds is allowed in some areas within the Conservation Area with restrictions. In Germany, hunting is forbidden the Conservation Area except in on the inhabited island in Lower Saxony (a maximum of 10 days per year). In the Netherlands, hunting on migratory species is prohibited.

WSP § 9.1.12. Lead pellets are not used in the Wadden Sea Area, except in Lower Saxony.

WSP § 9.1.13. Hunting of non-migratory species is, in principle, only allowed in the Conservation Area, if migratory species are not harmed.

9.2.6 Civil air traffic

WSP § 9.1.14. The impact of civil air traffic in the Wadden Sea area has been limited by measures such as establishing a minimum flight altitudes (Germany, the Netherlands) or by voluntary agreements with pilots and airport administrations (Schleswig-Holstein). No additional measures have been taken in Denmark.

WSP § 9.1.15 / 9.1.16. The agreements, that no new civil airports will be constructed in the Wadden Sea Area and that the existing ones will not be extended, have been implemented in all three countries.

WSP § 9.1.17. In the German and Dutch parts of the Wadden Sea Area, a minimum flight altitude for civil air traffic of 1,500 to 2,000 feet (450 - 600 m) has been established. In Denmark the agreement has not yet been implemented but negotiations have started to introduce a minimum flight altitude for civil air traffic in the Wadden Sea Area.

WSP § 9.1.18 The agreement to prohibit the use of ultra-light aircraft in the Wadden Sea Area has not been implemented in either of the three countries.

WSP § 9.1.19 Advertisement flights are not being carried out or only to a limited extent in certain areas.

WSP § 9.1.20 Guidelines for helicopter altitudes to minimize disturbances to wildlife have been established in all countries. Helicopter flight routes have not been established.

9.2.7 Military activities

WSP § 9.1.21 – 9.1.24. Several initiatives have been taken to reduce disturbance caused by military activities. These concern the examination of further out-phasing of these activities, the reduction of military flights and maximum speed, the coordination of these actions and the designation of redundant shooting ranges as nature protection areas. These agreements have been implemented or are currently being implemented by establishing management plans in collaboration with the military authorities or by voluntary agreements. This concern also agreements with military authorities from other NATO member states.

WSP § 9.2.5. The project "An inventory and assessment of the reduction of disturbance caused by military activities in the three countries" could not be implemented due to a lack of data, mainly with regard to the disturbance situation before the reduction of activities.

9.3 Recommendations for Management

Recommendations from QSR99

i. Food availability

Management regarding food availability could include the closure of additional tidal flats to fishery activities and the implementation of a quota system on the catch. The decision whether such measures are needed can only be taken after the assessment of fish and shellfish stocks.

With respect to the above mentioned problems, the following management measures would be useful:

- reduction of by-catch,
- reduction of mussel culture lots (with regard to the size),
- general avoidance of disturbance (see also potential feeding areas),
- reduction or cessation of cockle fishery,
- elaboration of management plans for herbivorous species on inland sites,
- reduction of eutrophication.

ii. Flight distances

Access to areas for humans should be made more predictable for birds, i.e. using only certain footpaths on salt marshes.

Creation of flight corridors for airplanes, especially helicopters and small aircraft.

To achieve this Target, or, at least, to work towards a decrease of flight distances, hunting must be terminated completely in the Wadden Sea Cooperation Area.

In addition, political negotiations regarding a hunting ban in breeding areas and important stopover sites on the flyway of the birds should be supported.

iii. Breeding success

Beaches are poorly protected habitats within the Wadden Sea Area. The aim of further cooperation on the breeding bird Target must be to increase the proportion of beach habitats available for birds and to reserve the most preferred habitats, such as primary dunes, beach barriers, sand spits and shell banks, for birds. Especially, disturbances due to recreational activities must, where possible, be excluded from these places during the breeding season.

iv. Roosting areas

Sufficiently large buffer zones around roosting sites should be created. Within these buffer zones all human disturbing factors have to be minimized. These include not only direct human activities but also infrastructure, such as wind turbines and wind parks, which have an effect on flight routes and the use of roosting places.

v. Moulting areas

A system of "Seaduck-Reserves", which are closed for all shipping and fishing activities, and other disturbance during the moulting period, must be designated. Spatial and temporal regulation of the closures for fishing boats can differ from that of watersports or other leisure activities. The quantification of a minimum size of these reserves is not possible, but the enormous flight distances have to be kept in mind when designating these zones.

Recommendations by IWSS10

vi(a). To better understand the apparent reduction of the carrying capacity of the Wadden Sea for shellfish consuming birds and to enable a successful food reservation policy, more and reliable data about the shellfish resources have to be on hand, such as data on food quality of shellfish, stock assessments of blue mussels on the cultivation plots, intertidal and subtidal resources, as well as accurate counts of eiders ducks and other shell eating birds.

vi(b). To allow an appropriate assessment of the impact of shellfish fisheries, scientific investigations should be performed openly and publicly, while results should preferably be peer reviewed. Any political translation of results into political decisions will have to follow a separate process.

vi(c). The Baltic/Danish/German/Dutch eider flyway population should be monitored on an international level.

vi(d). To be better prepared for calamities, like the eider mortality, the Common Wadden Sea Secretariat should be asked to draft a recording and analysis protocol.

9.4 Conclusions and Proposals for Trilateral Action

Explanatory note. In this section proposals for trilateral action are given on the basis of an evaluation of the assessment in the previous section 9.2 (references [Re.] to relevant WSP paragraphs) and the recommendations in 9.3 (references [Re. roman figures] to relevant recommendation)

Re i. Most bird populations have shown a positive development. To guarantee a favorable food condition for birds, the implementation of relevant measures as laid down in the trilateral Wadden Sea Plan should be continued, especially with regard to brent goose, eider duck, oystercatcher and knot.

Re ii. The relevant measures to implement the Target "Natural flight distances" are already part of national and trilateral policies and concern a more predictable access to important areas, flight corridors for civil air traffic, and the out-phasing of hunting in the Conservation Area.

Re iii. The conditions for and protection of breeding birds on beaches and dunes should be improved.

Re iv. The implementation of the Bird and Habitat Directives, as well as the extension of the German national parks and other, also voluntary, agreements, which have been made to reduce disturbance will improve the condition for migratory birds during roosting.

An inventory of important and potential roosting sites, and an investigation to create undisturbed roosting sites is being carried out in WSP project 9.2.1. All possible impacts should be considered, especially wind turbines and offshore installations. These have, so far, not been placed in the Cooperation Area. Because several plans are in preparation for constructing such installations inside or outside the Cooperation Area, the developments with regard to offshore installations should be followed with the aim of avoiding negative impacts from these installations on the environment in the Cooperation Area.

Re v. With regard to moulting conditions for seabirds in the Offshore Zone, it is proposed to collect more detailed information as a basis for conservation measures.

Re vi. An investigation of shellfish stocks (e.g. *Spisula*) could not be carried out because WSP project 7.2.2 could not be implemented. Because of the importance of the offshore area for the food availability for birds, there is a need for sustainable management of shellfish stocks in order to prevent negative effects on the bird populations. It is proposed to investigate other funding possibilities.

WSP § 10.2.3 The investigation of technical solutions and improvements in consultation with responsible fishery groups for the prevention of incidental catch of marine mammals in drift nets and set nets with the aim of minimizing by-catch has been carried out in the framework of the Seal Management Plan.

10. Marine Mammals

- Viable stocks and a natural reproduction capacity of the common seal including juvenile survival.
- Viable stocks and a natural reproduction capacity of the grey seal including juvenile survival.
- Viable stocks and a natural reproduction capacity of the harbour porpoise.

10.1 Status Ecosystem

According to QSR99

- The population size of the common seal is much higher than before the epidemic in 1988. The population may be regarded as viable.
- The grey seal population in the Wadden Sea is relatively small. The observed growth is also due to immigration from outside the area. There is insufficient knowledge to judge whether the population is viable.
- Compared to other parts of the North Sea, the area west of Amrum, Sylt and Rømø has a high density of harbour porpoises. This area may be regarded as an important rearing area for this species. Too little is known about the population dynamics of the harbour porpoise to be able to evaluate the target for this species.

Recent Data and Additional Information

The population of common seal further increased in 2000 but with a slightly slower rate than in the years before.

In the Netherlands, the number of grey seals has steadily increased during the last years and has reached 550 individuals. No new data are available concerning grey seals and harbour porpoises in Germany and Denmark.

Source: Wadden Sea Newsletter 2000/1, 2000/2,

10.2 Assessment of WSP Policies (based upon Joint Progress Report)

WSP § 10.1.1 / 10.2.1 The breeding/rearing areas of the harbour porpoise in the Wadden Sea Area and adjacent areas have been protected by the designation of a whale protection area off the islands of Sylt and Amrum in Schleswig-Holstein in 1999 and the implementation of several measures (regulation of gillnet fishing and other activities, action plan to reduce accidental by-catch, activities) in the Danish waters.

WSP § 10.1.2. Public information about small cetaceans in the Wadden Sea Area and the North Sea (10.1.2) has been carried out by the ASCOBANS secretariat. Additionally, the Schleswig-Holstein National Park information center will be extended by a whale exhibition building in 2001/2002.

WSP § 10.2.2. The possibilities for closing, in a flexible way, areas where grey seal pups rest regularly have been investigated.

In Schleswig-Holstein, a temporary grey seal sanctuary has been installed in cooperation with the local authorities and NGOs. In the Netherlands, certain areas are closed (permanently and temporarily, contours yearly updated) to reduce disturbances of grey seal pups.

WSP § 10.2.3. The investigation of technical solutions and improvements, in consultation with responsible fishery groups, for the prevention of incidental catch of marine mammals in drift nets and set nets with the aim of minimizing by-catch has been carried out in the framework of the Seal Management Plan.

10.3 Recommendations for Management

Recommendations from QSR99

i. In view of the rapidly growing common seal population, policies should anticipate problems connected with an increasing population such as availability of haul out sites and conflicts with other users such as fisheries.

ii. Of major importance for the protection management of the grey seal, is the fact that it needs undisturbed high sands (not flooded during high tide) or beaches and salt marshes during whelping and nursing time in winter.

iii. Disturbance by boating and fisheries should be minimized in the area west of Sylt, Amrum and Rømø, which is an important rearing area for the harbour porpoise.

Recommendations by IWSS10

iv. To start trilateral research on how to reconcile the protection of the growing harbour seal stock with the development of recreation and tourism and with fisheries management.

10.4 Conclusions and Proposals for Trilateral Action

Explanatory note. In this section proposals for trilateral action are given on the basis of an evaluation of the assessment in the previous section 10.2 (references [Re.] to relevant WSP paragraphs) and the recommendations in 10.3 (references [Re. roman figures] to relevant recommendation)

Re i, ii, iv. These issues are covered by the new Seal Management Plan

Re iii. The protection of breeding and rearing areas of the harbour porpoise in the Wadden Sea Area and the adjacent areas through appropriate measures has been agreed on trilaterally. The establishment of a whale protection area in Schleswig-Holstein is a valuable contribution to the implementation of the Targets on harbour porpoise. The Danish Action Plan also contributes to the protection of the harbour porpoise in the Danish waters especially concerning measure to reduce by-catch.

ANNEX 1

Document List

Trilateral Reports Prepared in the Framework of the Implementation of the Stade Declaration and the Wadden Sea Plan

All documents can be obtained through the Common Wadden Sea Secretariat.

	Title/Subject	Pages	Year	Status/Reference
TGC-8	Stade Declaration/Trilateral Wadden Sea Plan	100	1998	CWSS
TGC-8	Verklaring van Stade/Trilaterale Waddenzee Plan	216	1998	CWSS
TGC-8	Erklärung von Stade/Trilateraler Wattenmeerplan	220	1998	CWSS
TGC-8	Stade-deklarationen/Den trilaterale Vadehavsplan	216	1998	CWSS
SD Preamble	Wadden Sea Quality Status Report 1999	260	1999	WSE No. 9-1999
SD Preamble	Waddenzee Quality Status Rapport 1999	246	2000	Rapport RIKZ/ 2000.008
SD Preamble	Wattenmeer Qualitätszustandsbericht 1999 Bewertung und Empfehlungen	66	2000	BMU
SD §11	Joint Progress Report	85	2001	Final Draft version 04.10.2001
SD §21	Breeding success/pollutants in bird eggs	104	1998	WSE No. 8-1998
SD §21	Breeding birds in the Wadden Sea in 1996	122	2000	WSE No. 10-2000
SD §21	TMAP Blue Mussel Workshop, October 2000	35	2001	TMAG 01/3/6c-1
SD §21	TMAP Salt Marsh Workshop, November 2000	23	2001	TMAG 01/3/6c-2
SD §21	Contaminants in Bird Eggs in the Wadden Sea. Spatial and temporal trends 1991 - 200	68	2001	WSE No. 11-1998
SD §22	TMAP Evaluation Report	41	2001	TWG 01/1/4d-7
SD §25	PSSA Wadden Sea Feasibility Study	91+ Annex	2001	Southampton Institute
SD §32	International Action Plan for the Brent Goose		2000	3rd draft 2000
SD §33	TSEG-plus report: Evaluation of the status of seals	36 + Annex	2001	TWG 01/3
SD §35	Caring for the Wadden Sea as an interactive process	84	1999	Min. LNV
SD §38	Proceedings 10th Scientific Wadden Sea Symposium			Min. LNV In preparation
WSP §I -11	Interim Report Zoning Group	43	2000	TWG 00/2/14-2
WSP §1.1.1/1.2.1	The nomination of the Wadden Sea Conservation Area as a World Heritage Site	30	2000	Burbridge 2000
WSP §1.2.2	Final Report Lancelwad Project	336 + maps	2001	WSE No. 12-2001

	Title/Subject	Pages	Year	Status/Reference
WSP §2.2.1	Wadden Sea Specific Eutrophication Criteria	116	2001	WSE No. 14-2001
WSP §2.2.2	Inventory Guiding Systems	6	2001	TWG 01/3/4-19
WSP §2.2.4	Information Shore Reception Facilities	4	2001	TWG 01/2/4a-4
WSP §3.2.1/ 4.2.1/5.2.2/ 5.2.4/7.2.1	Final Report Working Group Coastal Protection and Sea Level Rise	64	2001	WSE No. 13-2001
WSP §4.2.1 §4.2.2	TMAP technical report on blue mussels, cockles, Sabellaria reefs and Zostera	35	2000	TWG 00/1/8c-1
WSP §4.2.1/ §4.2.2	Inventory shellfish fisheries		2001	Final Report in preparation
WSP §5.2.1	Dynamic dune development	7	2001	TWG 01/3/4-3
WSP §8.2.2	Possibilities for sustainable agriculture in the Wadden Sea region	91 + maps	2000	CWSS Working Document
WSP §9.2.1	Report roosting sites			In preparation
WSP §9.2.2	Report moulting sites	35 + Annex	2001	NPA Tønning
WSP §9.2.3	Geese management			In preparation
REPORTS FROM THE INTERREGIONAL WADDEN SEA COOPERATION (IRWC) AND NON-GOVERNMENTAL ORGANIZATIONS				
SD §36	Sustainable Tourism Development and Recreational Use in the Wadden Sea Region	82	2000	IRWC, Ribe
SD §36	Bæredygtig udvikling af turismen og den rekreative udnyttelse i vadshavsregionen	79	2000	IRWC, Ribe
SD §36	Nachhaltige Entwicklung des Tourismus in der Wattenmeerregion und Nutzung des Gebiets für Erholungszwecke	68	2000	IRWC, Ribe
SD §36	Final Technical Report Netforum Project	36	2001	IRWC, Ribe
SD §25	Schutz des Wattenmeeres vor Schiffsunfällen durch Einrichtung eines "PSSA Wattenmeer"	50	2000	WWF Deutschland, Frankfurt am Main
SD §25	Protection of the Wadden Sea from ship accidents through the establishment of a "PSSA Wadden Sea"	48	2000	WWF Germany, Frankfurt am Main
SD/WSP	Common Package: Shipping Security and Disaster Prevention/Regional Oriented Public Participation/ Trilateral Convention on the Protection of the Wadden Sea Region		2000	Wadden Sea Team/ Seas At Risk, Harlingen, Bremen

ANNEX 2

Wadden Sea Specific Eutrophication Criteria

Brief Summary

Framework

In 1994, at the 7th Wadden Sea Conference in Leeuwarden, the trilateral Targets were adopted. With regard to eutrophication a formulation was agreed upon which was consistent with the development of a procedure regarding the strategy to combat eutrophication within the framework of OSPAR.

Part of this strategy is to classify the Convention Area in terms of Eutrophication Problem Areas, Non-Problem Areas and Potential Problem Areas.

It was recognized that criteria for the classification would differ between different sea areas of the Convention Areas, given the large hydrological differences.

This was the reason why within the trilateral framework it was decided that Wadden Sea specific criteria should be developed (WSP Project 2.2.1).

In the period December 1998 - December 2000 a trilateral project was carried out with financial support of the three countries and logistic support of the Alfred Wegener Institute (AWI, Wattenmeerstation Sylt) and the Wadden Sea Secretariat.

The work consisted of literature study, the analyses of long-time data series from the three countries, and an expert workshop.

Outcome

The main starting point for the analysis is the assumption that the Wadden Sea is a system which imports organic material from the adjacent North Sea. This material is broken down (remineralized) in the Wadden Sea and the resulting products, amongst which nutrients, are used again for primary production in the Wadden Sea itself and in the adjacent coastal zone.

An important implication of this concept is that changes in the growth of phytoplankton (primary production) in the coastal zone will result in changes in the remineralization rate in the Wadden Sea. Consequently, remineralization products in the Wadden Sea can be used as an indicator of the eutrophication status of the Wadden Sea and the North Sea coastal zone.

The main proposal from the study is to use ammonium + nitrite concentrations in autumn as such indicators.

The choice for the general concept and for the mentioned indicator could be substantiated by the analyses of long-time data series.

Several other parameters were evaluated for their usefulness as eutrophication indicator. The general problem that arose was that none of the so-called eutrophication effect parameters (for example growth of macroalgae and mussels) could be directly linked to nutrient concentrations. Several other factors, such as weather and climate, also strongly influenced these parameters.

In the final phase of the project a model was developed which would allow for the classification of the Wadden Sea into the three OSPAR categories. One of the principal problems that had to be faced was that the definition of "Eutrophication Problem Area"¹ contains a substantial normative aspect. It was recognized that the Wadden Sea is, also in a pristine state, a eutrophic area, where, under certain circumstances, eutrophication ef-

¹ Eutrophication Problem Area: Problem Areas with regard to eutrophication are those areas for which there is evidence of an undesirable disturbance to the marine ecosystem due to anthropogenic enrichment by nutrients.

fect, such as large algal blooms, may occur. The question when such events must be regarded as undesirable can hardly be answered on the basis of scientific facts.

Therefore the choice was made to apply a model in which nutrient concentrations instead of eutrophication events are used, assuming that the frequency of eutrophication events will (statistically) increase with increasing nutrient concentrations.

On the basis of scientific literature it could be made plausible that during the 1970s a general increase in eutrophication events had occurred. This increase coincided with a doubling of wintery nitrate concentrations and autumnal ammonium + nitrite concentrations. It is suggested that a 50% reduction of the present day (1980-2000) eutrophication demarcates the borderline between Potential Problem and Problem conditions. For the separation between non-problem and potential problem conditions available background values were applied.

All ranges were developed for the western Dutch Wadden Sea and adapted for five different subregions of the Wadden Sea on the basis of recent differences in autumn concentrations of ammonium + nitrite.

In all these subregions concentrations are such that they must be regarded as Eutrophication Problem Areas (see Table 1).

In the Final Report of the project also a computation is made of the relevance of the different input sources of nutrients. It is concluded that riverine inputs are the major factor, but that, in order to arrive at non-problem area conditions, also atmospheric nitrogen inputs will have to be reduced.

Table 1:
Classification of the Wadden Sea into Non-Problem, Potential Problem and Problem areas based on autumn concentrations of $\text{NH}_4 + \text{NO}_2$ (μM). The division in subregions is based on the availability of seasonal data. The present autumn values refer to values during the 1990's.

Area	Non-Problem conditions	Potential Problem conditions	Problem conditions	"Present" values (1990s)
Western Dutch Wadden Sea	<3.0 μM	3.0 μM <> 8.3 μM	> 8.3 μM	12.3 μM
Eastern Dutch Wadden Sea	<4.0 μM	4.0 μM <> 10.2 μM	> 10.2 μM	16.7 μM
Lower Sax. Wadden Sea	<3.2 μM	3.2 μM <> 8.2 μM	> 8.2 μM	13.0 μM
Sylt Rømø Bight	<3.1 μM	3.1 μM <> 7.4 μM	> 7.4 μM	11.8 μM
Danish Wadden Sea	<2.5 μM	2.5 μM <> 6.5 μM	> 6.5 μM	10.3 μM

LIST OF ACRONYMS

AEWA	African-Eurasian Waterbird Agreement
AIS	Automatic Identification System
ASCOBANS	Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas
CWSS	Common Wadden Sea Secretariat
ECE	Economic Commission for Europe
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
FAO	Food and Agricultural Organization of the United Nations
IMO	International Maritime Organization of the United Nations
IRWS	Inter-regional Wadden Sea Cooperation
MARPOL	International Convention for the Prevention of Pollution from Ships
LANCEWAD	Landscape and Cultural Heritage in the Wadden Sea Region
NGO	Non-Governmental Organization
PSSA	Particularly Sensitive Sea Area
QSR	Quality Status Report
SD	State Declaration
SO	Senior Official
TMAP / G	Trilateral Monitoring and Assessment Program/Group
TSEG	Trilateral Seal Expert Group
TSS	Traffic Separation Scheme
TWG	Trilateral Working Group
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
WSP	Trilateral Wadden Sea Plan
WWF	World Wide Fund for Nature

