



Integrated ecosystem approach for Wadden Sea management – NL/DE/DK

1. Policy Objective & Theme

- SUSTAINABLE USE OF RESOURCES: Preserving coastal environment (its functioning and integrity) to share space
- SUSTAINABLE ECONOMIC GROWTH: Balancing economic, social, cultural development whilst enhancing environment

2. Key approaches

- Integration
- Participation
- Ecosystems based
- Socio-economic

3. Experiences that can be exchanged

The key positive experience from the application of the integrated ecosystem approach is that it is multifaceted: it is coherent with applying and integrating relevant EU Directives and ICZM principles; it also aims at harmonizing conservation objectives and good ecological status on the trans-boundary level and at different levels of implementation, ranging from the definitions to harmonised methodologies for their assessment. Last, but not the least, ecological quality objectives (EcoQOs) are used as a tool in integrated ecosystem approach for setting clear operational environmental objectives directed towards specific management and serving as indicators for the ecosystem health, as agreed at the 5th North Sea Conference in Bergen 2002 (Bergen Declaration, 2002). The development of a coherent and integrated set of EcoQOs is undertaken by OSPAR and the International Council for the Exploration of the Sea (ICES), in coordination with the development of marine indicators in the European Environment Agency (EEA) and environmental objectives in the EU Water Framework Directive.

4. Overview of the case

The Wadden Sea is Europe's largest and most important marine wetland, a marine area of outstanding international importance shared by Denmark, Germany and The Netherlands. Nowhere else in the world is there an area on a similar scale and so multifaceted, which contains such a complex of tidal flats, gullies salt marshes, dunes and islands (Enemark, 2005). There has been a gradual shift in the management issues of the Wadden Sea from addressing the problems within the area to an acknowledgement of the importance of managing the Wadden Sea in a larger coastal context and addressing the ecosystem relationship issues. The Wadden Sea conservation and management is based on an integrated ecosystem approach which aims at preserving the integrity and functioning of the system and allows for a sustainable use of the area within that framework. The Wadden Sea is now subject to a comprehensive nature protection scheme on the national and regional level as well as to extensive protection and management arrangements between the countries in the framework of the Trilateral Wadden Sea Cooperation. Central elements of the trilateral arrangements are the guiding principles, common management principles and the common targets upon which common policies and integrated ecosystem approach have been agreed on.

5. Context and Objectives

a) Context

The Wadden Sea, encompassing the 500 km long coastal zone from Den Helder in the Netherlands to Blåvands Huk in Denmark, is an exceptional ecosystem of global importance, and a shared responsibility of the three countries. It is unique

in that it consists entirely of a sandy-muddy tidal system with only minor river influences on morphodynamics. The Wadden Sea ecosystem is characterized as tidal flats and barrier island system with extensive salt marshes. It differs from other systems of this type in that it is the only tidal flat and barrier island depositional system of this scale and diversity in the World. There are no systems in the World that compare to the Wadden Sea. The Wadden Sea is a unique coastal ecosystem with enormously productive marine biota and with linkages far beyond its narrow geographical boundaries. It is one of the last remaining natural large-scale inter-tidal ecosystems in Europe where natural processes continue to function in an undisturbed manner. This transitional water body between land and sea is characterized by the constant change of flood and ebb tides, great fluctuations in salinity, high temperatures during summer and occasional ice cover in winter. These circumstances have created numerous ecological niches, colonized by species that are adapted to the extreme environmental conditions. The tidal flats in the Wadden Sea form the largest unbroken stretch of sand and mudflats worldwide, accounting for 60% of all tidal areas in Europe and North Africa. The Wadden Sea ecosystem represents one of the internationally most important wetlands.

It is extremely rich in environmental gradients and transitional zones, yielding many different (micro) habitats that form the basis for ecological specialization under extreme conditions. The salt marshes host about 2,300 species of flora and fauna. The marine and brackish areas support a further 2,700 species. In total it is estimated that the Wadden Sea Area provides habitats for up to 10,000 species of unicellular organisms, plants, fungi and animals. The Wadden Sea is of outstanding international importance as a staging, moulting and wintering area for at least 52 populations of 41 migratory waterbird species that use the East Atlantic flyway and originate from breeding populations as far away as northern Siberia or Northeast Canada. The quality of water, sediment and marine habitats is, to an important degree, influenced by the North Sea and activities in the catchment area of the tributaries.

b) Objectives

1. To apply an innovative integrated ecosystem approach for ensuring environmental integrity of the trans-boundary transitional waters approach by combining regulations of Habitat Directive, Bird Directive, WFD and MSFD with the ICZM principles.
2. To achieve, as far as possible, and maintain the geomorphological and biological processes and the full scale of habitat types which belong to a natural and dynamic Wadden Sea in order to maintain biological diversity.

6. Implementation of the ICZM Approach (i.e. management, tools, resources)

a) Management

According to the Convention on Biodiversity (CBD), the integrated ecosystem approach “is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Application of the [integrated] ecosystem approach will help to reach a balance of three objectives of the Convention (conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources). It is based on the application of appropriate scientific methodologies focused on levels of biological organization which encompass the essential processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems” (CBD, 1992).

b) ICZM tool

The objectives of the new Wadden Sea Plan (WSP-2010) will be achieved by applying the instrument of integrated ecosystem approach coherent *inter alia* to ICZM principles and harmonizing conservation objectives and good ecological status to the extent possible and at different levels of implementation, ranging from the definitions to harmonised methodologies for their assessment. The Guiding Principle for the Wadden Sea integrated ecosystem approach is “to achieve as far as possible, a natural and sustainable ecosystem in which natural processes proceed in an undisturbed way”. Such an ecosystem contains the full range of natural and dynamic habitat types each of which needing a certain quality (natural dynamics, presence of typical species, absence of disturbance, absence of pollution), which can be reached by proper conservation and management.

The quality of the habitats shall be maintained or improved by working towards achieving Targets which have been agreed upon for the tidal area, the offshore area, estuaries, salt marshes, beaches and dunes, the rural area, water and sediment quality, fish, birds and marine mammals, as well as landscape and cultural aspects. In order to provide a scientific assessment of the status and development of the Wadden Sea ecosystem and to assess the status of implementation of the trilateral Targets of the Wadden Sea Plan, the Trilateral Monitoring and Assessment Program (TMAP) was launched in 1994 (updated in 2008) as the common monitoring program for the Wadden Sea carried out by the Netherlands, Germany and Denmark in the framework of the Trilateral Wadden Sea Cooperation.

7. Cost and resources

Complete costing is not available

8. Effectiveness (i.e. were the foreseen goals/objectives of the work reached?)

The trilateral conservation policy and management is directed towards achieving the full scale of habitat types which belong to a natural and dynamic Wadden Sea. The achievement and upholding of the following targets for different key habitats provide the evidence of the effectiveness of the integrated ecosystem approach in the Trilateral Wadden Sea Cooperation.

9. Success and Fail factors

a) Success factors

1. There are clear quality level targets set for the maintenance of the key habitats of the Wadden Sea, which indicate the success of the integrated ecosystem approach.
2. The Trilateral Monitoring and Assessment Program (TMAP) is implemented for the Wadden Sea in the framework of the Trilateral Wadden Sea Cooperation.
3. The Wadden Sea is an open system and there are many interactions with the adjacent North Sea.

b) Fail factors

Potential lucrative mega-projects, like gas-drilling, which take place in the Dutch part and even in the national park area of the German part of the Wadden Sea, might obstruct the integrated ecosystem approach for the trilateral management the area.

10. Unforeseen outcomes

None as yet

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13. Sources

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CBD (1992). Convention on Biological diversity (with annexes), Concluded at Rio de Janeiro on 5 June 1992; United Nations Treaty Series, No. 30619.

Enemark, J. (2005). The Wadden Sea protection and management scheme – towards an integrated coastal management approach. *Ocean & Coastal Management*, 48:11-12, 996-1015.

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14. Relevance for cross-border management of transitional waters

The integrated ecosystem approach in the Wadden Sea is based on the application of appropriate scientific methodologies focused on levels of biological organization which encompass the essential processes, functions and interactions among organisms and their environment. It encompasses the entire transitional water body and the adjacent ecotones shaped by extreme salinity and ecological gradients. Therefore, the case study is highly relevant for cross-border management of transitional waters.