Offshore wind parks and maritime safety in the EEZ of the Baltic Sea Region - DE

1. Policy Objective & Theme

- ADAPTATION TO RISK: Preventing and managing natural hazards and technological (human-made) hazards
- ADAPTATION TO RISK: Integrating coherent strategies covering the risk-dimension (prevention to response) into planning and investment
- SUSTAINABLE ECONOMIC GROWTH: Developing Europe's regional seas sustainably

2. Key Approaches

- Integration
- Knowledge-based
- Ecosystems based approach

3. Experiences that can be exchanged

This case demonstrates how international, and regional policies and legislation are implemented in a sea-planning procedure, and how participation processes include stakeholders on the international, national, state, regional, and local level. Further, data on the procedural process concerning wind farms can be exchanged, providing marine spatial planning is not fully established.

4. Overview of the case

The prevention of ship accidents in future wind parks, and of adverse effects caused by collisions was the main aim of the study. Regulations for planning procedures require environmental impact assessments for spatial planning and the participation of the public, authorities and stakeholders. A risk assessment was done to estimate the probability of incidences, and the damage following an accident. The introduction of additional safety measures were shown to reduce the risks.

5. Context and Objectives

a) Context

Maritime safety is a big issue in the rather narrow Baltic Sea with its heavy ship traffic. Some of the busiest shipping lines cross the sea. About 2,000 ships are at sea at any time since traffic has increased. Among other cargoes, oil and hazardous substances are transported.

Offshore wind power is one of the new utilisations in the Baltic Sea. Offshore wind energy production faces many advantages compared to terrestrial: constant wind, high wind speed, no conflict with human settlements. However, new conflicts will arise, one of the most prominent is probably interference with maritime traffic. The offshore area Kriegers Flak belongs to the Exclusive Economic Zones (EEZ) of Denmark, Germany, and Sweden. This summary focuses on maritime safety aspects and the situation in Germany. The German zone is Kriegers Flak I, where an application for 80 turbines with a power generation potential of 330 MW was submitted in May 2001, and was approved in April 2005. Until 2005, eleven applications for wind power farms had been approved, half of them in the designated areas.

b) Objectives

The main objectives were to increase the influence of regional governments and local authorities on matters of maritime safety; to develop transport and communication within a framework of maritime safety, taking into account the diverse activities; and to implement a sound risk management in planning processes. Prevention of, and preparedness for, ship accidents was one focus. Another focus was to integrate stakeholders of all hierarchical levels, and the public in the participatory process. The study ran from July 2005 to December 2007.

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

a) Management

German partners were the Maritime Institute Bremen, the Ministry of Economy, Employment and Transport Schleswig-Holstein, Senator of Construction, Environment and Transport of Bremen, and the Institute for Environmental Protection and Safety in Shipping – GAUSS mbH.

b) ICZM tools

A handbook providing guidelines for spatial planners, coastal managers, decision makers, and authorities involved in planning procedures was developed, based on the experiences from case studies. Further, a GIS based on the marine hazard contingency plan of Germany (VPS) was adjusted to serve as a spatial planning instrument, called Maritime Environmental Risk Management System (MERMS). The handbook, case studies, legal background, and inventories are implemented in the system. Germany has defined development zones for wind power taking into account a Strategic Environment Assessment (SEA). Thus, wind parks are excluded from areas with heavy ship traffic, from areas reserved for oil and gas pipelines, cable routes, raw material deposits, from areas restricted to the military, and those under the protection of the Wild Birds Directive or the Flora-Fauna-Habitat Directive.

The underlying policy in Germany is the “Strategy by the Federal Government for Offshore Wind Energy” (2002) within the framework of the strategy for sustainable development. The Federal Maritime and Hydrographic Agency (BSH) designated three areas for offshore wind power development in the German EEZ in accordance with article 3a of the Offshore Installation Ordinance (Seeanlagenverordnung), two of them in the Baltic see: Kriegers Flak, and Adlergrund. In 2004 the Federal Regional Planning Act (Raumordnungsgesetz) was amended to implement marine spatial planning in the EEZ. Participatory elements of planning procedures are required by the Aarhus Convention and the Protocol on Strategic Environmental Assessments under the Espoo Environmental Impact Assessment Convention. A Strategic Environmental Assessment (SEA) was conducted: it considers not only environmental factors but also social, economic, and other matters for the strategic decision-making process. It also requires early participation of stakeholders and the public. The SEA enabled local, regional, and international authorities and the public to participate in the planning procedure for the Kriegers Flak wind park. In the first participation round, competent national and regional authorities (sectors waterway, mining, environment) were asked to comment on the application plans. In a second round after evaluation of these comments further stakeholders (environmental NGOs, and business associations: shipping, fisheries, wind energy) and the public were invited to participate. In a third round the applicant presented his project, discussing conflicting interests and possible effects on the marine environment. International parties were also involved in the participatory process. A risk analysis for ship collision incidents was then carried out for Kriegers Flak. Implementing risk reduction measures reduced the probability of major incidents. Collision risk reduction measures are: careful siting procedures, proper marking, radar detection, sufficient emergency towing capacity, and design optimisation including the application of fenders. Another means for damage probability reduction is a proper contingency and mitigation planning.

Stakeholders and the public have the possibility to discuss and comment the assessment findings. The responsible authorities (BSH, and regional Waterways and Shipping Directorates) decide about an approval. An approval is given for a 25 year period, construction has to start within 2.5 years, and further requirements for the construction process are issued: safety standards during construction, state-of-the-art geo-technical study, state-of-the-art construction methods, safety concept, installation of lights, radar, automatic identification system, use of environmentally compatible materials and non-glare paint, minimal collision impact design of foundations, noise reduction for construction and operation, and bank guarantees covering de-commissioning after operation.

7. Cost and resources

The costs for the case study as presented here are not known although it was co-financed by ERDF.

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

Marine spatial planning as exercised in the EEZ proved to be an instrument to reduce and prevent conflicts. Risk assessment studies provided recommendations for safety measures to prevent hazards arising from collisions. Recommended passive and active measures have the capability to prevent damage. Participation of all levels and sectors, and the general public was given by the application procedures concerned with offshore wind parks. However, long-term continuity of marine spatial planning requires a legal framework across international borders.

9. Success and Fail factors

Al though, international legislative and administrative structures differ between countries, all manage to implement environmental impact and risk assessments and to ensure participation of stakeholders, and the public at a regional, national, and international levels. Experiences and data can be used synergistically for other wind park projects.

10. Unforeseen outcomes

None so far.

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13. Sources

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- Offshore windfarms development and the issue of maritime safety - Case study “Kriegers Flak” I, II, and III (September 2007) Schnegelsberg, S., Institute for Environmental Protection and Safety in Shipping - GAUSS mbH.
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