RAMA

RISK ANALYSIS OF MARINE ACTIVITIES IN THE BELGIAN PART OF THE NORTH SEA

Duration of the project: 15/12/2003 – 30/04/2006
Budget: € 178.989
Keywords: Risk Analysis, Human Activities, North Sea, Environmental Impact

CONTEXT

Recent accidents in European waters (eg. Prestige, Tricolor, …) have shown that policy makers are confronted with the occurrence of incidents that do severely damage the environment, irrespective of national borders.

The engagement of society for a sustainable management of the sea and the coast has lead at national and international level to increased attention. This is shown among others by recent changes in the EU legislation and from the request towards OSPAR for the development of appropriate risk assessments as mentioned in the Bergen declaration of the 5th North Sea Conference.

PROJECT DESCRIPTION

The Belgian Part of the North Sea is an intensely used marine area. This rather small part of the southern North Sea contains one of the most intensive merchant shipping routes in the world. Besides shipping it is also used for a wide, and increasing variety of human activities, which all pose a certain danger to the environment. The frequency with which incidents with environmental damage may be expected and the severity of these are however only poorly known or not known at all, which inhibits the development of appropriate measures for risk reduction.

Objectives
The main goal of this project is to carry out a risk analysis of all relevant incidents with environmental damage to the Belgian part of the sea, the coast or the beaches due to human activities.

This general goal is translated into several specific objectives.
- Analysis of the different methods for risk analysis including the kind of information delivered as well as their usefulness.
- Identify and analyse (as much as possible) all relevant incidents.
- Estimate the risk by assessing the probability of occurrence and the potential impact.
- Classify the different incidents according to their risk level and study the highest risk incident scenarios more extensively.
- Formulate recommendations to improve the safety level for the environment and to optimise the responses in the framework of the Belgian 'North Sea disaster plan'.
- Translate the results of the project towards potential end users.

Methodology
In the present study the following approach will be applied:
- The qualitative comparison of methods for risk analysis will highlight the advantages and disadvantages (applicability of results, reliability and uncertainties) of the methods available for each consecutive step in the risk assessment process. This comparison will be based on literature research, will focus on marine incidents and will also identify gaps in knowledge.
- The different activities which form potential risks for environmental damage will be catalogued and analysed, exploring further existing datasets and data available with authorities such as the Vessel Traffic Centre. This requires development of a geographically related dataset on distribution, intensity and characteristics of the different activities.
- Based on this listing, the different types of incidents that might happen will be studied. Event-analysis as well as incident casuistics, of the Belgian and adjacent waters, will be used.
- The quantitative analysis of the probability of the occurrence of incidents will focus on occurrence of shipping accidents and will use recent data. Methodology developped by DNV during the SAFECO I and II projects and the models they have developed (e.g. Marine Accident Risk Calculation System - MARCS) will be used.
- The environmental impacts at occurrence of incidents will be studied using available (ecotoxicological) data and using a sensitivity analysis of the affected marine, coastal and beach areas, maximising an ecosystem approach. A few selected scenarios will form the basis of this part of the study.
- Combination of probabilistic results and effects in case of occurrence will result in a ranking of incidents using a multi-dimensional decision matrix. Criteria will be proposed and applied to classify the studied risks.
- The Belgian North Sea disaster plan will be studied and compared with the disaster plans of neigbouring parties of the Bonn Agreement. Results of the risk analysis will be integrated to identify possible problems. Problem identification will also take place by means of interviewing the key persons involved in implemention of the plan.
- Identified problems will be met by proposals for improvement and shall be incorporated in a newly drafted Belgian North Sea disaster plan

Interaction between the different partners
The project will make use of experience gathered by

the project partners during other projects of the Belgian Science Policy in which they were both active, primarily GAUFRE (on spatial planning at sea and inventory of current human activities at sea) and MARE-DASM (on socio-economic, ecological and legal consequences of an important marine incident (major oil spill)), as well as other relevant running or started marine research projects.

Ecolas will be the main partner looking into the risk analysis, with a substantial help from DNV into the aspects of quantitative occurrence modelling.

The Maritime Institute will focus on the analysis and improvement of the existing contingency plans.

Both teams will continue their cooperation during data gathering on human activities.

Expected results and/or products

- A geographically identified description (location, intensity) of current shipping activities (type of vessels, cargo, routes, …) that pose a risk to the environment
- A detailed analysis of possible incidents and a scientifically sound estimate of the probabilities of the occurrence of the relevant incidents
- A description of effects of the relevant incidents
- A sensitivity analysis of the marine and coastal area's
- A ranking of the risks posed by human activities studied both by probability of occurrence as by their potential impact
- A set of criteria for classification of risks an application of these criteria to the identified incidents
- An evaluation of the existing contingency plans including recommendations for improvement
- Drafting text proposals to improve the Belgian disaster and contingency plan at Sea.

Exploitation:

- Information of policymakers at different levels (county, province, regional and federal) of the most important actual risks of the existing human activities at sea
- Improvement of the contingency plan 'North Sea Disaster Plan'
- The results might form an input for re-evaluation of current compensation, liability and insurance methods
- Results will be disseminated through website, workshops, seminars and papers.

PARTNERS

Activities

ECOLAS

Ecolas is an environmental consultancy company of the AXE group with more than 40 researchers of which a majority works on applied or strategic studies for governments and policy makers worldwide and who are experts in a wide range of disciplines (marine, freshwater, air and soil, ecotoxicology, risk analysis, nature, environmental economics, sustainable development, …). Other activites within Ecolas are focused on environmental assitance towards private companies.

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The Maritime Institute is a research institute of the Department of Public International Law of Ghent University. It is a multidisciplinary group of 14 researchers specialised in international law of the sea, maritime law, national and international environmental law, transport law and hereto related policy topics. As an independent research unit, the Institute advises and carries out studies on behalf of governmental and non-governmental organisations and private companies.

Det Norske Veritas (DNV)

DNV is an independent autonomous foundation providing services in the areas of maritime classification, safety, environment and quality to governments and industries. DNV Consulting is a "solution oriented" team of 350 professional staff focusing on the provision of business consulting, safety, risk and environmental management solutions.

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