



Public perception of coastal flood defence and participation in coastal flood defence planning

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Abstract

In the North Sea Region, approx. 16 million people live in coastal lowlands that are in danger of being flooded during storm floods. To maintain present safety standards, despite increasing natural and socio-economic pressures, long-term investments are inevitable. The awareness of the risk of coastal flooding and the perception of coastal defence strongly influence policies and strategies.

People that are aware of the risks will accept this. Further, an aware coastal population will react faster and better organised in case of an emergency. In order to maintain an adequate level of public awareness, it is necessary to further develop respective instruments and apply them more intensively, e.g., information tools, flood warning systems. One way to achieve awareness is public participation or rather, active involvement of the people in the planning process.

This study will focus on analysis and comparison of public perception of coastal flood defence in the countries participating in the project COMRISK, an INTERREG III B project, financed by the EU: Denmark, Germany, The Netherlands, Belgium and The United Kingdom. Furthermore an investigation and evaluation of methods to improve public perception of the risks of coastal flooding as well as participation in coastal flood defence will be done.

1 Introduction

1.1 INTERREG III B project COMRISK

In the North Sea Region, approx. 16 million people live in coastal lowlands that are in danger of being flooded during storm surges. Severe storm floods took place in the North Sea Region in the past and the risk is still present. Especially in consideration of climate change a management of this risk is inevitable.

The transnational project COMRISK (Common Strategies to Reduce the Risk of Storm Floods in Coastal Lowlands) is conducted by national and regional coastal defence authorities in the North Sea Region. The project aims to improved risk management for coastal flood prone areas by means of a transfer and evaluation of knowledge and methods as well as pilot studies. The project runs from 2002 to 2005 and is co-financed by the Community Initiative Programme INTERREG III B North Sea Region of the European Union.

COMRISK is divided into an umbrella project and nine subprojects. The project is led by the Schleswig-Holstein State Ministry of the Interior which co-ordinates the umbrella project and the subprojects. Each subproject is led by a Project Partner.

Evaluation Studies:

SP1 Policies and Strategies. National Institute of Coastal and Marine Management (RIKZ), The Netherlands

SP2 Risk Assessment for Strategic Planning. Environment Agency, United Kingdom

SP3 Perception and Participation. Schleswig-Holstein State Ministry of the Interior (IM), Germany

SP4 Performance of Flood Risk Management Measures. Environment Agency, United Kingdom

SP5 Boundary Conditions. Road and Hydraulic Engineering Division (DWW), The Netherlands

Pilot Studies:

SP6 Flanders. Ministry of the Flemish Community, Waterways and Maritime Affairs Administration, Coastal Waterways Division (WWK), Belgium

SP7 Wadden Sea. Danish Coastal Authority, Denmark

SP8 Lincolnshire. Environment Agency, United Kingdom

SP9 Langeoog. Lower Saxony Water Management and Coastal Defence Agency (NLWK), Germany

This article gives an introduction to the ongoing work of **SP3 (Public Perception of Coastal Flood Defence and Participation in Coastal Flood Defence Planning in the North Sea Region)**. The subproject runs from 01.05.2003 until 30.09.2004 and is commissioned and financed by the Schleswig-Holstein State Ministry of the Interior. It is carried out by the Department of Coastal Geography of the University of Kiel (Prof. Dr. Horst Sterr, Gunilla Kaiser and Daniel Witzki), associated partners are the Research- and Technology Centre Westcoast, Büsum (Dr. Andreas Kannen) and the Disaster Research Unit of the University of Kiel (Dr. Wolf Dombrowsky).

1.2 Objectives of Subproject 3

To maintain an adequate level of safety in flood-prone coastal zones and to develop effective political measures the perception of risk of storm floods is an important issue. As the awareness of risk strongly influences policies and the acceptance of coastal defence measures it is part of an integrated risk management. Furthermore coastal flood defence measures are supposed to be more accepted if people take part in the planning progress.

The objectives of the Subproject 3 are:

- Analysis of the present state of public perception and participation in the partner regions
- Investigation and evaluation of methods to improve public perception of and participation in coastal flood defence
- Recommendations for methods to improve public perception of the risks of coastal flooding as well as public participation in coastal flood defence

2 Results

2.1 Methodology

An analysis of the risk perception allows a description of the present situation. An assessment implies an evaluation of risk from the point of view of the concerned - taking into account common aims, personal features, cultural and social backgrounds. The awareness of the risk of coastal flooding and the perception of coastal defence in the population strongly influence policies and strategies. People who are aware of the risks will probably accept this and could help to reduce the risk of flooding.

The crucial point to improve the awareness is information. Information about risks can be of different origin, the working-up depends on risk-communication. Influencing factors on risk perception are threat as well as the familiarity of events. This means that not only a statistical expectancy but also a

personally perceived worst-case is relevant for risk perception. In order to maintain an adequate level of public awareness, it is necessary to further inform the people and to develop respective instruments, e.g. information tools and flood warning systems.

One way to achieve awareness is public participation of the people in the planning process of Integrated Coastal Zone Management (ICZM). Active involvement in planning procedures leads to shared responsibilities and higher acceptance of measures.

Participation of people in common issues is a basic principle of democratic communities. The implementation of sustainable development requires new strategies of public relation and conflict management to integrate different ecological, economical and social interests. For this purpose participation methods have been developed in the last 20 years. These methods serve as instruments to induce a balance of interests between stakeholders.

Participation methods are based on voluntariness, transparency, common accessibility and public engagement. Participation can be legal as well as informal.

There are several instruments available: To solve problems mediation can be chosen. For creative development a future workshop is a good choice. Strategic programs in spatial planning can be discussed with all stakeholders at a round table.

Public participation is one way to influence awareness and acceptance. The degree of risk perception is an essential prerequisite for public participation.

2.2 Survey

The perception of the risk of storm floods is charged by a randomly sampled questionnaire-based household survey in selected areas in the COMRISK partner regions.

The following flood-prone areas (figure 1), which are situated directly at the coast and which are of touristic significance were chosen:

Belgium: Oostende

Denmark: Ribe

Germany: St. Peter-Ording

The Netherlands: Gemeente Sluis (Breskens, Cadzand, Cadzand-Bad)

United Kingdom: Skegness

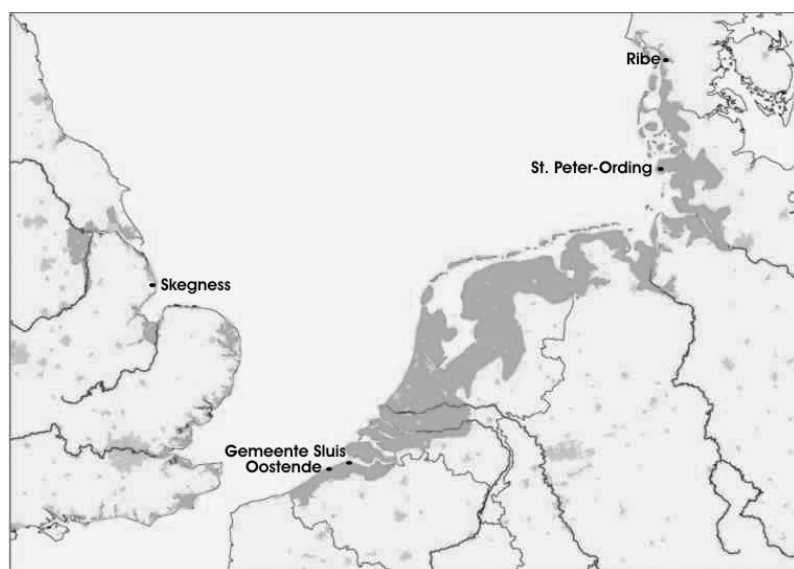


Fig. 1: Areas of investigation

The empirical instrument is a standardised questionnaire which contains twelve questions about risk perception, nine questions about participation and three questions concerning demographic data.

2.000 questionnaires were distributed, 400 in each area, in Oostende, Ribe, St. Peter-Ording, Gemeente Sluis and Skegness. The questionnaires were translated into Dutch, Danish and English, so that they can easily be filled out by all inhabitants.

The questionnaires were distributed personally with prepaid envelopes to randomly selected households. In order to obtain comparable samples in all areas small spots were selected. 1/3 of the questionnaires were distributed in the town centre, 1/3 close to the dike or dunes and 1/3 in districts with longer distance from the sea. The distribution of the questionnaires was accompanied by a press release, which was sent to local newspapers, containing information about the purpose of the questioning. This press release was also made to raise the amount of answered questionnaires.

Assuming that the perception of the risk of storm floods is different within and between the areas of investigation, representative results should be gained. Different regional conditions, historical and actual disasters and the degree of participation as well as the flow of information are important for the perception of risk. In addition to compare the framework in the areas it should be considered to what degree the risk of a storm flood is felt as a threat and to what degree people feel affected. These parameters are an assumption for the individual contentedness concerning participation and the acceptance of a remaining risk.

The following questions resume the main topics required for an analysis:

- *To what extent are storm surges considered as a threat / risk?*
- *To what extent is risk accepted?*
- *What are the regional distinctions of risk awareness?*
- *How can risk perception be improved?*

- *What kind of participation methods are available and are there practical experiences?*
- *What extent of participation is effective?*
- *Is there a demand for more participation?*
- *What are the differences of participation methods in the partner regions?*
- *How can participation procedures be improved?*

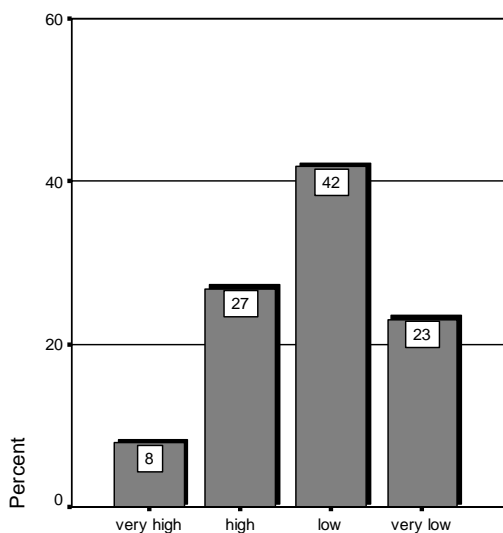
2.3 Draft results

In total 411 (20,6%) of the 2000 questionnaires were sent back. The number of returned questionnaires differs from country to country.

Area	distributed questionnaires	answers	answers in %
Belgium	400	110	27,5%
Denmark	400	89	22,3%
Germany	400	85	21,3%
The Netherlands	400	82	20,5%
United Kingdom	400	45	11,3%
Total	2000	411	20,6%

Tab. 1: Rate of returned questionnaires

In the following a few draft results will be presented.



The draft results in figure 2 are an example for the average opinion in the resumed research areas of the entire COMRISK-region. People were asked to make an assessment on a scale with four steps, reaching from *very high* till *very low*. Two thirds of the people estimate the probability of a coastal flooding to be *low* or *very low*. The rest of the interviewees consider this threat to be *high* or even *very high*. This result leads to another question: Do people take precautions for a storm flood?

Fig. 2: Question: How high do you estimate the probability of a coastal flooding?

The answers to the question in figure 3 show, that there is a large gap between the risk perception and the resulting activity: Only seven percent of the people take protective measures. An additional open question brought up, that the measures named most frequently were settlement outside the flood-prone area, protection of the building and the availability of an emergency equipment.

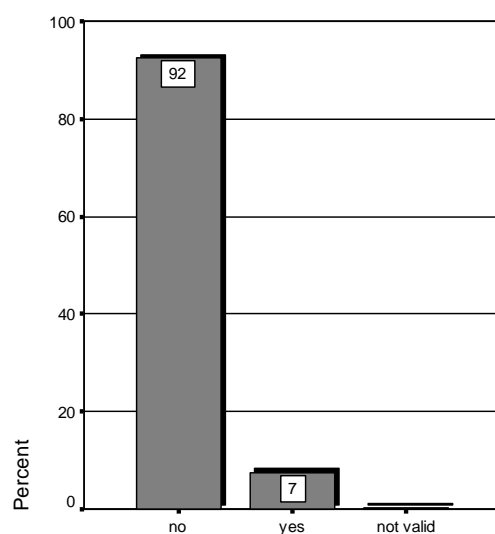


Fig. 3: Question: Have you taken personal measures to be generally prepared for a storm flood?

Figure 4 demonstrates the differences in public awareness and the level of information concerning storm floods in the five research areas: The only region, where a majority of the people feel sure about what to do in case of a coastal flooding is Denmark. The reason seems to be the degree of information concerning the case of flooding that has reached the population: A more detailed, additional question revealed a noticeably high publicity of a published information plan with clear information about what to do in case of emergency. This fact gives an important example how safety can be increased by influencing the peoples' risk awareness.

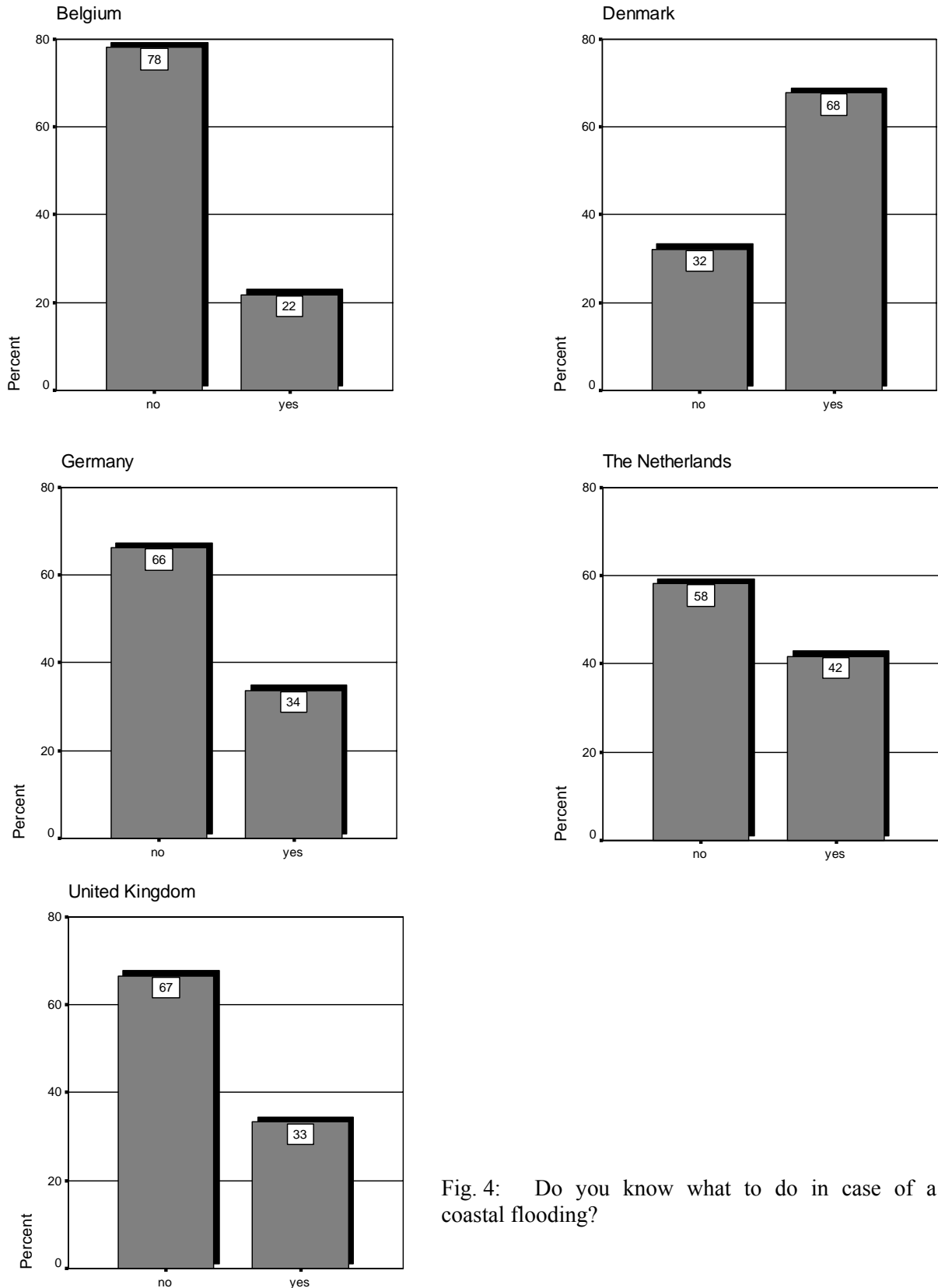
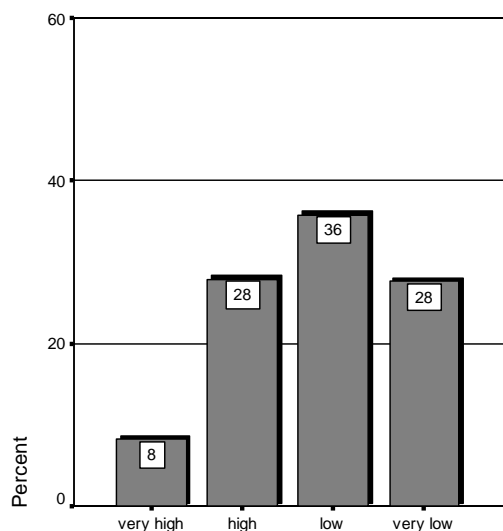


Fig. 4: Do you know what to do in case of a coastal flooding?

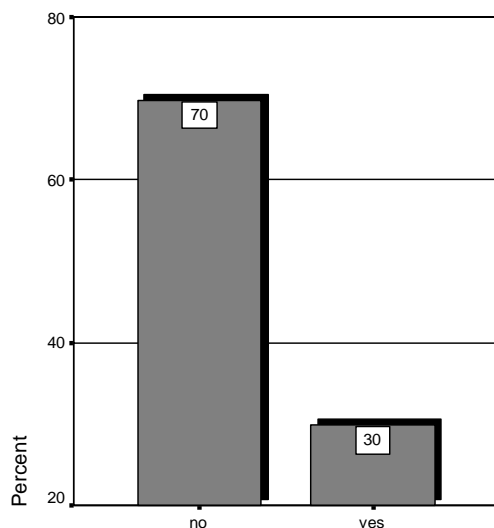


Generally, the majority of the public does not want to be involved in the planning process of coastal protection. 64 percent rate their interest *low* or *very low*. But if it is taken into consideration that a total of one third of the interviewees has a *high/ very high* interest in being involved in the planning process, there are obviously a sufficient number of potential participants for a participation procedure in the flood-prone areas. How many people in fact took part in a planning progress is another question that will be evaluated later.

Fig. 5: Are you interested in being actively involved in the planning process of coastal protection matters?

The following result shows, that not only the interest for participation is relevant (figure 6). 70 percent of the interviewed people are not aware of a possibility to represent their opinion. Only one of these possibilities is a formal participation process: An additional question revealed, that private initiatives - in interest groups or on a private basis - are much more often considered to be a successful option than a formal or informal participation procedure.

Fig. 6: Do you know a possibility to represent your opinion, if you do not agree with the decisions of the coastal protection authorities?



3 Discussion

The investigated state of awareness of the risk of coastal flooding within the population shows, that this awareness in the range from *very high* till *very low* can be found in all research areas. The draft results allow a prospect of the projects aim to increase safety in case of coastal flooding: The improvement of risk perception is one way to achieve more safety because a large majority of the interviewed people do not know what to do in case of a dike breach while at the same time one third expressed their interest in being actively involved in the planning process of coastal defence measures. People that are aware of the risks will probably accept this and could help to reduce the risk of flooding. Further, an aware coastal population will react faster and better organised to an emergency. As awareness decreases with time that has passed since the last calamity, it is important to maintain a high level of information concerning the threat. Moreover active involvement in planning procedures leads to shared responsibilities and higher acceptance of measures. The instruments, that are currently developed in this project, e.g. information tools and flood warning systems as well as active involvement in planning procedures, are obviously an auspicious way to increase safety for the case of coastal flooding. The evaluation of these information tools and the significance of participation in the planning process will be accomplished by expert interviews.

The final results of COMRISK, including a synthesis of all subprojects, will be presented at the international COMRISK2005 conference in Kiel, Germany. For further information on the project visit: www.comrisk.org.

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