AWARENESS OF AND PREPAREDNESS FOR STORM-SURGES IN A COASTAL COMMUNITY ON THE NORTH SEA

by

Sonja Dorothea Hofmann

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Divisions of Geography and Environmental Management
School of Applied Sciences
Newcastle-upon-Tyne, United Kingdom

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Figure 1 *Postcard picture of St.Peter-Ording*

These elemental powers remind the humanity at times ever and anon that their self assurance on the strength of grand civilising deeds and therewith associated their assertiveness meets its limits to unlock the secrets of the inscrutable.

Dieses Elementare erinnert zu Zeiten die Menschheit immer wieder daran, dass ihre Selbstsicherheit auf Grund noch so grossartiger zivilisatorischer Taten und damit verbunden ihr Selbstbewusstsein an Grenzen stösst, die Geheimnisse des Unerforschlichen [zu] erschliessen.

Declaration of the German Federal Government on the storm-surge disaster in 1962

ABSTRACT

Risk awareness and personal preparedness are seen to be important parameters in an integrated risk management scheme today. This study is contributing to the knowledge base about the perception of risk. Regarding the risk of storm-surges, an assessment of the perception and the status of personal preparedness of the people are addressed in an interview study in a coastal community on the North Sea. The results of this qualitative interview study are integrated with results of a previously conducted quantitative survey in the same community.

Major points of the discussion are the relation between risk perception and preparedness, self-responsibility in the disaster management scheme and the role of the media. The conclusions include that the trust in the coastal defence authorities is very high, which might influence the attitude regarding responsibilities and therefore the personal preparedness. This is influenced by the local media presentation of dike safety. The attitude towards the responsibility for the dissemination of information about storm-surge risk is complex. Improvements in the disaster management can be achieved when higher awareness is raised with adequate information about personal responsibilities and preparedness without creating fear.

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CHAPTER 1

INTRODUCTION

A summary of the complete research project is presented here.

In Chapter 2 the aims and objectives of the study are defined, the study location is introduced and a summary of the secondary data is given. Risk perception and preparedness are the premises for the behaviour of people in a disaster situation, thus these factors are important for the development of disaster management strategies. Regarding the risk of storm-surges, an assessment of the perception and the status of personal preparedness of the people in a coastal community is carried out. This question is addressed by means of the example of a storm-surge warning in January of this year.

The study location St.Peter-Ording is a coastal community on the North Sea, which has experienced several severe storm-surges in the last century, with the most severe in 1962 and the highest ever storm-surge in 1976. In the recent discussion about the impact of the climate change on the sea-level rise, it is considered that the storm-surge risk could be accelerating.

Until now, research on risk awareness is mainly focussing on quantitative studies. Several studies have tried to explore the connection between different variables in risk awareness and preparedness. The presented study builds upon a quantitative survey, which was previously conducted in the same coastal community. The results of the preceding study were that risk perception is strongly influenced by personal experience, that there is no correlation between risk awareness and the degree of preparedness and that there is a large information deficit in the population.

Chapter 3 contains an introduction to the theoretical concept. A qualitative research approach is used for this study, which tries to understand the reality in its social context through the analysis of interviews. With the comprehension that quantitative studies are

used to find out what happens, qualitative research is used to find out why things happen.

In Chapter 4 the interview study is explained in detail, including a description of the analysis process. For this study 12 qualitative interviews have been conducted in St.Peter-Ording with a purposive sampling of participants. In the semi-structured interviews the participants were asked about their perspectives, beliefs and worries on the risk of storm-surges in their community. As a recent example specific attention was given to the storm-surge warning in January 2007.

The results of the research are presented in Chapter 5. Here the statements of the participants are collected and interpreted about the information and risk perception of storm-surges, the assessment of a disaster situation, the personal preparedness and the evaluation of the local impact of the climate change.

The discussion in Chapter 6 focusses on the deeper understanding of the results, which includes the comparison with the results of the previously conducted quantitative study and other risk awareness studies. Central parts of the discussion are the confidence of the people in the dikes and the influence of the lack of personal responsibility in the coastal protection on the preparedness against storm-surge risk. Also the importance of the media on the understanding of and the information about risk is discussed.

Finally, the conclusions of this study and an outlook are presented in Chapter 7.

CHAPTER 2

RESEARCH QUESTION AND BACKGROUND

This chapter is divided into three parts. It starts with the main aims and objectives of the main study and then describes the study setting. Subsequently it outlines the primary and secondary data collection and the relationship between the studies used and undertaken.

2.1 The Research Question

The overall focus for this research project is the awareness and preparedness towards storm-surge risk of people living in a coastal communities. This is addressed by a qualitative study in a coastal community at the North Sea.

2.1.1 The Specific Research Question

More specifically, an assessment of the perception of risk and the status of preparedness towards storm surge risk in the coastal community St.Peter-Ording is carried out in this study. It attempts to answer questions related to the perception and reaction of the local people in response to a storm-surge warning.

A qualitative interview study was conducted in St.Peter-Ording in order to ask people about their perspectives, beliefs and worries on the risk of storm-surges in their community. As a recent example specific attention was given to a storm-surge warning in January 2007.

A storm-surge warning had been released in St.Peter-Ording during the Kyrill storm in January 2007. This latest example of a warning has been taken as a peg for a snap-shot of 'what would have happened if' the storm would have been more severe. In the qualitative interview study questions about this warning have been addressed. Was the

warning adequate, how did people react on it and have they felt informed well? This research is intended to be a methodical extension on a former quantitative study about risk perception in St.Peter-Ording (Kaiser et al., 2004).

2.1.2 Aims and Objectives

The study's aim is to present a comprehensive picture of how people feel about living in a flood-prone area and about their reaction to flood warnings. It is exploring the experiences of the participants in storm-surges and their knowledge about the risk as well as their knowledge about what to do in a storm-surge situation. Also the question if people feel well informed about storm-surges and their threat is addressed.

The objective is to identify and evaluate the perception and reaction of the coastal population and their preparedness towards storm-surge risk. The knowledge to what extent the community is prepared for a severe storm-surge can be of great importance for the people in the community and the flood management authorities. Thus improvements in the disaster management schemes can be suggested by the results. The outcomes might also be transferable to other communities in similar environments.

2.2 Setting and Storm-surge Threat

2.2.1 St. Peter-Ording - Geographical Setting and Ethnology

St.Peter-Ording, with a permanent population of 4022, is a typical North Frisian community in the flood-prone lowlands along the German North Sea coast, and is heavily relying on tourism with over 100,000 guests each year (Gemeinde St.Peter-Ording, 2007). St.Peter-Ording is located in the west of a peninsula in the state Schleswig-Holstein (Figure 1 and 2.1), with an area of the municipality of 2825 ha (Statistisches Landesamt Schleswig-Holstein, 1997). The community is protected against storm-surges by a partly interrupted sea dike with a height between 6.5 and 8.6 metres above sea level (MLR, 2001) and sand dunes towards the north. Generally the dikes in Germany are state-run (MLR, 2001), but the lower part of the dike in St.Peter-Ording is community-owned and is not heightened on the grounds that tourists have a better view. Storm-surges pose a serious threat to the community, the

massive foreland with its salt marshes (see Figure 1) is completely underwater a few times each year.

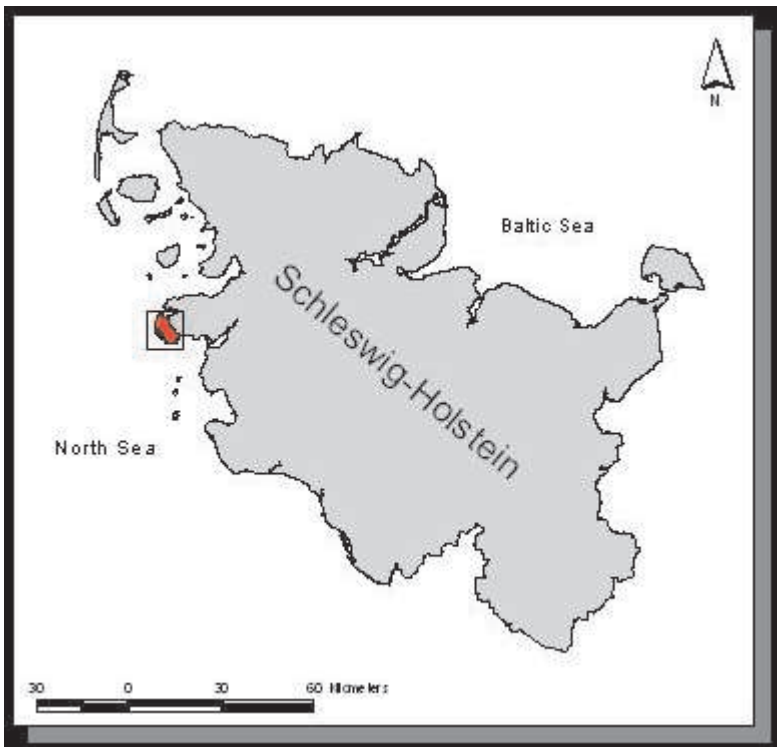

Figure 2.1 *Map of the area with the location of St.Peter-Ording (in red) in Schleswig-Holstein*

In coastal regions the relationship between nature and culture, respectively identity, is very strong (Brednich, 2001). On the one hand people are exposed to nature in a high degree and on the other hand hardly any landscape is subject to stronger changes within human lifetimes (Rieken, 2005). In the special case of North Frisia the change of landscape was subject to anthropogenic change for a long time, since people started to build dwelling mounds to defend their habitat against the sea in the first century (Rieken, 2005). Later, in the 11th century, favourable soil conditions lead to available resources through farming and enabled the construction of the first dikes to oppose the steady sea-level rise, which strongly influenced the coast-line shape. The permanent struggle against the sea and its yearly threat posed by storm-surges between autumn and spring are firmly anchored in the mentality of the Frisians (Rieken, 2005).

Year	Height in cm over sea level
MHW (91-00)	660
18.10.36	933
16/17.02.62	994
03.01.76	1015
21.01.76	978
24.11.81	971
26.01.90	943
27.02.90	969
28.01.94	948
03.12.99	952

Table 2.1
Highest storm-surge peak water levels in Büsum (south-east of St.Peter-Ording) between 1936 and 1999 (MLR, 2001). MHW: medium high water level.

2.2.2 Climate Change and Storm-surges

There is little doubt that the global climate change will cause an accelerating rise of the sea-level in the North Sea that is probably accompanied by an increase in extreme weather events and a greater tidal range, which could cause an increase in storm-surge frequency and severity (Sterr, 1998; IPCC, 2001; Weisse and Rosenthal, 2003).

The region experienced numerous severe storm-surges in the last centuries and decades (see Figure 2.2 and Table 2.1). The 1962 storm-surge caused heavy damage in the whole region and killed 350 people and thousands of animals in the German North Sea area (Rieken, 2005). Also in St.Peter-Ording parts of the community were flooded (Landeszeitung, 2006). In reaction to the 1962 flood the protective measures were increased, the dikes were significantly heightened in St.Peter-Ording. When in 1976 the highest storm-surge ever happened, it only had minor damages (Rieken, 2005).

Rieken (2005) counts 20 strong and severe storm-surges between 1962 and 2000, which outnumbers the average by far [1]. See Table 2.2 for the definition of storm-surges and their classifications. Although it is possible that this can be addressed by natural fluctuations [2], it is possible that the global climate change already plays a decisive role in the increase of storm-surge events (IPCC, 2001).

[1] Strong storm-surges occur between two and 20 times per 20 years, severe storm-surges less than once in 20 years (Petersen and Rohde, 1991).
[2] Another strong storm-surge cumulation has happened for example in the 17th century (Rieken, 2005)

Figure 2.2 *Storm-surge water levels displayed on a pole at the beach.*

The last storm-surge warning until today was released on the 18th of January 2007. At that time the heavy storm "Kyrill" swept over wide areas of central Europe with wind speeds of up to 225 km/h, resulting in considerable damage to property and loss of life. St.Peter-Ording did receive a storm-surge warning for a strong storm-surge. The procedure was as follows and in accordance to the usual procedure for storm-surge warnings (M. Hamann and R. Balsmeier, pers. comm.). The Federal Office for Maritime Navigation and Hydrography (BSH) in Hamburg was reporting a storm-surge warning to the districts and the Ministry of the Interior of Schleswig-Holstein in Kiel. There the steering committee is setting up an operational team, which had its first briefing at midday. The team is in close contact with the district of North Frisia, which in turn communicates with the communities. In St.Peter-Ording a steering committee came together for a short meeting and the dikes were monitored. A disaster action plan as well as an evacuation plan exist for St.Peter-Ording and are accessible in the municipal adminstration. The subsequent procedure of all teams is adjusted to the situation, in the case of "Kyrill" a warning to the public was released via the

"**[A] storm-surge** is simply water that is pushed toward the shore by the force of the winds swirling around the storm. This advancing surge combines with the normal tides to create the storm tide, which can increase the mean water level [4 metres] or more. In addition, wind driven waves are superimposed on the storm tide. This rise in water level can cause severe flooding in coastal areas, particularly when the storm tide coincides with the normal high tides".

(National Hurricane Centre, 2007)

Storm-surge classification for the German Bight: Minor storm-surges reach a height of one to two metres above sea level, strong storm-surges are at two to three metres and severe storm-surges more than three metres above sea level.

(Rieken, 2005)

Table 2.2
Definition of storm-surges

local radio. The warning message included that the risk of a strong storm surge exists and where, when and how high it is expected. In the end the storm was not severely strong in St.Peter-Ording and did not coincide with the high tide, thus no storm-surge was generated.

2.3 Risk Perception: Background and Literature

The perception of risk, the experience and the knowledge of the people are the basis for their behaviour in disaster situations (Kaiser et al., 2004). For the development of better strategies in risk management it is thus important to be aware of these factors. The meaning of the word 'risk perception' is captured by several definitions in Table 2.3.

2.3.1 The COMRISK Study and its Results

The European project COMRISK (Common strategies to reduce the risk of storm floods in coastal lowlands) was carried out in 2002 - 2005 in five European communities bordering the North Sea. The Subproject 3 about public perception was conducted by Kaiser et al. (2004). One of the study areas has been St.Peter-Ording. This quantitative survey dealt with the public perception of coastal defence as well as participation in coastal defence planning. The

Risk Perception is the view of risk held by a person or group and reflects cultural and personal values, as well as experience. (Harvey, 2007) **Risk perception** describes the appraisal of a risk situation on the basis of intuitive judgement, personal experience, and acquired information (e.g. from the media). (Wiedemann et al.) **Risk perception** is the sensual or rational, individual or collective perception process and the connected identification, analysis and verbalisation of risk. Influencing factors are the input and processing capacity of the percipient person as well as the situational, social and cultural framework. The perceived risk is the basis for the evaluation or judgement of the risk, whereas there is no exact separation of the perception and judgement processes. (Kaiser et al., 2004)

Table 2.3
Definitions of risk perception

results of the former part will be described here. The questionnaire (also only the first part) can be found in Appendix B.

To achieve an effective flood risk management process it is essential to determine social conditions in addition to the scientific approach. The objectives here have been the analysis of the present state of public perception, the evaluation of methods to improve public perception in flood risk management and to find methods to improve the former.

A random-sample household survey had been carried out distributing 2000 questionnaires in mailboxes in the five study areas, considering the improvement suggestions for postal surveys by Dillman (1978), like prepaid envelopes. The standardised questionnaires included 12 questions on risk perception, 9 on participation and 3 on demographic information (see Appendix B). The following results are all based on the returned questionnaires from St.Peter-Ording. 21.3 % of the questionnaire have been returned, with a majority of male (55 %) and in an age group of more than 60 year old (60 %) respondents.

The results of the perception study include that 73 % of the respondents have experienced a storm-surge and 27 % have experienced a dike failure. 46 % and 19 % rated the probability

for a dike failure in St.Peter-Ording as low and very low, respectively. Regarding personal preparedness, only 9 % have taken measures against flooding. 65 % of the respondents stated that they would not know what to do in the case of a dike failure and 77 % feel they have not been informed well about the basic risks of storm-surges by the responsible authorities and would also not know how to get this information (60 %). Concerning the global climate change, the answers of the respondents varied. The assessment of the personal threat due to the rising sea-level was rated low and high by each 34 %. However, the estimation of the influence this will have on the increase of storm-surges was then rated with 47 % as high and 24 % as low.

Cross tabulations revealed that there were no differences in answers according to gender or age groups of the respondents in almost all questions. Only the age group of people older than 60 had minor differences in two questions. They are a little more concerned if the protection is sufficient and they estimate the influence of the sea-level rise on storm-surge a little higher.

The main conclusions of the COMRISK study are that

1. Risk perception is strongly influenced by personal experience and the time that has passed since the last storm-surge event
2. There is no correlation between risk awareness and the degree of preparedness
3. There is a large information deficit in the population.

Recommendations that came out of the study are concerned with the information improvement. The public should obtain more background information on coastal defence, about what to do in the case of a dike failure and about flood precautionary measures. Information has to be neutral, objective, simple, targeted, understandable. Two suggestions were that the local press should be involved in information dissemination and flood risk and coastal defence should be made a central theme at school. Sufficient, adequate, and targeted information is seen as an important step towards an efficient coastal risk management scheme.

The COMRISK study is used as the basis on which this study builds upon. The complete data and examination records are available.

2.3.2 Results of other Risk Perception Studies

The risk perception of the population against natural risks is seen as an important factor in risk management by many authors (Slovic, 1987; Renn, 1998; Plapp and Werner, 2006; Knocke and Kolivras, 2007). Therefore a range of studies have been conducted over the last decades regarding this aspect. Methodologically the focus lies on quantitative surveys.

Peters and Heinrichs (2005) surveyed 183 coastal residents at the German coasts about their risk construct of climate change and coastal risks. Although the risk regarding climate change as well as storm-surges is seen as threatening, the faith in the present coastal protection is predominantly very high in the population. The existing coastal protection strategies as well as the media presentation of the risk only on the status of the condition of the coastal protection constructions are accepted as they are. They found that the people do not implicate the connection between climate change and coastal protection as long as they are not explicitly asked. Apparently the population assumes that the challenge towards the threat through climate change is met with moderate modifications in the coastal protection, probably by enhancing the dikes. Peters and Heinrichs (2005) conclude that it would require a massive crises, like a severe storm surge event or an institutional scandal, to shake the faith in the familiar coastal protection strategy and to accept new strategies and measures.

A qualitative field study about people's comprehension of flood risks in flood prone areas was conducted in the UK and Norway using focus groups (Hasle, 2006). Their intention was to collect information about feelings, views and attitudes about living in such an area. They have found that the basic concepts and understanding of the risk does not differ significantly between people that have experiences of flooding and those that have not, as well as between the different countries. Key findings were that several people seriously consider to move away, but various other personal reasons are still stronger than the fear. Some worry about material losses, some admit that their private preparations could be improved. One of the Norwegian groups is very pessimistic towards expectations from authorities. All groups would like to have adequate information presented in a local context.

The perception of flood risk is correlating well compared to experts' risk assessment as found in a study in Switzerland (Siegrist and Gutscher, 2006). People living in high and low risk areas had been asked to rate the risk of flooding in their area. However, in terms of

preparedness there was no difference between the people living in the different risk areas.

The issue of risk perception and preparedness is transferable to other natural risks with a low reoccurrence probability and a high impact like earthquakes or volcanic eruptions. Also general studies about risk perception will be discussed below.

In a questionnaire study in a New Zealand community threatened by volcanic hazards it was found that the population has a low interest in the risk, but high expectations towards the responsibility of the government (Johnston and Benton, 1998). The participants rate the probability of an event very low and this in turn is seen as an indicating factor for the low personal preparedness. The equally low risk awareness facing volcanic risk from lava flows was found in Hawaii by Gregg et al. (2004). This is particularly interesting on the basis of the fact that the majority of the respondents had taken part in a hazard education program. Likewise Johnston and Benton (1998), they find that the responsibilities are expected to lie with the officials. Gregg et al. (2004) raise the idea that information dissemination about preparedness might even be the cause of lower personal preparedness, because the fact that the information is disseminated by specific agencies could lead to the assumption that they are the ones that are responsible. They suggest that risk communication strategies need to build on community knowledge and beliefs instead of using a scientific language.

An 'unrealistic optimistic bias', originally described by Weinstein (1984), which describes that the majority of people rate themselves as less vulnerable and more skillful than the average is also found by Sjoeberg (2000) for the rating of different risks by a representative sample of the Swedish population. This is also supported by Lindell and Whitney (2000) who find that although the risk of damaging earthquakes is rated relatively high by their participants, the risk of personal loss or injury is rated relatively small.

Generally, the correlation between preparedness and demographic variables is found to be very small in a review of 23 studies (Lindell and Whitney, 2000). They also find no significant correlation between perceived risk and adaptation. Lindell and Whitney (2000) suggest that risk managers should work on the personal responsibility for self-protection and, for example, clarify that people must expect to be self-sufficient for at least 72 hours after an earthquake.

Risks with a low frequency in reoccurrence are typically ignored by people until a disaster happens. An increase in risk awareness after a disaster is only of a short duration (Karger,

1996). Strategies of people to reduce their insecurity can be the denial or downplay of the risk. It can also be ascribed to a higher power, which can be the 'hands of god' or the governmental agencies that take care (Karger, 1996).

CHAPTER 3

RESEARCH PARADIGM AND INSTRUMENTS

The theoretical approach that is used for the study is explained in this chapter.

3.1 Epistemology

For this interview study a post-structural approach is taken. This means it is understood that knowledge is created through social and cultural processes and meaning can only be gained in this context. Nothing is true or known in isolation from these processes (Bryman, 2001). An interpretative paradigm is accepted, which is concerned with the individual and is anti-positivist (Bryman, 2001; Black, 2002). Also subjectivism is part of this approach, since the research object is the perception of the researched subject. Subjective factors like opinions and motives are researched (Flick, 2002).

With this study is is intended to contribute to a growing knowledge base about the perception of risk as well as the concepts towards reaction in disaster situations of the studied population. An important assumption about the nature of knowledge and reality is that general knowledge is not nescience (Kaufmann, 1999). In the context of this study this means that also what participants do not know or know wrong is part of the knowledge that is attempted to find.

In this research paradigm the researcher takes the role as an active part of the data production (Temple, 1997). It is not possible to separate the researcher from the results in the way that they need to have the understanding of the cultural and social context in which they position their findings. And this understanding can never be completely objective.

I take up the position that the use of mixed methods is the best research strategy to

find a true meaning when asking people about their perceptions, knowledge and beliefs. It is assumed that it often needs both quantitative and qualitative methods to answer a research question comprehensively (Black, 2002).

The focus of previous research on risk perception lies explicitly on quantitative studies (Karger, 1996). While quantitative research is drawing on the description of what is happening, the presented research question can only be comprehensively answered if additionally a qualitative approach is used to find out why things happen (Black, 2002). Qualitative research tries to understand social reality through text (Flick, 2002). In this relation the observed reality has gone through two steps, first the translation of reality to text, which is the interview and transcribing phase, and second the back translation of text to reality or the conclusion from text to reality. For the researcher reality reveals itself only through text and other memory kept from the interview in its cultural context (Flick, 2002). Thus only what has been captured by the interview is kept alive from the interviewee.

3.2 Research Instruments

Here a qualitative interview study was conducted to build on the results of a quantitative survey. The general research design is empirical. Twelve qualitative interviews have been conducted in St.Peter-Ording with a purposive sampling of the participants.

With a qualitative interview study in St.Peter-Ording it is possible to find out about the knowledge, beliefs and worries about the hazard of storm-surges of the people in their community. The interview style was semi-structured, an interview outline was used with key questions that are consistent in all interviews, but it was possible to improvise on some of the questions (Arksey and Knight, 1999). The sampling and interview process is described in detail in Chapter 4. Apart from learning about what is on people's minds and their perception and understanding of an issue, interviews might also allow the reconstruction of what has happened, which is not held in written sources (Arksey and Knight, 1999).

Contrary to methods in standardised interviews the situation and interviewer are not neutral here and after Kaufmann (1999), most valuable data come from interviewees that are taken out of their usual habit and start reflecting about themselves, while the interviewee should experience this situation as completely normal.

As Arksey and Knight (1999) illustrate, the importance of the topic for the local people will influence the likelihood of agreement to participate in the study. Also their understanding of research and what they expect as the outcomes of a research study might influence this (Wiles et al., 2006). Arksey and Knight (1999) further describe that appearance, body language, and voice of the interviewer are very important boundary conditions in an interview. On the other hand, telling the interviewees exactly what the study will involve, can also have some negative influence on the interview outcome and its interpretation. After Wiles et al. (2006, p. 294), "the trend towards ensuring consent and agreement from participants for the use of their data has significant implications for the freedom of the researcher to interpret the data in the way she or he views as appropriate". Anyhow, it is indispensable to do so in order to ensure basic ethical principles.

An enhancement in reliability of qualitative interview studies can be gained with an interview test and a review after the first interviews (van Teijlingen and Hundley, 2001).

The linking of multiple methods, often referred to as triangulation, is a tool to strengthen completeness in answering a research question, to enhance validity and confidence in the results and to avoid systematic biases (Arksey and Knight, 1999; Hunter and Brewer, 2003; Flick, 2004). It also allows greater confidence in interpretations due to a possibly better in-depth understanding (Maxwell, 1996). A qualitative study can take its representativeness from triangulation (Flick, 2004). Here the advantage was to have a quantitative survey already available (Kaiser et al., 2004) to build the findings of the interviews upon.

Triangulation basically means that a research subject is examined from at least two different points of view (Flick, 2004). Bryman (2001) describes 11 different models on how to combine qualitative and quantitative research, but a real integration of the methods is still an unsolved issue (Flick, 2004). A combination of the methods is best done on the level of the gained results in each method. They can be convergent, complementary or divergent to each other (Flick, 2004), and each of these give reason to resolve the causes.

General criticism on triangulation has been expressed for example by Blaikie (1991), who is arguing that it is not valid to merge results from different basic epistemological study designs in one statement, because they mean different things. This critiques is invalid if the results are not simply compared, but each seen in the context of their meaning.

An attempt to directly link the two studies was made by asking the interviewees to fill out the 'old' questionnaire. The use of this questionnaire is to have a tool for validation of the interview data and to be able to link the interview data better to the COMRISK study. Thus, if the results of the questionnaires are comparable to those found in COMRISK, it can be assumed that the participants of this study are part of the study population of the COMRISK study. This does not mean they did take part in the former study, but they share the same basic social background.

An important issue in validation is the way the researcher deals with generalisation (Kaufmann, 1999). A frequent error in qualitative research is made by the attempt to generalize findings (Onwuegbuzie and Leech, 2007). Qualitative data alone should be used to get insights into people's behaviour and perception within a specific setting only. With the small sample of 12 interview partners generalising can not be done anyway, not for the whole group or sub-groups. This is especially true, because there have been no differences in gender and age groups in the COMRISK study. Thus it would not be possible to make a generalisation even if, for example, all women would say something else then all men in this study. It would be mentioned though.

In this regard is was decided to leave the results, including the comments of the respondents, unrelated from the respondant, thus having 'voices of the community' and not comments from specific persons.

CHAPTER 4

DATA COLLECTION AND ANALYSIS

In this chapter the interview study is presented. Further sections describe the analysis process, which basically consists of transcribing, coding, comparing codes and finding themes.

4.1 Sampling and Interviewing

Prior to the conducting of the first interview the interview outline was tested on a person not familiar with the topic to ensure understandability of the questions. Some of the questions have been adjusted according to their suggestions. Also the length of the interview was tested. But, as can been seen later, the amount and type of questions does not determine the length of the interview.

The interviews have been conducted in St.Peter-Ording between the 12th and 20th of June 2007. Since interview partners needed to be found first, most of the interviews took part in the later half. Due to the limited dimension of this study a number of 10 to 15 interviews had been envisaged. It turned out to be challenging to find suitable interview partners within the time constraint of 10 days in the field. Eventually 12 interviews had been successfully realised.

The study population is defined as the permanent inhabitants of St.Peter-Ording that live on flood-prone land. A purposive, non-random sample of this population was interviewed in order to ensure a cross-section of the intended population (Black, 2002). All potential respondents have been shortly introduced into what the study intends to find out and what the outcome will be. This is an important approach in convincing people to take part in the study (Arksey and Knight, 1999), taking into account that they have to trust a researcher

that they do not know.

Only permanent residents of St.Peter-Ording have been chosen for the study, because they will be most likely in the region during the storm-surge season. Finding permanent residents turned out to be not a simple task during summer season. Walking from door-to-door and only ringing the bell where the cars had a local licence plate number was a very frustrating activity and only resulted in two interview appointments. Some interview partners were found through their working places, also in a way like a door-to-door system, but this more easily distinguishes inhabitants from tourists. Visits to community social events like a tea party with the elderly community members or a prayer evening was a good way of socialising within the community and brought about some interview partners. Additionally a snowball sampling system was used to meet some interviewees, which had been suggestions of other interview partners. After Black (2002), that this however might limit the representativeness and has to be done carefully, here only a selection of the suggestions was contacted and interviewed when applicable.

It turned out to be more easy to find male than female participants. Only four out of twelve interview partners are female. It happened twice that women that have been asked for an interview referred to their husbands as interview partners. Also participants in the age group between 35 and 50 have been the most approachable, because they participate most active in public life.

Table 4.1 compiles the basic personal data about the interviewees, which have been asked at the end of each interview (Witzel, 2000). Also the result of the first question on how long they had lived in St.Peter-Ording is added (SPO). An "$*$" is suffixed if the interviewee was born in St.Peter-Ording. "Child/elder" states the number of children under 18 and elderly over 65 that live in the household. Income is given in yearly gross income per household in Euros, the average yearly gross income in Germany is indeterminate, but is 38.000 Euros for a full-time employee (Statistisches Bundesamt Deutschland, 2007).

The interviews had a semi-structured type. This means that a question outline was prepared and the questions have been asked in about the order, but were open to be adjusted to the progression of the interview. Basically all interviews started of in the same way, but developed differently during the interview. The questions' order and phrasing could be

Name	f/m	age group	employment	income	child/elder	SPO(∗)
ZA	m	35-50	employee	25.000-40.000	2	1961∗
YB	f	35-50	self-employed	25.000-40.000		2004
XC	m	35-50	self-employed	40.000-55.000	3	1990
WD	f	35-50	self-employed	55.000+	4	1971∗
VE	m	67+	retired	10.000-25.000		1931∗
UF	m	50-67	self-employed	25.000-40.000		2002
TG	m	35-50	self-employed	55.000+	2	1963∗
ST	m	35-50	employee	40.000-55.000	3	2000
RI	m	18-34	self-employed	10.000-25.000	1 (soon)	1976∗
QJ	m	67+	retired civil servant	40.000		1955
PK	f	50-67	employee/self-empl.	55.000+		1987
OL	f	35-50	employee/self-empl.	40.000-55.000		1994

Table 4.1
Basic personal data about the interviewees, for explanations see Section 4.1

changed to avoid disturbing the flow of words of the respondents (Arksey and Knight, 1999). It was desired to hear what the interviewee has to say about the key topics, but some parts of the interview were open to be interviewee-led. Apart from the start off question about how long they had lived in St.Peter-Ording, which was used as an ice breaker to make the interviewee start talking, the questions have been basically open. The interviews included the following questions:

- What experiences do people have regarding storm-surges?
- Has there been a storm-surge warning during the storm "Kyrill"? If yes, what did the warning include?
- How did people react? What measures did they take?
- How do people perceive the publicity on climate change personally?
- What is people's view about the adequacy of protective measures?
- Do people feel informed well?

A full outline of the interview content can be found in Appendix A. A documentation sheet including date, place, duration and other characteristics of the interview was filled out after each interview. After the first interview the succession was reviewed. One consideration was that it can be useful to ask further if an answer is too short.

The intention of the interviewer was to make the interviewee feel comfortable in their situation and face everyone with due respect. The conversation was accompanied by a friendly manner of the interviewer, speaking in a calm voice, making comments to let the interviewee know that their answers are understood and taken seriously and their dialogue partner is listening attentively, sometimes it was appropriate to laugh or make jokes (Kaufmann, 1999). The questions were personal but not intimate or threatening, thus have not been emotionally demanding for the interviewees (Arksey and Knight, 1999). The appearance of the interviewer in a formal dress is an important signal of professionalism (Arksey and Knight, 1999). The interviews took place in various surroundings, for example at home, at work places, in parish halls or in a café.

The interviews were recorded with a digital voice recorder. All participants were fine with having the interview recorded, one added "if I won't be on the radio". The length of the interviews varied significantly although the same principal questions have been asked. The interviews took between 6 minutes 27 seconds and 40 minutes 12 seconds recording time, with most of the interviews between 20 and 30 minutes. Possible reasons are discussed in Section 4.4. After the interview each participant was asked if they would be so kind to fill out one of the old COMRISK questionnaires within the following weeks and send in back in a postpaid envelope. Seven of the 12 questionnaires have been sent back until today.

Additional information about the community preparedness have been gained by personal and e-mail contact to so-called experts. Personal meetings were arranged with the mayor, R. Balsmeier, and a community administrative of St.Peter-Ording, a Senior Officer in the Division of Coastal Protection (Schleswig-Holstein State Ministry of Rural Development), Dr. J. Hofstede, and a Senior Officer in the Division of Civil Protection (Schleswig-Holstein State Ministry of the Interior), M. Hamann, in the state capital Kiel. More information about the storm-surge warning procedure were send by e-mail from H. Eichhorn of the Fire and Civil Protection Office of North Frisia in Husum. All of the above have been asked for information about a normal storm-surge warning procedure, including the timing and content of the warning especially for the case of the storm "Kyrill" in January, the communication networks and responsibilities. The information gained by these experts is described in Chapter 2.2.2.

4.2 Transcribing

Transcribing is the transformation of the data from the voice recorder into a written form and is a very time intensive task (Laws et al., 2003). Especially when recordings are noisy (e.g. in a café) or interviewees speak in dialect or alternate strongly with their voice it can be challenging to transcribe the complete interview correctly. With a transcribing speed of approximately two to three hours for ten minutes, the complete transcribing process took about 70 to 80 hours. The use of a digital voice recorder had the advantage that all interviews could be directly saved on a personal computer and the sound could be enhanced a little using standard computer software. Also jumping for- and backwards in the recording during the transcription process is relatively comfortable with a personal computer. One complete interview transcription can be found in Appendix C.

There are many advantages if the person who transcribes the interviews is identical to the interviewer and researcher. The researcher then knows the circumstances of the interview, for example the way the participant talked and gesticulated. The person also has listened to the recording many times before starting to analyse the data.

The transcribing has been made with strict transcribing conventions to try to capture the complete interview with the maximum exactness that is possible for a written document (see Appendix C). The transcribing conventions used are a modification of the basic rules by Flick (2002). It is clear that this can never be even rudimentary the true reproduction of the complete interview with its atmosphere, gestures, facial and body expressions and so on. In some cases this had been added in brackets if it was remembered from the situation, e.g. one participant made the gesture of 'go in one ear and out the other', but only said "so" in that moment.

Until this point the data is tried to be kept as original to each participant as possible. This means that the interview in Appendix C is only translated into English for demonstration purposes and not for further analysis.

4.3 Coding and Interpretation

With qualitative interviews a large amount of complex data is collected, which is obviously challenging in its analysis (Silverman, 1993), and "there is no formula to aid the researcher in interpretation of qualitative research data" (Mostyn, 1985, p.140). The analysis tool to capture content into umbrella terms is called coding (Flick, 2002).

The first step is to use a few of the interviews and start to 'open code' its contents. This means to look for emerging themes and topics in different categories, and to look for what people have talked about without thinking about what the questions were. Statements from all the interviews are then coded and put into these categories, which always remain open for change and extension. An important issue raised by Arksey and Knight (1999) about coding is that the categories should not distract from recognizing important data 'outside' of these, which is best met with cross-reading. A standardised content analysis would only capture the most obvious (Kaufmann, 1999). Then as the next step further coding is done using the interview question topics as themes. For the coding the text parts were still kept in German, but the names of the categories were set in English. The coding was done with computer assistance using the commercial software tool NVivo 7 (QSR International, 2007).

An interpretation of the data was started on the basis of some tactics suggested by Arksey and Knight (1999) and Sarantakos (1998): making contrasts and comparisons, exploring relationships between variables, finding logical chains of evidence, and looking for concepts behind observations. A hint by Mostyn (1985) is that new perspectives often appear when the researcher tries to stand back from the problem. The analysed data then needs to be put together in a plausible way. The results are presented in Chapter 5 in a form that draws attention to important specific topics.

4.4 Problems and Possible Sources of Error

The challenge of finding suitable interview partners is described in Section 4.1. But since no statistics will be calculated and no generalisation can be made with a small sample like this one, it is appropriate to use an opportunity sample (Arksey and Knight, 1999). They add on that it is still important to hear the story from different sides, which has been tried to take

into account for the selection of participants in this study.

Some interviewees seemed to be unsure, if they are the right interview partners for the study. Although they have been convinced that the study is not about any specific knowledge and there cannot be any wrong answers, these concerns might have influenced the answers, at least in the beginning of the interview until the interviewee felt comfortable enough. The factor of unsureness could also have lead the women described above to refer to their husbands as interview partners. They might have thought that questions to storm-surges and their risk, which is often perceived as a technical topic, are stereotypically better answered by men.

The length of the interviews varied significantly, although the interviewer tried to ask the same questions and make the same interview atmosphere. Reasons might be the personal motivation of the respondent towards the topic as well as time constraints, also the different environments where the interviews took part could have had an influence (Kaufmann, 1999). The lack of motivation could be the reason for the shortest interview, although the participant agreed on an appointment before she seemed uninterested in answering the questions. Another explanation may be that "some interviewees simply do not have a lot to say" (Arksey and Knight, 1999, p.136).

It was expected that more than 7 of the 12 questionnaires handed out would be send back. It remains unclear why it had not, because all interview partners had said they are happy to fill it out. One possible explanation is that they might not have had the time to fill it out during the next days and then did not have the heart to send it anymore, because they though it would be too late.

4.5 Measures of Precaution

There are some points to be considered for the personal safety during the interview process, which involves talking to strangers in an unfamiliar, often private, environment. A checklist by Arksey and Knight (1999) recommends to make interview appointments during daylight times, tell a friend where and when the interviews take place (and to make sure that the interviewee knows that as well), and to carry a mobile phone, which have been partly followed. However, St.Peter-Ording is a small community with a predominantly safe neighbourhood, and I felt very safe. There was only one situation when I would have told a friend the exact

place and time of the interview, but the participant to-be called off the interview appointment.

CHAPTER 5

RESULTS

The results of the interview and the questionnaire surveys are presented in this chapter. Putting together the results from the interviews, which include an overwhelming wealth of information from the interviewees, is the task to find the reality in texts. Here to present the results finally some original quotes had to be translated into English.

5.1 Results of the Interview Study

In the following the major results are described in several categories that did evolve from the coding process. Generally, people tell what is in front of their minds when they answer questions, thus referring and relating to things that are up to date in their present lives (Arksey and Knight, 1999).

The results are presented in the way that comments are left unrelated to respondents, because they then are the 'voices of the community' instead of single persons that talk, with the intention to rule out a generalisation of sub-groups, as described in Chapter 3. In any case the results are an interpretation and are taken out of their context, thus it is reasonable to depersonify them.

5.1.1 Knowledge about and Perception of Storm-surges

It is well known by all participants what the term 'storm-surge' means and everyone has experienced at least small storm-surges.

Weather in general is an everyday topic in the North Sea coast region and plays a big role in the life of the people living there. Especially at winter time when strong storms are

numerous people get reminded of the threats of nature. Many that live in the region for a long time have a very good understanding of meteorology including storm-surges and how they are generated, including wind directions and tidal specifics for the local coast. The fear of damage from storm is a lot greater than the fear from the water for many of the respondents.

Feelings about storm-surges are described by the participants with words like threatening, queasy, frightening, alarming and dramatic. But some also describe their experiences with fascinating, mind-blowing or exiting. One respondent said she thinks it is a bit scary to know about the forces of the water and that there is nothing you can do about it. But on the other hand she was impressed when she saw the water reaching high in the last winter, and adds on that winter storms are something beautiful.

Another respondent describes in detail his lasting memory of the 1976 storm-surge when he was 13 years old. He uses a very impressive and stirring language while remembering the situation when he had to go to the dike with his father to bring shovels to the civil defence and fire fighters. In the moment they were there the water was already very high and water spurted out of rabbit dens in the dike "20 metres high... like out of a fire fighters hose". Suddenly the whole dike moved several metres and everybody, including the rescue workers, started to run away and abandoned the dike. Luckily it did not break in the end.

Another participant who had been in his house during the same event said "we didn't really notice it". It seems strange to him that the highest storm-surge ever is not in his memory as such. He, in turn, has experienced the 1962 flood when he was a student in Hamburg and tried to help with the rescue work, but again had not had any damage in his own house.

5.1.2 Assessment of Risk

The risk of a dike failure due to a storm-surge is rated differently by the interview partners. Most are very sure that the existing dikes are strong and high enough for many more years, but others rate is quite possible that it could fail, especially in the area where the natural dunes are the only protection or in the case of a further sea-level rise. Regular dike inspection reports published in the local press have a reassuring effect on several of the participants.

When asked about the valuation of the safety in respect to the sea-level rise, one re-

spondent said, she does not worry that the dikes could breach and she knows that from the calculations up to date the dikes are high enough. But in another context, while she talks about how she feels during winter storms when the water fills the foreland she mentions that "then I think, 'this' could definitely happen to me". Then, in a third context, she talks about the natural sand dune protection, which "are beautiful, but not safe" and are quite threatening regarding storm-surges. One respondent thinks that some day he will "have his feet under water", because he knows that the next storm-surge will certainly come and he is aware that his house could be in the way of the water flow. Another participant meant with "this impressive high asphalt dike" there surely is no threat. Some of the interview partners have said that any normal storm-surge is held by the dike as it is, but in the case of a very extreme event or a tsunami it will not hold, "but none would then".

The personal risk is rated lower compared to others by several respondents. This applies either within the community, because they live on higher ground, in the second floor, or not close to the natural sand dune protection or in comparison to other communities, because of the special location of the Eiderstedt peninsula.

Storm-surge risk is just one of the factors in life when living on the coast, one participant compares it to the risk of avalanches in the mountains. He also meant that he would never live on a main street in a city and other people do, there are advantages and disadvantages where ever you live. This opinion is shared by another participant who said that the risk is a disadvantage, but they live where other people go on holidays. Another interview partner mentioned that he personally would not want to have higher dikes because this would obstruct the view to the beach from his bedroom window. Several people told that they have to live with the risk if they do not want to move inland, and the topic has always been with the coastal dwellers. One participant explained that his ancestors have live in the region for 600 years and they could not have lived there if they would not have dealt with the risk.

5.1.3 Subconsciousness and Self-reflection in Risk Awareness

Several respondents have mentioned in some way that the persistent threat is somewhere in their subconsciousness, but they only become aware of the risk in special situations. For example, one respondent said that it is somewhere in the back of her mind, but when she

walks her dogs along the dike during winter storms she awakes up to the fact how close she lives to the sea and its threat. Another respondent admits that he possibly buries his head in the sand to not hear or see anything about the possible risks.

"If you think about it too much you become scared" is the justification for one respondent not to think about any precautionary measures. She added that she just hopes that she does not have to experience a disaster. A further participant said that he does not need Noah's ark, but later mentioned that he "wouldn't want to die in a flood, that I admit".

One respondent relativised his prior statements with the comment that he cannot imagine a severe storm-surge at the moment, because the last one was 31 years ago, and if another disastrous event would happen, he would probably speak differently. Another participant felt that nowadays we are all acting big and arrogant, thinking that nothing could happen to us. One respondent said that everything can happen, but that does not mean she has to think about it, "if it happens than it happens".

One interview partner was reflecting upon the fact that insurances do not insure coastal dwellers, because this would mean they think that storm-surge is a high risk, which is in contrast to what the dwellers, including himself, think.

5.1.4 Assessment of a Disaster Situation and Preparedness

For some participants the only alternative in a storm-surge disaster situation is seen in an escape. This includes the believe that no preparations are needed but having a car to flee with. This is basically shared by others that said that there is nothing you can do but go into the second floor and wait, two of them were aware that they should open windows and doors downstairs to lower the pressure of the water masses on the house. The risk is treated lightly by some respondents, there seems to be no awareness towards aftermaths and the situation (e.g. winter time). As an examples one interviewee said "you go upstairs... open the windows and doors downstairs, and that's the end of it". In response to the aftermath one respondent meant that in the case of a disaster the willingness to donate will be high enough in Germany that he does not need to prepare for the unlikely event.

Several respondents mentioned that it would be useful to always have a small case with all important documents prepared for an evacuation situation, but only one stated to have

such a thing basically prepared. Some had heard that neighbours or friends have or had a document case or that it was common to have one in former times. Two of the interview partners have their important documents in a bank safe. The respondent who does have a document case prepared also reckons that "everybody has such a small case, that's how I know it".

One participant told that he had thought about improvements against flood in the house, but this would be too expensive. He is aware that the house was build with weak materials in the fifties, which might not withstand a flood flow. Another one said that his preparations are only theoretically at the moment. He was thinking about what he could do if the dikes would breach, but this would be nothing due at the moment.

By most interview partners it is expected that prior to a dike failure the responsible authorities would disseminate warnings to everybody, probably by driving around the town with load speakers. Neighbourly help is assumed to work with no doubt in the community by several participants, all of which live in St.Peter-Ording for a long time. One respondent criticised that the stationary sirens formerly used in the community in critical situations had been abandoned. The attitude that they will get told what to do seems to be common with newer members of the community. One respondent said that she has been told that in the case of emergency it is well organised that everybody gets told what to do. Another respondent is sure that the situation will be very different in the matter of information compared to severe storm-surges like in 1962, because everybody will be informed and everybody has got a radio today.

Several respondents doubt the possibility to evacuate St.Peter-Ording. It is expected that either the land will be flooded from the low lying hinterland or the limited evacuation routes would be heavily cramped. One respondent said he didn't want to be caught in the massive traffic jam he would expect and would prefer to stay in his house. Another one had read about a evacuation scenario on the Eiderstedt peninsula, where they found out that it is not possible to evacuate the population within two hours and they would all be drowned.

One interview partner described her imagination of a disaster situation as similar to a movie she had recently on seen on TV and did give her a "real case of nerves". It is high season and even though scientists had warned that a disaster could happen the people in

charge would only react when it is too late because they don't want to frighten the tourists. She thinks that this scenario is very close to reality because the town heavily depends on tourism and no one would say that everybody has to leave until it is not definitely, which could be too late.

5.1.5 Reactions after Storm-surge Warning

The reaction after a storm-surge warning has great discrepancies between the participants. This is mainly based on the reaction after the storm-surge warning for the storm "Kyrill". All participants did remember the storm, almost all had heard from it through the media, one knew it before by personal investigation on the weather progression. The majority remembered that a storm-surge warning was released. Of those who remembered the warning most also remembered what its content was.

While several respondents told about their preparations and were sure that everybody in the community was well prepared as well, others didn't react at all or didn't know how to react. The two most diverging statements were one participant who worked for about two hours to secure everything in and around his and his neighbours and families houses and another participant who stated that he is absolutely safe behind the dike and does not need to do anything. The former was born in St.Peter-Ording, the latter only lives there for a few years. Many respondents had strapped things in their gardens to secure them against storm or closed the shutters.

Communication within the community was vivid before and after the storm. After they had heard about the warning many had talked to their family and neighbours about it. One respondent told that his neighbours always come to see him when a warning is released to ask him what they should do, because he is a native. In this example he told them to wait and see. After the storm people talk among each other about what has happened where. One participant told that storm-surge warnings always start off the telling of old stories of severe storm-surge events in the past, especially within the elderly community. Some participants have not talked to anyone about it at all.

5.1.6 Climate change and its Local Impact

Regarding climate change publicity, several interview partners admitted that they sometimes look differently or more exactly at weather phenomena than in the past and are concerned if then a storm is staying longer than normally, for example. One participant is concerned about the more localised disasters in the region like tornados, which he believes had not happened before and he thinks this might be a phenomenon where people need to adapt. Another participant thinks that it is not true that every abnormal weather period is as abnormal as people think, because most had happened before at some time in the past. One respondent denies the human impact on climate change and thinks that it only is a great topic at the moment because many people can make a lot of money with it. He had seen a documentary on lies about climate change on TV a few days before [1].

Globally most respondents believe that something is happening, but "this is not only a topic for the coast, this belongs everywhere". And this is especially a topic when they think about the following generations. Three respondents pointed out their personal energy-saving lifestyle, but one of them said that she is in a quandary because it is not possible to be without a car where she lives.

Regarding the local impact if the sea-level rises fast in the near future some participants think about the possibility to "live like the Dutch" with dikes five metres higher than today and some are worried that the dikes will not be enhanced high enough in time. One participant said that since it is not a process of one or two years, she hopes it does not affect her anymore. Others worry about the future for their community in regard of the tourism sector, if the whole beach would be flooded with every high tide "this would be the end for St.Peter". However, another one described the amenities of the change to a more mediterranean climate in the North Sea region.

5.1.7 Information

Regarding storm-surge information for locals several respondents think that information events like presentations are not the right way, because almost no one would go there. None

[1] A few days before the interview a German channel broadcasted the documentary "The Great Global Warming Swindle" by M. Durkin, it is possible that the participant has seen this.

of them would go. The topic seems to be too obvious. Posters or leaflets are also seen as a medium which will not be noticed by most. Two respondents raise the problem of information overload in our society and that "you want to have some peace sometime". The internet is seen as an appropriate medium for information dissemination nowadays, because it is the medium of the youth and they are the ones that need to be informed the most. Two participant suggests that storm-surge projects could be started at high school using the internet as a medium, and also the eduction in the kindergarten and primary school could involve this topic. However, a third one thinks that "you can't put everything into school". Another participants believes that a local journal would also be a good medium because "everybody reads it". A similar suggestion by a participant is the radio as the best medium because "everybody listens to it", and at least himself would listen closer if they would talk about storm-surges in the North Sea. One interviewee is sure that the most important tool in information dissemination is definitely the communication within the community.

Most interview partners think that it is in their own responsibility and interest to inform themselves, and no one can do this for them. "I'm well informed, because I inform myself" is the attitude of one participant. He is convinced that the majority of the inhabitants are aware of where they live and it is never possible to get everybody informed anyway. One respondent admitted that she does not want to be informed at all.

One respondent feels adequately informed about storm surges with the exception of information about the emergency management. He is bothered by the fact that the new program they did make after the management had failed during the 1962 storm-surge is "again resting in a drawer" and nothing seems to happen there. He would want to be more involved in the disaster management process and is astonished that people in the community are not asked to be more involved.

5.1.8 Authorities

The trust and mistrust in authorities, like government agencies and the emergency management, varies significantly. Several participants feel confident in the success of supply of emergency services if a disaster would happen. Also the regular dike inspections are eminently respected and the dike calculations are trusted.

On the other hand, participants are worried that things like dike enhancements are listed to be done but await their realisation for many years. This is seen to be a problem of political handling of financial resources. One participants recalls the time when the dike was in a worse state and the money allocated for the improvements by the federal government household went back for years because the federal state could not pay its required proportion. Another respondent concluded that not enough will be done until the next disaster with thousands of drowned will happen, "that's the game".

Two interview partners oppose the safety of the dikes and dunes to the interests of the tourism sector. As described in Section 5.1.4, one respondent does mistrust the authorities in giving warning in sufficient time, because the interests lie primary in the money of the tourists. It is also disquieting for some participants that the dike is lower than required at some parts with the justification to give tourists a better view.

Also the weather forecast, which seems to be very inaccurate for the region, is seen as a problem in the case of a severe event. It is agreed by several respondents that the meteorological offices often give out completely wrong estimations, and the storm "Kyrill" was just a prominent example. One participant said that he would not describe it as mistrust, but "there is the one thing that I hear and the other that I observe".

5.2 Results of the Questionnaire

A further analysis of this data is not planned and beyond the scope of this study. The aim of the application of the questionnaire was solely to have a tool for validation of the interview data and to be able to connect the interview data better to the COMRISK study.

The results of the questionnaire are represented in Table 5.1 and directly compared to the results from the COMRISK study. Apart from yes and no (y, n) the following abbreviations have been used in the table: l (low), h (high), h&h (half-and-half). An abbreviated version of the questions is included in the table, for the full questions see Appendix B.

Most of the answers are in good consistence with the results of the COMRISK study. Only questions R8a and R10a have an oppositional return. While the majority of the respondents in COMRISK say that they do not know what to do in the case of a dike failure and where to

No	Question	COMRISK	This Study
R1	Storm-surge experience	y (73%)	y (85%)
R2	Dike failure experience	n (69%)	n (100%)
R3	Disaster knowledge	-	y (100%)
R4	Probability of dike failure	l	l
R5	Inundation probability of house	y (77%)	y (85%)
R6a	Personal measures	n (89%)	n (85%)
R7a	Trust in safety arrangements	h&h	h&h
R8a	Know what to in case of dike failure	n (65%)	y (85%)
R9	Feel informed well	l	l
R10a	Know where to get information	n (60%)	y (85%)
R11	Personal threat through climate change	h&h	l
R12	Influence on local area	h&h	l

Table 5.1
Results of the questionnaire in the COMRISK study and in this study. For explanations of abbreviations see Section 5.2

get information, the vast majority of the returned questionnaires of the interviewees state that they would know what to do. None of the participants in this study had been participating in the COMRISK study in 2002.

5.3 Limitations of the Data

One of the limitations of an open interview style is that it is not always possible to get a clear, or even any, answer to every question that was supposed to be answered by the study. This means that for some questions the response rate is less than 12, which is less problematic in the sense that no statistical analysis is performed at all.

When analysing the interview contents, it has to be taken into account that answers often over- or underemphasize their real meaning (Black, 2002). People do not answer questions honestly for many reasons, they may perceive the instrument as a threat or do want to be overly helpful and strongly exaggerate (Black, 2002). This was tried to take into consideration so that parts of the interviews that were not clear how they were meant are not used. Also the advantage that the interviewer and interpreter is identical helps to evaluate the validity of each participants answers.

In an interview study an enormous amount of data is collected and it is not possible to use everything in the texts. Any technique of an analysis of interview data is a reduction

and interpretation, never a reproduction of the completeness (Kaufmann, 1999). Much of the data gets abandoned or less attention, undoubtedly the selection often lies in the research question, interest or background knowledge of the researcher (Arksey and Knight, 1999).

This study is multi-lingual, which has some important implications. The interviews have been conducted in German and the final output is in English, thus somewhere in between there is a translation issue. A wise comment by Overing (1987, p.83) says that "by giving a name to something we create a world, by changing the name for something, we transform its impact, both emotionally and intellectually". Thus translation is a delicate issue, because there will never be a 'correct' translation of any text (Temple, 2005). As Simon (1996) understands it, the best translation is not found in the dictionary, but in the understanding of the social context. The knowledge of the local culture by the researcher is very important for this understanding (Birbili, 2000). Problems with translation especially arise when words are concepts in different languages (like "family") or carry different emotional associations (Temple, 1997). An advantage in this study is that the researcher is fluent in both languages and the language of the people researched is their first language. Irrespective of the translation issue analysis of data in social sciences is always a reconstruction of experiences of others in own terms (Temple, 1997).

Here the approach is used that the content is left most truthful if the whole data processing is done in German and only the outcome, namely the interpretations of the truth which is in any case an interpretation of the original transcription regardless of the language, is done in English. Only some quotes of the participants have been translated in order to given them a voice to the reader. One interview has been translated completely for demonstration purposes and can be found in Appendix C. Admittedly, it was one of the easier ones to translate, because the participant spoke in a very clear manner, sometimes almost like written language, in comparison with other interviews.

The order that the interview was conducted before the questionnaire was filled out by the participants is possibly influencing the results of the questionnaire. But since the focus is explicitly on the interview study, the intention was that people are open minded in the interview and it would have influenced the interview results if the participants had thought about the topic before.

CHAPTER 6

DISCUSSION

In this chapter the results are discussed. The interpretations are put into the context of the research question and the secondary data. Then the data quality is addressed and further thoughts are mentioned.

6.1 Discussion of the Results

In the majority of the interviews the answers of the participants go into great detail. This means that rarely any answer is just a 'yes' or 'no', but usually exists of a 'yes (or no), because'. Many are of the type 'yes (or no), but'. Both thus include a statement why the answer is yes or no or ambiguous. This supports the presumption that qualitative interviews are important if the whole picture of risk perception is the aim of the research. Because the explanation why the answer was 'yes' or 'no' is not captured in a questionnaire survey. A lot of information is gained about the perception, knowledge, experiences and feelings about storm-surges and their risk with qualitative interviews. It is difficult to make causal relationships between variables in qualitative data because of the limited number of participants (Sarantakos, 1998), thus propositions about them in the following discussion will not be more than speculations.

Storm-surges are not an everyday issue for the people in St.Peter-Ording. The interview partners thus talk about a topic that is nothing they think and talk about in daily life. It is possible that they create their own reality concerning their attitude just in the moment of the interview (Kaufmann, 1999). This can mean that the person does not have a solid viewpoint towards some of the questions. In some situations this did result in contradicting statements in the course of the conversation.

However, storm-surges and their threat are not an issue where people in St.Peter-Ording have never thought of before. Medium and strong storm-surges are very common in the region during winter time. And the threat of flooding is present, even though the dike is perceived to provide high safety. As described in Chapter 2.2.1 the fear from the sea is deeply anchored in the mentality of the people, which at least applies to those who were born there or have lived in the area for a long time. It is possible that the statements would have been different if the study would have taken place in early spring just after the storm and storm-surge period instead of in the summer. It would have been a topic closer to the perceived reality than during summer time.

A direct combination of qualitative and quantitative results is never possible (Flick, 2004), but a comparison of the results will be done and possible contrasts or correlations will be discussed.

One of the results in the COMRISK study was that risk perception is strongly influenced by personal storm-surge experience. The outcome of the interviews is that most of the participants are well aware of the possible risks, two of them have experienced major storm-surges in the last decades. Three participants rule out the possibility of a dike failure and also two of them have experienced major storm-surges. Thus for the participants of the interview study the relation between risk perception and personal experience is not present. Knowledge about storm-surges seems to be influenced by personal experience, which in turn is often equivalent to the length of time that people live in the area. People do not necessarily learn from experience, getting off lightly from a perilous situation might even reduce the risk awareness (Karger, 1996).

The people in St.Peter-Ording are fully aware of the importance of the dikes without which they could not live in the area. There is a strong confidence in the dikes and that they will withstand future storm-surge events for many more years. One of the reasons why the participants trust in the dikes is that they read dike reports of the yearly dike inspection in the local newspaper, which give the impression that there is no reason to worry as long as the inspections are carried out. This implies the full confidence to the dike and coastal defence authorities. This has also been found by Peters and Heinrichs (2005) in their quantitative study in the North Sea region.

As a participant noted, this trust in the defences only evolved since the dikes are build much better, which really is only since the improvements after the 1962 disaster. For centuries people could only rely on themselves in disaster situations. This change can be seen as part of the believe in a technological world. The people of St.Peter-Ording have not build the new dikes by themselves anymore and this might be the reason why they also do not feel directly responsible for them anymore. Rieken (2005) notes that people should not be too self-assure on the basis of great civilizing deeds, because the security that the technological world is putting across is its biggest weakness. The language used about dikes and their security level is very technical and abstract, for example the possibility of a dike failure is given in probabilities per thousand years. This could mean that the general public cannot do anything with this technical figures and thus they have to rely on what the authorities tell them. This is supported by the reasoning in Chapter 4.4 that questions about storm-surges are perceived as technical. Thus the remaining risk is not socially accepted but politically, because the general public cannot judge these figures.

It should be one of the concerns of the political authorities to give out information in a language people understand and to delegate more responsibility back to the people. One respondent was surprised that he is owning a piece of land on the coast but is not responsible for the dikes or has any other responsibilities regarding the coastal risk management. It should be explained to the people that they are a part of the risk management scheme and need to take self responsibility, which includes knowledge and preparedness. The important but difficult task is to raise awareness without creating fear. Some research findings have linked high risk awareness to negative emotional and health factors, which should be avoided (Hellesoy et al., 1998). It became clear that the threat of storm-surges is ever in the minds of the people living on the coast, for many it is only in the subconsciousness. The denial of risk in the conscious mind can be seen as a strategy to avoid emotional stress. Some participants have admitted that they do not want to think about the risk in too much detail, because it would create fears.

Global climate change is an up to date topic. People have mixed feelings about the increase in personal risk by the climate change in both the COMRISK and the interview study. Also the assessment of an increase in the storm-surge frequency and severity is rated high by the majority in both studies.

The media presentation of disasters and risk seems to have an important influence on the understanding of risk of the participants. This does not only include the reports of the dike inspections in the local newspaper, but also films about flood disasters or reportages about climate change on TV. Media forms opinions and is one of the sources of information for the people, also about the risk of storm-surges (Peters and Heinrichs, 2005). Media can also create fears and exaggerate risks. The storm "Kyrill" is a prominent example of the exaggeration of an event through the media. One participant is remembering a movie she had seen about a disastrous storm-surge in Northern Germany that scared her and that she associated with her private risk situation. Private and sometimes also public media is often perceived as lurid and thus the faith in information is often marginal. Still the local media reporting about the condition of the dikes is trusted. By all means, the media plays an important role in the distribution of information, it should therefore be used by the disaster management authorities to publish objective and understandable information about the risk of storm-surges. This especially applies to the local media. As one participant noted, dramatic representation of natural risks are great in movies, but an advanced neutral representation of the specific risk in a region is essential.

The second conclusion of the COMRISK study was that there is no correlation between risk awareness and the degree of preparedness. The same was found by Siegrist and Gutscher (2006) in their study about flood risk in Switzerland. Here, the results of the interviews support this conclusion. There is very little preparedness overall. The general attitude is that nothing can be done to prepare against a flooding apart from going into the second floor or evacuate the area. Two respondents have their documents in a bank safe, which is a good preparation to reduce costs and hassle after a possible disaster.

An unrealistic optimism as described by Weinstein (1984) is also found for the interview partners. They rate their personal risk lower compared to others within the community as well as compared to other communities at risk from storm-surges on the North Sea. The fact described by Karger (1996) that people tend to downplay the risk can also be seen in the interview study. If the risk of a dike failure is admitted, its impact is played down and treated lightly. The trust in the emergency services in the case of a disaster is very high. As described in the results, one respondents envisages a flooding as an easy thing, which only includes going into the second floor and wait. Here again sufficient information must give an

understanding of possible risks in a disaster situation and, based on the suggestion of Lindell and Whitney (2000), people must know that they possibly need to be self-sufficient for a few days.

The reaction on the storm-surge warning in January was low. One reason for this could be that people are used to warnings and do not take them serious anymore. One respondent explained that authorities warn too quick, because a non-severe storm-surge is nothing that the general public needs to be warned about. This could be better distinguished in the warning concept. Another possible explanation is that people expect that the dike is holding also during a severe storm-surge. This would mean that the enhancement of the dikes causes an amplification of trust in the dikes, which in turn causes the reduction of personal responsibility. None of these can be approved because it could well be that people would have reacted differently if the warning chain would have evolved differently during that day in the case that a real threat would have emerged. The interviews revealed that some were awaiting further warning steps before they would have reacted, which could also be an evidence for a well-founded knowledge about the height and risk of a strong storm-surge in comparison to a severe storm-surge.

There is also the possibility that people did not know how to react or did not know that there is a reason to react. One of the fundamental conclusions of the COMRISK study was that there is a large information deficit in the population. The majority of the people do not feel informed well and do not know where to get appropriate information from. In the interviews most participants stated that they feel informed well. And if they would not feel informed well it would be their own fault, because it is in their own responsibility to get the information they need. However, the interviewees equally stated that they do not feel informed well in the questionnaires. The reason for the discrepancy is unclear, one difference was that in the interview participants were asked if the feel appropriately informed about storm-surges and in the questionnaire question if they feel informed well by the appropriate authorities.

It is possible that bringing up the authorities in the question causes people to shift the responsibility away from themselves to the authorities. If they then think about what information the authorities have given, this is rated as insufficient. This again is supporting the

assumption that responsibility should be assigned more to the people once again, because giving people a feeling of security which comes completely from the authorities does reduce the personal responsibility. Another possibility is that the respondents did not want to admit their ignorance regarding information in front of the interviewer.

There was no consent about the best approach on how to disseminate the information required. Suggestions given by the participants include the local media, school projects or the internet. The advantages and disadvantages of media presentation are discussed earlier. School projects are probably a great tool to inform the future generation. The internet is an up-to date tool to publish detailed information directly from the disaster management authorities, but it remains unclear how people can be encouraged to inform themselves via the internet.

In connection with the exaggerated media presentation the communication in the community might have exceeded the normal way, but it seems that, especially in the old-established parts of the community, the informal communication is working very well. This is a good precondition for the case of a disaster, for example for the distribution of information. One participant is convinced that the information would work well via the radio in the case of a severe event because everybody does have a radio nowadays. This does not bear in mind that only radios run by battery will work in the case of a power outage, and those get more and more uncommon and are already categorised as emergency equipment. Thus the direct communication in the community is indispensable.

The income from the tourism sector is very important for a coastal community. The economy in St.Peter-Ording relies heavily on tourism (see Chapter 2.2.1). It thus is a political and societal decision to knowingly cut back on the security in the interest of the guests who want to look over the dike from their accommodation. Indeed the desire for a free view can be also demanded by the permanent residents who consider this as quality in life, how one participant stated and Renn and Zwick (1997) describe in their work. In the context of tourism and safety the political authorities are rather mistrusted. It is seen as possible that warnings would be given too late in the tourist season. Thus an influence of the economy on the risk management is perceived.

6.2 Data Quality and Validation

Criteria for judging data can be reliability and validity (Black, 2002). The principle method of enhancing validity and confidence of the results in this study is done with triangulation as described in Chapter 3. Further tools to enhance reliability in qualitative research include the quality refinement of the interview recording and documentation and by establishing strict transcription rules, which clearly clarify procedures of the interview transcriptions (Flick, 2002). Also the precedent test interview, as had be done in this study, adds to reliability of the research (Silverman, 1993).

Validity relies to a great extent on the skill of the interviewer and the length of the interview (Arksey and Knight, 1999). Interviewing techniques can enhance trust and openness of the interviewee to let them explain things how they see it. The questions asked fully covered the research issue and the sample size fitted its purpose. All these instruments assist in the improvement of validity, but there is no guarantee that validity is ensured when applying them like statistics in a quantitative study (Cho and Trent, 2006).

As Onwuegbuzie and Leech (2007) describe, the risk to degrade validity comes in at all stages of the research process, from the design and data collection to the analysis and interpretation. They present an extensive list of possible threats to validity in qualitative research, which should help to improve the research and not discourage the researcher in the possibility of validating their findings. They illustrate that "a real social world [] can have real consequences in people's lives; [] there is a reasonable view of 'what happened' in any particular situation (e.g., including what was believed, interpreted); and that we who render accounts of it can do so well or poorly, and should not consider our work unjudgable" (p.246).

6.3 Further Considerations

The most essential ethical considerations include the importance of protecting the trust of the interviewees (Flick, 2002). The participants and their statements are handled completely confident in this report. Only some demographic data that was collected from the participants is presented. Any further description, like the exact place of the interview or the occupation, would negate the confidentiality since it could be possible in a small community

like St.Peter-Ording that individuals could then be identified. The respondents all agreed with the interview being tape recorded.

Generally, the social impact of a single interview research study is seen to be very minimal (Wiles et al., 2006). This is also expected for this study. It could indeed be that some of the interviewees will further reflect their attitudes about flood risk or talk about the interview and its topic in their families. Also, it is not impossible that a few participants were distressed after talking about personal storm-surge experiences.

CHAPTER 7

CONCLUSIONS

7.1 Conclusions of this Study

This study is contributing to the knowledge base about the perception of risk. The qualitative study has turned out to be a very useful tool in addition to a quantitative survey on the same topic. It significantly assists in the interpretation of the results.

A number of points to think about for the improvement of an integrated risk management were discussed in this study. The pattern how risk perception is created and information is disseminated is understood as an intricately complex of society, political and technical authorities and the media. The main conclusions that arise from the discussion are:

- Risk perception does not correlate with personal preparedness.
- There is a great trust in the coastal defence authorities. The personal responsibility in the disaster mitigation process is not clear for the majority of the participants.
- Local media reports about the dike inspections reassure the people of the safety of the dikes. This might decrease the acceptance for the need of preparations.
- The threat through storm-surges is seen by the people to be one of the factors they have to live with. Some perceive the risk very aware, the majority is pushing the thoughts about risk away, which might be a strategy to avoid emotional stress.
- Two concepts of responsibility for the dissemination of information are found. The individual as well as the authorities are seen to be responsible. The best tools to disseminate information need to be further studied.

7.2 Outlook

A recommendation for an improvement in the disaster management schemes is that higher awareness should be raised with adequate information, but it should be avoided to create fear. It is important to improve the personal responsibility by clarifying the importance of personal responsibility and preparedness in the coastal protection scheme.

Some of the points raised in this study will be introduced to disaster management officials in autumn this year, thus the results might eventually be used for the enhancement of the risk management plans of the state Schleswig-Holstein.

APPENDIX A

INTERVIEW QUESTIONS

A.1 Interview Questions in German

1. Seit wann leben Sie in St.Peter-Ording?

2. Haben Sie jemals eine Sturmflut erlebt? Wann war das? Was ist damals passiert?

3. In der Vergangenheit hat es in der Nordseeregion Überflutungen durch Sturmfluten gegeben und auch St.Peter-Ording ist ein überflutungsgefährdetes Gebiet. Wie bewusst sind Sie sich, dass die Möglichkeit einer Überflutung besteht?

4. Machen Sie sich Sorgen darüber, dass eine Sturmflut St.Peter-Ording bedrohen könnte?

5. Haben Sie derzeit irgendwelche Vorkehrungen in ihrem Haus gegen Überflutung vorgenommen? Oder haben Sie sich darüber schon einmal Gedanken gemacht?

6. Können Sie sich an den Sturm "Kyrill" im Januar erinnern?

7. Wie haben Sie zuerst davon erfahren?

8. Wurde damals eine Sturmflutwarnung herausgegeben wurde? Wie haben Sie davon erfahren?

9. Erinnern Sie sich, was die Warnung beinhaltet hatte? War die Warnung für Sie vollständig verständlich und wurden Ihnen die daraus möglichen persönlichen Auswirkungen klar vermittelt?

10. Haben Sie das Gefühl, durch die Sturmflutwarnung gut informiert worden zu sein?

11. Wie haben Sie reagiert? Haben Sie mit Verwandten oder Nachbarn über die Warnung gesprochen und wie man darauf reagieren sollte? Haben sie irgendwelche Vorkehrungen getroffen?

12. In letzter Zeit wird in den Medien häufig über den Klimawandel berichtet. Hat dies Ihre Einstellung beeinflusst in einem Überflutungsgebiet zu leben?

13. Machen Sie sich Sorgen, dass Sturmfluten in Zukunft häufiger und stärker werden könnten?

14. Machen Sie sich Sorgen, dass die Deiche dem erhöhten Risiko nicht ausreichend standhalten könnten? Was denken Sie, wie man die Schutzwirkung erhöhen könnte?

15. Wer ist Ihrer Meinung nach für die Finanzierung dieser Schutzeinrichtungen zuständig?

16. Fühlen Sie sich ausreichend informiert hinsichtlich der Sturmflutgefahren in St.Peter-Ording?

17. Wie würden Sie gerne informiert werden? Haben Sie Ideen, wie man dieses Thema anschaulich für die Gemeinde umsetzen könnte?

18. Haben Sie noch weitere Kommentare zum Thema Sturmflut in St.Peter-Ording?

ALLGEMEINES

Diese folgenden Fragen dienen nur der statistischen Auswertung und werden absolut vertraulich behandelt.

Teilnehmer: Geschlecht w ☐ m ☐

Zu welcher der folgenden Altersgruppen gehren Sie?

- ☐ unter 18
- ☐ 18-34
- ☐ 35-50
- ☐ 50-67
- ☐ 67+

Wie viele Mitglieder der folgenden Gruppen leben in Ihren Haushalt?

- ☐ Kinder bis 10
- ☐ Kinder 11-17
- ☐ Erwachsene ber 65

☐ weitere Erwachsene

Würden Sie mir sagen, zu welcher Gruppe sie zählen?

☐ in Ausbildung

☐ Arbeitnehmer

☐ Selbstständige

☐ Beamte

☐ Teilzeitbeschäftigte

☐ in Rente

Welcher der folgenden Buchstaben stellt das jährliche Bruttoeinkommen in Ihrem Haushalt dar?

☐ A) unter 10,000

☐ B) 10,000-25,000

☐ C) 25,000-40,000

☐ D) 40,000-55,000

☐ E) 55,000 und mehr

☐ F) weiss nicht

A.2 Translation of Questions into English

1. How long have you lived in St.Peter-Ording?

2. Have you ever experienced a storm-surge? When was that? What has happened at that time?

3. Flooding due to storm-surges has happened in the past in the North Sea region and St.Peter-Ording is a designated flood-prone area. How aware are you that there is the possibility of flooding?

4. Are you worried about the possibility of a storm-surge affecting St.Peter-Ording?

5. Have you generally taken any precautions against flooding in your house? Or have you ever thought about it?

6. Do you remember the storm "Kyrill" this January?

7. How did you hear about it first?

8. Do you remember if a storm-surge warning had been released at that time? Where did you hear about this?

9. Do you remember what the warning included? Did you understand the warning and its implications for you personally?

10. Do you have the feeling to be informed well through storm-surge warnings?

11. How did you react? Did you talk to relatives or neighbours about the warning and how to react? Did you take any measures?

12. Regarding the recently frequent news about climate change, do you think differently now about the situation of living in a flood-prone area?

13. Are you worried that storm-surges will be more frequent and more severe in the future?

14. Are you worried that the flood protection is not sufficient for the increasing risk? How could the protection be improved in you view?

15. Who, in your opinion, should be paying for the protective measures?

16. Do you feel informed sufficiently regarding storm-surge risk in St.Peter-Ording?

17. How would you like to be informed? Do you have any ideas how the topic could be implemented creatively in the community?

18. Do you have any other comments on the risk of storm-surge in St. Peter-Ording?

GENERAL

These questions are for statistical use only and will be kept with confidence.

Participant: Sex f ☐ m ☐

To which of the following age groups do you belong?

☐ under 18

- [ ] 18-34
- [ ] 35-50
- [ ] 50-67
- [ ] 67+

How many people are there in your household in each of the following groups?

- [ ] children under 10
- [ ] children 11-17
- [ ] adults over 65
- [ ] other adults

Would you tell me to which of the following groups you belong?

- [ ] student
- [ ] employed
- [ ] self-employed
- [ ] civil servant
- [ ] part-time employed
- [ ] retired

Which of the letters on this card represents the gross annual income, from all sources, of your household?

- [ ] A) below 10,000
- [ ] B) 10,000-25,000
- [ ] C) 25,000-40,000
- [ ] D) 40,000-55,000
- [ ] E) 55,000 and more
- [ ] F) don't know

APPENDIX B

QUESTIONNAIRE WITH TRANSLATIONS

Fragebogen für eine Bestandsaufnahme zum Thema:

"WAHRNEHMUNG UND BETEILIGUNG IM KÜSTENSCHUTZ"

Survey for an appraisal to the topic:

"Perception and participation in the coastal defence"

Vorbemerkung

Die Umfrage wird durch das Geographische Institut der Universität Kiel (Projektleiter Prof. Dr. Horst Sterr und Dr. Gunilla Kaiser) im Auftrag des Innenministeriums des Landes Schleswig-Holstein durchgeführt. Es handelt sich um eine anonyme Befragung. Die befragten Haushalte wurden nach dem Zufallsprinzip ausgewählt.

Wir möchten Sie bitten, die ausgefüllten Bögen im beigefügten, für Sie portofreien Antwortumschlag, an folgende Adresse zu senden: Dr. Gunilla Kaiser, Geographisches Institut der Universität Kiel, Ludewig-Meyn Str. 14, D 24118 Kiel, Deutschland.

Preliminary remark

This survey is carried out by the Geographical Institute of the University of Kiel (project leader Prof.Dr. Horst Sterr and Dr. Gunilla Kaiser) on behalf of the Ministry of Interior of the State of Schleswig-Holstein. The survey is anonymous. The surveyed households were selected randomly.

May we ask you to send the completed sheets in the enclosed envelope (postage-free) to the following address: Dr. Gunilla Kaiser, Geographisches Institut der Universität Kiel, Ludewig-Meyn Str. 14, D 24118 Kiel, Deutschland.

Fragebogen Teil I - Risikowahrnehmung *Questionnaire Part I - Risk perception*

Bitte füllen Sie diesen Fragebogen aus und markieren Sie die gewählten Antworten mit nur einem Kreuz, wo dies erforderlich ist.

Please fill in this questionnaire and mark your chosen answers with one tick only where required.

R 1) Haben Sie jemals eine Sturmflut miterlebt?

Have you ever experienced a storm-surge?

ja(*yes*) ☐ nein(*no*) ☐

R 2) Haben Sie jemals einen Deichbruch miterlebt?

Have you ever experienced a dike failure?

ja ☐ nein ☐

R 3) Wissen Sie, in welchem Jahr es in St. Peter-Ording in der Vergangenheit eine Sturmflutkatastrophe gab?

Do you know in which year St.Peter-Ording had a storm-surge disaster?

ja ☐ nein ☐

(im Jahr (*in the year)*)

R 4) Wie hoch schätzen Sie die Wahrscheinlichkeit eines Deichbruches in St. Peter-Ording ein?

How high would you rate the probability of a dike failure in St.Peter-Ording?

(hoch (*high*)) ++ ☐ + ☐ − ☐ −− ☐ (niedrig (*low*))

R 5) Kann das Haus, in dem Sie wohnen, bei einem Deichbruch vom Wasser erreicht werden?

Is the house in which you live within reach of inundation in the case of a dike failure?

ja ☐ nein ☐

R 6a) Haben Sie persönlich Massnahmen getroffen, um sich generell auf eine Sturmflut vorzubereiten?

Did you take personal measures to be generally prepared for a storm-surge?

ja ☐ nein ☐

R 6b) Wenn Sie die vorherige Frage (R 6a) mit ja beantwortet haben, welche Massnahmen sind dies?

If you have answered the previous question (R 6a) with yes, which measures are these?

R 7a) Gibt es Ihrer Meinung nach in St.Peter-Ording ausreichend Sicherheitsvorkehrungen gegen Sturmfluten (z.B. Katastrophenschutzmassnahmen, öffentliche Warnungen)?

According to your opinion, does St.Peter-Ording have sufficient safety arrangements for storm-surges? (e.g. disaster management arrangements, public warnings)?

ja ☐ nein ☐

R 7b) Wenn Sie die vorherige Frage (R 7a) mit nein beantwortet haben, wie könnte man Ihrer Meinung nach die Sicherheit für den Fall einer Sturmflut erhöhen?

If you have answered the previous question (R 7a) with no, how could the safety in case of a storm-surge be enhanced according to your opinion?

R 8a) Wissen Sie, was im Falle eines Deichbruchs zu tun ist?

Do you know what to do in case of a dike failure?

ja ☐ nein ☐

R 8b) Wenn Sie die vorherige Frage (R 8a) mit ja beantwortet haben, was genau können Sie im Fall eines Deichbruchs tun, um sich selbst zu schützen?

If you have answered the previous question (R 8a) with yes, what exactly could you do in case of a dike failure to protect yourself?

R 9) Wie gut fühlen Sie sich über das grundsätzliche Risiko einer Sturmflut von den zuständigen Behörden informiert?

How well do you feel informed by the appropriate authorities about the risk of storm-surges in principle?

(hoch (*high*)) ++ ☐ + ☐ − ☐ −− ☐ (niedrig (*low*))

R 10a) Wissen Sie, wie Sie an Informationen über Vorsorgemanahmen zu Ihrem persönlichen Schutz vor Sturmfluten kommen?

Do you know how to get information about precaution measures for your personal protection against

storm-surges?

ja ☐ nein ☐

R 10b) Wenn Sie die vorherige Frage (R 10a) mit ja beantwortet haben: Woher beziehen Sie Informationen?

If you have answered the previous question (R 10a) with yes: Where do you get information from?

Bitte machen sie höchstens drei Kreuze: (*Please tick only three*)

- ☐ Behörden (*authorities*)
- ☐ Nachbarn/Freunde (*neighbours/friends*)
- ☐ Internet
- ☐ Presse (*press*)
- ☐ Radio / TV
- ☐ Feuerwehr/Katastrophenschutz (*fire brigade/ disaster management agencies*)
- ☐ Andere Informationsquellen (*Other source of information*)

R 11) Fühlen Sie sich persönlich durch einen - aufgrund von Klimaveränderungen hervorgerufenen - Meeresspiegelanstieg gefährdet?

Do you feel personally threatened due to a sea level rise caused by climate change?

(hoch (*high*)) ++ ☐ + ☐ − ☐ −− ☐ (niedrig (*low*))

R 12) Wie hoch schätzen Sie den Einfluss eines ansteigenden Meeresspiegels auf die Sturmflutgefahr in St. Peter-Ording ein?

How high would you rate the influence of a rising sea level on the storm-surge risk in St.Peter-Ording?

(hoch (*high*)) ++ ☐ + ☐ − ☐ −− ☐ (niedrig (*low*))

Allgemeine Daten

General data

D 1) Wie lange leben Sie schon in St.Peter-Ording? (*How long have you lived in St.Peter-Ording?*)

Jahre (*years*)

D 2) Bitte geben Sie Ihr Alter an: (*Please state your age group:*)

unter 30 Jahre

30 to 60

über 60 Jahre

D 3) Bitte kreuzen sie an : (*Please tick:*)

weiblich (*female*) ☐ männlich (*male*) ☐

APPENDIX C

EXAMPLE INTERVIEW

C.1 An Example Interview Translated into English

Time 18.6.2007, approx. 12:10 until 12:30

Place Back room of a store in Dorf, at the table

SH: How long have you lived in St.Peter-Ording?

TG: Me, 44 years [SH: mhm].

SH: Have you ever experienced a storm surge?

TG: Yes.

SH: When was that?

TG: 76 very aware and 81.

SH: What has happened at that time?

TG: My father was a messager in 76, we had a shop and sold (ehm, phh) household supplies but also hardware, and we had to go to the dike, to Böhl, to bring shovels there [SH: mhm]. (ehm) Near the present, there behind the golf course in that area, and (eh) there was, the water was already indefinitely high, almost run up the dike, the first waves almost overrun it and at the bottom of the dike there had been rabbit dens und the water spurted out there already [SH: ah]. This was dramatic, this really was a lasting memory. And then we drove there quite close, of course no one else was allowed there anymore but us, because we had to bring the shovels, and (eh) went almost up there then and I was about 13 [SH: mhm], yes, but still good memory. And suddenly the dike jumped several metres sideward and then I have [SH: ha? aha?], it really slipped [SH: mhm], yes, and afterwards I realised that it makes sense (eh), to run fast, thus we all rushed to the car, everybody left, the dike was then abandoned, but then, I don't know, civil defence or just the fire fighters, thus everybody rushed away, then (eh), to (eh) flee and, it was (that was) mind-blowing. This was absolutely mind-blowing, thus very aware a storm-surge [SH: mhm], we only just took two photos, when the first crest burst went over top and stuff, what my father took a photo of, and also these (eh) mo-, these (these) rabbit dens

there, where the water, that was like out of a fire fighters hose, [UV] the water spurted 20 metres high [SH: mhm], it was mind-blowing, [UV] [SH: mhm]. There I made myself aware for the first time (eh) with 13, that the North Sea can go different (haha) then normally [SH: mhm]. Yes, storm-surge. The other storm-surge 81, was in my eyes not that dramatic, there I was, we had to sit a major exam at that moment (eh) and that was also very (very, very) delightful, because those that had come to school by car, those were allowed to go home and, even though I was from the there, that time [UV] I came to school by car, I can't remember why, I could go. That was great, it sucked, was biology, I wasn't keen on it. Thus on that one I have, it wasn't, in my eyes just not with the dramatic, the water wasn't that high (eh), [UV] you could see awesome things of course, how high it was, there was a lot of amber afterwards and all that was great, but 76 that really was boah! that is lasting, I do have a very (very) [SH: mhm] high sensibility factor [UV] coastal defence measures and so on.

SH: Is it true that parts of Bad had been under water?

TG: That was in 62 [SH: ah, that was 62]. 62 the Bad was flooded and I was born in 63, that I can't know [SH: ja], ey? In that one would need to ask an older, an elderly inhabitant of St.Peter.

SH: Yes, because someone has told me that and I have never heard of it before, that' why.

TG: Yes sure, the Bad didn't have a dike [SH: mhm, yes], the Bad only had dunes in front, and those disappeared and the Bad was about one fifty under water, given that (that), bad pictures exist, also the dune abort edge, well that is, that is getting more and more, from the descriptions, but it is said that up to 200 metres in depth that had been broken off and so on. That again also happened in Ording Nord in 81, I don't know if you have been at the dune edge, and when you utterly knew through how many valleys you had to walk through to get to the dune and to get to the beach, and suddenly there only was (haha) in front of the dike one dune and then there was woop', oh here is the beach [SH: ah yes, mhm]. Thus 76, incredibly intentional, although I was only 13 years old, I know it like today, as in sight [SH: mhm].

SH: How aware are you that the possibility for a flooding exits here? Thus -x

TG: I would want to rule out a flooding and a dike breaching in SPO, not only want, but I do [UV (really?)] assume, that the water is still always able to pass by us, also because we have this immense foreland with the beach and so on. Thus I want this, here where we are very precicely (eh) I'm not afraid, at the parent-in-law's in the [UV] Koog I would always have [UV] [SH: (haha)], too less foreland and so on.

SH: Have you generally taken any precautions against flooding in the house?

TG: T Today, now, you mean?

SH: ("nod") Or have you ever thought about it?

TG: (3) No. We have a house on a dune, thus I am [UV] [SH: mhm], therefore no (no) great concerns, this is not far from here.

SH: More against storm probably?

TG: Yes, against storm certainly, obvious that you pay attention to everything (to everything), for granted, obviously.

SH: Have you got such a, I have heard this from several people, such a pack with all documents, that you can take in emergency and off you are?

TG: No. [SH: no?], no. (eh) That traffic jam I wouldn't want to do to myself, when Eiderstedt is getting evacuated, then preferably go to a higher point, and, the place of residence it a relatively high one [SH: mhm, yes].

SH: Do you remember "Kyrill" in January?

TG: Actually quite well.

SH: How did you hear about it first?

TG: Well, in the media, I think it was first on the radio or so [SH: mhm].

SH: Had a storm-surge warning been released at that time?

TG: We have had one. I don't know anymore how high above sea level and two eighty above (above) high water level [SH: mhm], maybe [UV] two eighty [SH: mhm].

SH: How did you hear about that?

TG: (ehm) I then looked on the internet [SH: mhm], because that was exiting, and then (then) investigated myself.

SH: Do you remember, [UV] in content, just the height, or?

TG: No, the height this (uoah), I don't remember now if they said that, that you shouldn't go outside anymore and all such things, because they had announced a massive wind speed, ey? I certainly did insist on being at the beach during high tide [SH: mhm], because -x

(short interruption by colleague)

TG: Because Kyrill was over at eight o'clock in SPO, that was the fun of it. So, we had proper wind in the course of the afternoon, but it stopped abruptly [SH: mhm]. You probably didn't experience it like that, ey?

SH: I was in Southern Germany, there -x

TG: There things really took off. And here, here it really stopped at eight, half nine. We had been in the town hall in a meeting and in the town hall there was a disaster management team assembled, director of local services and so on, they maintained the phone contact to the district and I don't know where else as well, and to the THW ("German civilian technical task force for disaster protection") and so on, (eh) and when our meeting, when we drove to the town hall it was still dramatic and we had finished at half nine, nine the wind was gone. You could have played badmington. And (eh) we then had high tide just before one in the night and I deliberately stayed awake that long and drove to the beach, or to the dike, because I wanted to peek, if the wind pressure wouldn't be enough from

somewhere else, just not from us anymore, that the water piles up, but, forgettable [SH: mhm], there was absolutely none.

SH: Did you have the feeling to be informed well through the storm-surge warning?

TG: Yes.

SH: (ehm) How did you react at that time, when you heard it, did you fix anything, or?

TG: Yes. Yes, removed some things in the garden, took away the birdhouse and took away an awning, (eh) placed two [UV], yet (yet) well, made just a bit wind safe, yes that's true [SH: mhm], ey? Well worked certainly two hours together with the janitor to change this [SH: ah yes, also here?]. Well here directly, at (at) the XXX ("confidential") is nothing that could fly away [SH: mhm] and (eh) but we went through everything again and also we have a house from my grandparents, house of my mother and (eh) there looked at everything again,if there is something, and changed something there, thus really undertook something for two hours, because you don't need to burden the insurances unnecessarily, that's silly, I don't see it like that [SH: yes].

SH: That means, do you speak about it somehow with the neighbours [TG: mhm] and relatives, when such a warning comes?

TG: Yes. Well, that you do then, that within the family and who, who you meet and so that you just, without longing for disasters, and (and) what do I know and so on, but we did talk about it and I did also help the neighbour, he also changed something, he did take two barrels away I think, which stood exactly in wind direction and so on [SH: mhm, yes].

SH: Then (eh) lately the media certainly reports at large scale about the climate change. Did this influence your attitude somehow towards living in a flood-prone area?

TG: I don't believe this, I've studied geography, but that is not the reason [SH: yes (haha)], that is my perception would, that would really [UV], but (eh) I would think, that, we do indeed get a warming but, that we do have, it is getting a little warmer, but that is a continuing process and the part of the humans is a very marginal, but so much for that (ehm), if I believe this, that the, (the) sea climbs or not, (ehm) through this it has not changed at all, I feel very safe here, where I live [SH: mhm]. I do, if that is the same in two generations I can't say [SH: yes this], not at all.

SH: Are you worried, that storm-surges could be more severe or more frequent, like it is also always said?

TG: With the thing of [UV] and so on, in some way yes, but when I then try, with my own knowledge to scale it down to our North Sea, no.

SH: Thus by experience?

TG: Yes, by experience, and (and, and) also the experience that you have yourself here and the experience of other, that live here for very long and also I would say are not that unconfident in this, and I don't really have [UV], hopefully I won't be disabused, because this would certainly be terrible.

SH: Are you worried that the dikes could maybe not withstand the increased risk someday? Or how could the protection be enhanced then, for example?

TG: Well I do worry, how slow the progress then (then) will be with the heightening of the dike [SH: mhm], thus that there (ehm) from the federal and the state level (eh) funds will be, for ages, I don't want to say retarded, but that it will take very, very long then [SH: mhm, yes]. They are expensive, that is absolutely clear to me, no, that is completely clear, but (eh) [UV (my misgiving?)] would be that umpteen years [UV (on the?)] standing on the priority list and not realised till then, here everything has happened in the meantime, what should have happened, well, would we have talked ten years ago, I would have talked a little different about Ording North, the passage to St.Peter. Because just the Northwest corner a dike profile of (puh) 58 or so, thus dramatic, that was nothing [SH: mhm], exaggerated 58, but a lot too old, al lot to steep and so. But that is resolved, thank god, and did bring a lot of amber, the flushing, what they did there, that was [UV (good?)] [SH: (haha)].

SH: Who is responsible for the financing of the dikes in your opinion?

TG: Well, I don't know if the EU is taking a holding in it, but I know that the federal level is giving the lion's share and the state level is giving the complementary resources, (eh) we in St.Peter or that I know [UV] very precisely have apparently a piece of own dike [SH: aha], well, that is the old dike in Bad, because this one is too low (ehm) [SH: for the purpose of beauty?], for the purpose of beauty, and that the guests can look over the dike from their accommodation [SH: ah]. That is why there are two polder in Bad, after the experience from 62 (eh), where water when it's swashing over the dike, only swashes, where it could then flow in, well there are two areas that lie extra deep. But (3), well I actually know about, who's paying, and I also know, that we, well in the last state government (ehm), and that I found very biting, that was state politics, that the red-green government did not access (ehm) some coastal protection issues, because they did not have their own contribution, 50 the federal level, 50 the state, and when the state does not have the 50, then it went back to the federal budget again in the big jar. And that was over years it was umpteen million, and that was during a time when we here indeed in, on Eiderstedt here [UV (St.Peter?)] had and further north high up in North Frisia also two parts, and that was bad, that really was upsetting, because [UV] if it happens now, and is coming from north-west and not from south-west, that it is threatened there [SH: mhm, yes].

SH: Do you feel informed adequately about storm-surge risk?

TG: Yes.

SH: Have you got any ideas, how it would be possible to bandy information about somehow?

TG: Well, if you have a 15 year old son and he is listening to Enjoy radio and then always in the morning, you might hear Enjoy as well [SH: no (haha)], there they have such a comedy story that, it is called the Pisa police and there they had such a, now for example recently the G8 summit conference,

"how high is actually the G8 summit?" and then they have invented [UV] numbers or so, (eh) then always teenagers are asked, and then I think for myself, well, who doesn't want it, simply just doesn't care. That is completely obvious and you never get everyone anyway, (eh, phh), and, I, I am well informed, because I inform myself [SH: mhm], but [SH: where, well?] everywhere, well, if I read something, if I pick something up, if I look in the Internet, and so, thus concerning these topics and so, (ehm, phh), but because of real interest, [UV (homeland?)] interest. But I think that you can never reach everyone, but I'm convinced that when it comes to the concrete dangerous point, that then (eh) neighbourly help is working beyond question, that one then really goes around and that then of course radio and television, that is as right as rain. Thus, the most that live here, yet know where they live, also I would see the percentage rate here definitely at two thirds, who are aware of that they live in such an area, some of course not at all, that's clear as well, but they one need to say, hey look out, this and that is, whereas, helping a lot is not possible then, if it comes really terrible, then [UV (with us happens?)] nothing at all [SH: mhm].

SH: Have you got any other comment to the topic storm-surge?

TG: A fundamental comment to the topic storm-surge? (4) Mmm you have to, cos' when you live here and the family, that was discovered some time, [UV] live here for 600 years, I don't want to know, what they have experienced here in that time [SH: mhm] and the other part of the family is from Holstein, my mother is from Büsum, thus from the coast as well and also there forever, and (eh) we hadn't [UV] been able to live there as a family, if (if) then one would not always have dealt with it. And in the course of this, that our dike got better and better, the storm-surges have piled up higher, [UV (long?)], ey? Well, I also cannot imagine a storm-surge at the moment, because that is already so long, that's 31 years ago, when the last severe storm-surge piled up [SH: mhm]. If we talk together again afterwards, after the next one, I might talk completely different, I don't know.

C.2 The Original Interview in German

Interview: TG

Zeit 18.6.2007, ca. 12:10 bis 12:30

Ort Hinterzimmer eines Ladens in Dorf, am Tisch

SH: Seit wann leben Sie denn in SPO?

TG: Ich, 44 Jahre [SH: mhm].

SH: Haben Sie jemals ne Sturmflut erlebt?

TG: Ja.

SH: Wann war das?

TG: 76 sehr bewusst und 81.

SH: Was ist damals passiert?

TG: Mein Vater war 76 Melder, wir hatten ein Geschäft und haben (ähm, phh) Haushaltswaren aber auch Eisenwaren verkauft, und wir mussten zum Deich, nach Böhl und dort Schaufeln hinbringen [SH: mhm]. (ähm) Beim jetzigen, da hinterm Golfplatz in dem Umfeld und (äh) da war, das Wasser war unendlich hoch schon, den Deich ziemlich hoch gelaufen, erste Wellen gingen da so schon fast drüber und unten am Deich waren die Löcher von Kaninchen und da schoss schon Wasser raus [SH: ah]. Das war dramatisch, also das war wirklich so ne bleibende Erinnerung. Und dann sind wir eben so relativ dicht rangefahren, da durfte man sonst natürlich nicht mehr hin, aber wir ja, weil wir die Schaufeln hingebracht haben, und (äh) sind denn dann fast bis nach oben und ich war so 13 [SH: mhm], ja, aber gute Erinnerung noch. Und auf einmal sprang der Deich einige Meter zur Seite und danach hab ich dann [SH: ha? aha?] der rutschte da richtig [SH: mhm], ja, und danach hab ich dann festgestellt, dass es sinnig ist (äh), schnell zu laufen, also wir sind dann gerast zum Auto, alle weg, der Deich ist dann verlassen worden, aber also, ich weiss nicht, THW oder nur Feuerwehr, also alle weggerast, dann (äh), um (äh) das Weite zu suchen und, das war (das war) schon irre. Das war also absolut irre, also sehr bewusst ne Sturmflut [SH: mhm], wir ham' noch zwei Photos gemacht, wie also der erste Kammbruch da rber ging und so, was mein Vater dann photographiert hat, und auch diese (äh) Mau-, diese (diese) Kaninchenlöcher da, wo das Wasser, das war wie aus einem Feuerwehrschlauch, [UV] das Wasser schoss 20 Meter hoch [SH: mhm], das war irre, [UV] [SH: mhm]. Da hab ich mir das erste Mal bewusst gemacht (äh) mit 13, das die Nordsee auch anders können (haha) als normalerweise [SH: mhm]. Ja, also Sturmflut. Die andere Sturmflut 81, die war in meinen Augen nicht so dramatisch, da war ich, wir haben grad Leistungskursklausur geschrieben (ähm) und das war auch sehr (sehr, sehr) reizvoll, weil dann die, die mit dem Auto in der Schule waren, die durften die Schule verlassen und, obwohl ich nun aus'm Ort war, damals [UV] ich mit dem Auto in die Schule, ich weiss nicht mehr warum, konnte ich dann weg. Das war gut, war blöde, war Bio, hatte ich keine Lust zu. Also an die hab ich also, die war auch nich', in meinen Augen eben nicht so in der Dramatik, das Wasser ist auch nich' so hoch gelaufen (hm), [UV] man konnte am Deich tolle Sachen sehn natrlich, wie hoch das gewesen, es gab viel Bernstein danach und das war alles toll, aber 76 war also echt boah! das ist bleibend, also ich hab schon sehr (sehr) [SH: mhm] grossen Sensibilitätsfaktor [UV] Küstenschutzmassnahmen und so weiter.

SH: Stimmt es, dass in Bad Teile unter Wasser standen?

TG: Das war 62 [SH: ah, das war 62]. 62 ist Bad abgesoffen und ich bin 63 geboren, da kann ich nicht wissen [SH: ja], ne? Da müsste man nen alten, nen älteren St.Peteraner fragen.

SH: Ja, weil einer hat mir das erzählt und ich hatte das vorher noch nie gehört, deswegen.

TG: Ja doch, das Bad hatte keinen Deich [SH: mhm, ja], das Bad hatte nur Dünen davor, und die sind weg und das Bad stand so eins fünfzig unter Wasser, also da (da), böse Bilder gibt's da, auch die Dünenabbruchkante, also da sind, das wird ja immer mehr, von den Schilderungen, aber das soll so bis 200 Meter in der Tiefe die da weggerissen worden sind und so. Das war nach 81 allerdings auch oben in Ording Nord, ich weiss nicht ob Sie mal an der Dünenkante war'n, und man dann also schlichtweg auch einfach wusste durch wie viel Täler man so durchgegangen ist vorher, um an die Dünen ranzukommen und an'n Strand zu kommen, und auf einmal war das nur noch (haha) vor'm Deich eine Düne und dann war wupp', oh hier ist der Strand [SH: ah ja, mhm]. Also 76, unheimlich bewusst, auch wenn ich nur 13 Jahre alt war, weiss ich noch wie heute, also ist mir so vor Augen [SH: mhm].

SH: Wie bewusst sind Sie sich denn, dass die Möglichkeit einer Überflutung besteht hier? Also -x

TG: Ich würde die Überflutung und den Deichdurchbruch in SPO ausschliessen wollen, also nicht nur wollen, sondern ich gehe [UV (tatsächlich?)] davon aus, dass das Wasser immer an uns vorbeilaufen kann immer noch, auch weil wir diese gewaltige Vorland haben mit dem Strand und so weiter. Also ich will die, also hier bei uns ganz konkret (h) hab ich keine Angst, bei den Schwiegereltern im [UV] Koog hätt' ich immer [UV] [SH: (haha]], also zuwenig Vorland und so weiter.

SH: Haben Sie denn derzeit irgendwelche Vorkehrungen im Haus gegen Überflutung getroffen?

TG: H Heutzutage, jetzt, meinen Sie?

SH: ("nicken") Oder sich schon mal Gedanken drüber gemacht?

TG: (3) Nein. Wir ham'n Haus auf ner Düne, also ich bin [UV] [SH: mhm], deswegen also keine (keine) grossen Bedenken, das ist nicht weit weg von hier.

SH: Also mehr gegen Sturm wahrscheinlich?

TG: Ja, gegen Sturm natürlich, klar, das man da auf alle (auf alles) achtet, selbstverständlich, klar.

SH: Ham' Sie denn so ein, das habe ich von manche Leute schon gehört, so'n Pack mit allen Unterlagen, dass zur Not nimmt man die und weg ist man?

TG: Nein [SH: nee?], nein. (äh) Den Stau will ich mir auch nicht antun, wenn Eiderstedt verlassen wird, dann lieber nen Punkt hier aufsuchen, und, der Wohnort ist ein relativ hoher [SH: mhm, ja].

SH: Können Sie sich denn an Kyrill im Januar erinnern?

TG: Sehr gut sogar.

SH: Wie haben Sie denn davon zuerst erfahren?

TG: Ja, in den Medien, ich glaub die im Radio hatten das zuerst oder so [SH: mhm].

SH: Wurde damals ne Sturmflutwarnung herausgegeben?

TG: Wir haben eine gehabt. Ich weiss gar nicht mehr wie hoch über Normalnull und zwei achtzig über (über) Hochwasserstand [SH: mhm], vielleicht [UV] zwei achtzig [SH: mhm].

SH: Wie haben Sie denn davon erfahren?

TG: (ähm) Im Internet geguckt noch [SH: mhm], weil das war ja spannend, und dann (dann) noch mal selbst recherchiert.

SH: Erinnern Sie sich denn noch, [UV] inhaltlich war, nur die Höhe, oder?

TG: Nö, die Höhe die (uoah), weiss ich jetzt nicht wirklich ob die das gesagt hatten, dass man lieber nicht mehr raus sollte und all solche ganzen Sachen, weil die eine gewaltige Windgeschwindigkeit angesagt hatten, ne. Ich hab's mir auch nicht nehmen lassen natürlich, zur Flutzeit am Strand zu sein [SH: mhm], weil -x

(kurze Störung durch Mitarbeiter)

TG: Weil Kyrill ja um acht Uhr fertig war in SPO, das war der Spass daran. Also, wir hatten richtig Wind im Laufe des Nachmittags, aber der hörte schlagartig auf [SH: mhm]. Ham' Sie gar nicht so erlebt wahrscheinlich, ne?

SH: Ich war in Süddeutschland, da -x

TG: Da ging's zur Sache. Und hier, hier hörte es tatsächlich um acht, halb neun auf. Wir waren im Rathaus, auf so einer Sitzung und im Rathaus war ein Katastrophenkrisenstab zusammengestellt, Ordnungsamtleiter und so weiter, die dann Telefonverbindung hielten zum Kreis und was weiss ich wohin noch mehr, und zum THW und so, (äh) und als unsere Sitzung, als wir zum Rathaus fuhren war es dramatisch noch und als wir fertig waren um halb neun, neun war der Wind weg. Man htte Federballspielen können. Und (äh) wir hatten dann kurz vor eins Hochwasser dann in der Nacht und ich bin dann extra solange aufgeblieben und bin an'n Strand gefahrn, oder an'n Deich gefahren, weil ich gucken wollte, ob nicht der Winddruck trotzdem noch reicht von wo anders, zwar von uns eben nicht mehr, dass das Wasser aufläuft, aber, pillepalle [SH: mhm], da war berhaupt keiner.

SH: Haben Sie denn das Gefühl gehabt durch die Sturmflutwarnung gut informiert gewesen zu sein?

TG: Ja.

SH: (ähm) Wie ham' Sie denn damals reagiert, als Sie die gehört haben, ham' Sie irgendwas festgebunden, oder?

TG: Ja. Ja, einige Sachen im Garten entfernt, Vogelhaus weggenommen und so ne Plane weggenommen, (äh) zwei [UV] gestellt, schon (schon) also, so'n bisschen windsicher gemacht, ja das stimmt [SH: mhm] ne? Also bestimmt zwei Stunden mit dem Hausmeister zusammen gearbeitet um das zu verändern [SH: ah ja, auch hier?]. Also hier direkt, am (am) XXX ("vertraulich") ist nix was wegfliegen könnte [SH: mhm] und (h) aber wir sind also alles noch mal durch gegangen und ham' also noch so'n Haus von meinen Grosseltern, Haus meiner Mutter und (h) das eben alles noch mal so angeguckt, ob noch was ist, und hier noch was verändert, also wirklich zwei Stunden was unternommen, weil man muss Versicherungen nicht übergebührend belasten das ist Quatsch, also das seh' ich nicht so [SH: ja].

SH: Das heisst, spricht man dann auch irgendwie mit den Nachbarn [TG: mhm] und Verwandten darüber, wenn so ne Warnung kommt?

TG: Ja. Also, das tut man denn dann schon, das man also innerhalb der Familie und die, die man so trifft und das man so eben dieses, ohne Katastrophensehnsucht, oder (oder) was weiss ich oder so, aber wir ham' uns darüber unterhalten und ich hab auch beim Nachbarn mitgeholfen, der hat auch was verändert, der hat auch zwei Tonnen ich glaube weggenommen, wie genau in Windrichtung standen und so [SH: mhm, ja].

SH: Dann (äh) in letzter Zeit wird natürlich so in den Medien immer gross über den Klimawandel berichtet. Hat das Ihre Einstellung irgendwie beeinflusst dazu in nem Überflutungsgebiet zu leben?

TG: Ich glaube dem nicht, ich hab Geographie studiert, also das ist nicht der Grund [SH: ja (haha)], das ist meine Empfindung wäre, das wäre total [UV], aber (ähm) ich würde meinen, dass, wir kriegen zwar ne Erwärmung aber, die ham wir ja auch, es wir ja ein bisschen wärmer, aber das ist ein kontinuierlicher Prozess und der Anteil des Menschen ist ein ganz geringer, aber soviel davon (ähm), ob ich da nun dran glaube, dass das also, das Meer so hoch steigt oder nicht, (ähm) dadurch hat sich das überhaupt nicht verändert, ich fühle mich hier sehr sicher, wo ich lebe [SH: mhm]. Ich mich noch, ob das in zwei Generationen noch so ist kann ich nicht sagen [SH: ja das], überhaupt nicht.

SH: Machen Sie sich Sorgen, dass die Sturmfluten stärker werden könnten oder häufiger, wie das ja auch immer gesagt wird?

TG: Also nach den Dingen so mit [UV] und so weiter, irgendwo ja, aber wenn ich das denn dann versuche, mit eigenem Wissen wieder runter zubringen auf unsere Nordsee, nein.

SH: Also aus Erfahrung?

TG: Ja, aus Erfahrung, und (und, und) auch die Erfahrung die man selber einfach hier hat und Erfahrung von anderen, die hier auch schon lange leben und auch würde ich sagen nicht ganz unsicher zu sein in dem, und ich habe eigentlich keinen [UV], hoffentlich werd ich keines besseren belehrt, weil das wäre natürlich schrecklich.

SH: Machen Sie sich denn Sorgen, dass die Deiche dem erhöhten Risiko dann vielleicht irgendwann nicht mehr standhalten können? Oder wie könnte man die Schutzwirkung denn erhöhen, zum Beispiel?

TG: Also ich mach mir schon Sorgen, wie schleppend denn (denn) dann mit der Deicherhöhung fortgeschritten wird [SH: mhm], also das da (ähm) vom Bund und vom Land (äh) Mittel ewig und drei Tage, ich will nicht sagen hinausgezögert wird, aber dass das denn dann doch lange, lange dauert [SH: mhm, ah ja] also. Die sind teuer, das ist mir völlig klar, nein, das ist ganz klar, aber (äh) [UV (meine Befürchtung?)] wäre das also zig Jahre lang [UV (auf der?)] Prioritätenliste steht und dann erst verwirklicht wird also, hier ist inzwischen alles geschehen, was hätte sein müssen, also hätten wir uns vor zehn Jahren unterhalten, hätte ich über Ording Nord ein bisschen anders, also der Übergang nach St.Peter, ein bisschen anders gesprochen. Weil grad die Nordwest Ecke ein Deichprofil von (puh) 58 oder so, also dramatisch, das war gar nix [SH: mhm], übertrieben 58, aber wirklich uralt, viel zu steil und so. Aber das ist Gott sei Dank behoben und hat viel Bernstein gebracht, das Spülen, was

die da gemacht haben, das war [UV (gut?)] [SH: (haha)]

SH: Wer ist Ihrer Meinung nach denn zuständig für die Finanzierung von den Deichen?

TG: Na, ich weiss nicht ob die EU sich daran auch beteiligt, ich weiss aber das ein Löwenanteil der Bund gibt und das Land die Komplementärmittel gibt, (äh) wir in St.Peter oder das weiss ich [UV] ganz konkret ham' anscheinend ein Stück eigenen Deich [SH: aha], also, das ist der alte Deich in Bad, der ist nämlich zu niedrig (ähm) [SH: aus Schönheitszwecken?], aus Schönheitszwecken, und damit die Gäste aus den Quartieren übern Deich gucken können [SH: ah]. Deshalb gibt's in Bad zwei Polder, nach der Erfahrung von 62 (äh), wo Wasser wenn's es über den Deich schwappt, also nur schwappt, wo's denn dann hinlaufen könnte, also es gibt zwei Bereiche die extra tief liegen. Aber (3), also ich weiss eigentlich darum, wer's bezahlt, und weiss auch, dass wir also in der vorherigen Landesregierung (ähm), und das war fand ich ganz bissig, das war also Landespolitik, das also die rot-grüne Regierung (ähm) einige Küstenschutzgeschichten nicht abgerufen hat, weil sie den Eigenanteil nicht hatte, 50 der Bund, 50 das Land, und wenn das Land die 50 nicht hat, dann ist das also in den Bundeshaushalt zurückgegangen wieder in den grossen Topf. Und das war über Jahre warn's zig Millionen, und das zu einer Zeit wo wir hier tatsächlich in, auf Eiderstedt hier [UV (St. Peter?)] hatten und weiter oben hoch in Nordfriesland noch zwei Stücke, und das ist böse gewesen, das war richtig schlimm, weil [UV] wenn's jetzt passiert, und von Nordwest und nicht von Südwest her kommt, dann ist das da gefährdet [SH: mhm, ja].

SH: Fühlen Sie sich denn ausreichend informiert hinsichtlich der Sturmflutgefahren?

TG: Ja.

SH: Gibt's irgendwelche Ideen, wie man Informationen noch irgendwie unter die Leute bringen könnte?

TG: Also wenn man einen 15 jährigen Sohn hat und der Enjoy im Radio hört und man dann morgens immer, Sie hören vielleicht auch Enjoy [SH: nee (haha)], da gibt's immer so eine Comedy-Geschichte die, das nennt sich die Pisa-Polizei und da hatten die irgendein, jetzt zum Beispiel neulich der G8-Gipfel, "wie hoch ist eigentlich der G8-Gipfel?" und dann haben sie sich [UV] Zahlen ausgedacht oder so, (äh) also da werden dann immer Jugendliche gefragt, und dann denk ich mir, also wer das nicht will, der kümmert sich eben einfach nich'. Das ist völlig klar und man kriegt sowieso nie alle zu fassen, (äh, phh), und, ich, ich werd so gut informiert, weil ich mich selbst informiere [SH: mhm], aber [SH: wo denn, also?] überall, also ob ich was lese, ob ich was aufschnappe, ob ich im Internet gucke, und so, also was so Themen angeht und so, (ähm, phh), aber aus wirklichem Interesse, [UV (Heimat?)] Interesse. Ich denke aber, dass man eh nie alle erreicht, bilde mir aber ein, dass wenn es zum konkreten gefährlichen Punkt kommt, das dann (äh) Nachbarschaftshilfe ausser Frage funktioniert, dass man also da wirklich denn auch hin- und hergeht und dass dann natürlich Radio und Fernsehen, das ist völlig in Ordnung. Also, die meisten die hier wohnen, die wissen schon auch wo sie wohnen, also ich würde den Prozentsatz hier bestimmt bei zwei dritteln sehen, die sich dessen bewusst sind dass sie in

so einem Bereich leben, einige natürlich auch überhaupt nicht, das ist auch klar, aber die muss man dann eben sagen, hey pass auf, das und das ist, wobei, viel helfen kann man da auch nicht, wenn's wirklich richtig schlimm kommt, dann [UV (bei uns geht?)] gar nichts [SH: mhm]
SH: Haben Sie sonst noch ein Kommentar zum Thema Sturmflut?
TG: Einen grundsätzlichen Kommentar zum Thema Sturmflut? (4) Mmm man muss sich, wenn man denn dann hier lebt und die Familie, das ist mal irgendwann herausgefunden worden, [UV] lebt seit 600 Jahren hier, ich möchte nicht wissen, was die schon so erlebt haben in dieser Zeit hier [SH: mhm] und der andere Teil der Familie kommt aus Holstein, meine Mutter ist Büsumerin, also genauso von der Küste und auch ewig schon also da, und (äh) wir hätten [UV] ja nicht leben können als Familie, wenn (wenn) dann man nicht immer auch damit umgegangen ist. Und im Zuge dessen, dass unsere Deiche immer besser wurden, die Sturmfluten höher aufgelaufen sind, [UV (lang?)], ne? Ich kann mir im Moment eine Sturmflut auch gar nicht vorstellen, weil es schon so lange ist, das ist ja 31 Jahre her, dass die letzte richtig heftige Sturmflut aufgelaufen ist [SH: mhm]. Wenn wir uns danach noch wieder sprechen, nach der Nächsten, red ich vielleicht auch ganz anders, ich weiss es nicht.

C.3 Transcribing Standards

SPO Bad St.Peter-Ording

(ähm) mumbled, quiet, said in the background

[**SH: yes.**] insertion in the background

[**UV**] not understandable

[**UV (house?)**] not fully understandable, what was possibly said

could strong emphasis (here on the beginning of the word)

(1) pause, 1 second

, short pause, take breath

! exclamation

"yes" told direct speech

-x disrupted

("xx") comment

ähm, äh ehm, eh

räu harrumph

mmh reflecting mmh

mhm affirmative mhm

mm negatively mm

haha laugh (short)

HaHa laugh (long)

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