Risk cultures and climate change negotiation processes in coastal areas -

A case study analysis of Husum and Medmerry

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Hiermit erkläre ich an Eides statt, dass ich die vorliegende Dissertationsschrift selbst verfasst und keine anderen als die angegebenen Quellen und Hilfsmittel benutzt habe.

I hereby declare upon oath that I have written the present dissertation independently and have not used further resources and aids than those stated.

Hamburg, 10.10.2022 Lea Stumbitz

Abstract

Climate change is evident and the need for adaptation a non-negotiable fact. Climate change adaptation is still often approached as a technical problem based on rational, evidence-based decisions. However, adaptation needs to be understood as a local and regional social challenge, underpinned by locally embedded risk cultures. How and if climate risks are encountered, ultimately depends on how they are framed locally – a question that has received very limited attention in risk research so far, but is key if adaptation measures are to be accepted by the local community. Consequently, an approach is needed that takes into account the heterogeneous and dynamic nature of social processes and thus helps to elucidate how and why risks are framed differently in different places.

This thesis develops and extends a dynamic perspective on the theoretical concept of risk cultures within which individuals and culture are regarded as interdependent. It subsequently applies this framework of risk cultures to the analysis of two coastal locations facing climate change risks. The two case studies Husum (Germany) and Medmerry (United Kingdom) are analysed and compared in regard to their negotiation and climate change adaptation processes.

The empirical analysis reveals that risk cultures are not only inherently dynamic, but contested, and always negotiated in the context of personal, institutional, political and local frames of reference. As the study demonstrates, in order to understand the local context of such negotiation processes, it is crucial to acknowledge the three dimensions of risk cultures: formal and informal institutional settings; the identifications of the local population with and attachments to the place (including historic components); and the factors that influence risk perception and preparedness locally. The analysis further revealed that these dimensions are permeated by the mutually influencing aspects of temporality, spatiality and sociality. Informed by the empirical findings, a more comprehensive concept of risk cultures is developed that conceives culture as inherently dynamic and acknowledges the interconnectedness of its constituting dimensions as essential foundation of how the risks of climate change are framed and dealt with locally.

Kurzzusammenfassung

Der Klimawandel ist offensichtlich und die Notwendigkeit der Anpassung eine nicht verhandelbare Tatsache. Die Anpassung an den Klimawandel wird immer noch oft als technisches Problem betrachtet, dessen Lösung auf rationalen, evidenzbasierten Entscheidungen basiert. Anpassung muss jedoch als lokale und regionale soziale Herausforderung verstanden werden, die durch lokal eingebettete Risikokulturen untermauert wird. Wie und ob Klimarisiken entgegengetreten wird hängt letztendlich davon ab, wie sie vor Ort dargestellt werden – eine Frage, die in der Risikoforschung bisher nur sehr wenig Beachtung gefunden hat, aber von entscheidender Bedeutung ist, wenn Anpassungsmaßnahmen von der lokalen Gemeinschaft akzeptiert werden sollen. Folglich ist ein Ansatz erforderlich, der die heterogene und dynamische Beschaffenheit gesellschaftlicher Prozesse berücksichtigt und dabei hilft zu verstehen, wie und warum Risiken an verschiedenen Orten unterschiedlich bewertet werden.

Diese Arbeit entwickelt und erweitert eine dynamische Perspektive auf das theoretische Konzept der Risikokulturen, innerhalb derer Individuen und Kultur als voneinander abhängig betrachtet werden. Dieses analytische Konzept von Risikokulturen wird anschließend für die Analyse von zwei Küstenstandorten angewendet, die den Risiken durch den Klimawandel ausgesetzt sind. Die beiden Fallstudien Husum (Deutschland) und Medmerry (Großbritannien) werden hinsichtlich ihrer Aushandlungs- und Anpassungsprozesse an den Klimawandel analysiert und verglichen.

Die empirische Analyse zeigt, dass Risikokulturen nicht nur inhärent dynamisch, sondern umkämpft sind und immer im Kontext persönlicher, institutioneller, politischer und lokaler Bezugsrahmen ausgehandelt werden. Wie die Studie zeigt, ist es für das Verständnis des lokalen Kontexts solcher Aushandlungsprozesse entscheidend, die drei Dimensionen von Risikokulturen anzuerkennen: formelle und informelle institutionelle Rahmenbedingungen; die Identifikationen der lokalen Bevölkerung mit und Verbundenheit mit dem Ort (einschließlich historischer Komponenten); und die Faktoren, die die Risikowahrnehmung und -bereitschaft vor Ort beeinflussen. Die Analyse ergab außerdem, dass diese Dimensionen von den sich gegenseitig beeinflussenden Aspekten von Zeitlichkeit, Räumlichkeit und Sozialität durchdrungen sind. Basierend auf den empirischen Erkenntnissen wird ein umfassenderes Konzept von Risikokulturen entwickelt, das Kultur als inhärent dynamisch begreift und die Vernetzung ihrer konstituierenden Dimensionen als wesentliche Grundlage dafür anerkennt, wie die Risiken des Klimawandels lokal gestaltet und behandelt werden.

Danksagung

Die letzten Jahre waren geprägt durch die Corona-Krise, damit verbundener Ungewissheit und entsprechend einer langen Zeit im Home-Office. Diese Bedingungen habe es mir nicht unbedingt leichter gemacht die Arbeit fertigzustellen, weshalb ich mich ganz besonders bei denjenigen bedanken möchte, die mich in dieser Zeit unterstützt haben.

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List of Abbreviations

DEFRA	Department for Environment, Food & Rural Affairs
EA	Environmental Agency
ICZM	Integrated Coastal Zone Management
IPCC	Intergovernmental on Climate Change
LKN	Landesbetrieb für Küstenschutz, Nationalpark und Meeresschutz (Schleswig-Holstein State Agency for Coastal Flood Defence and Protection, the National Park and Marine Protection)
MELUR	Ministerium für Energiewende, Landwirtschaft, Umwelt und ländliche Räume des Landes Schleswig-Holstein (Ministry for energy transformation, Agriculture, environment and rural areas) (meanwhile MEKUN)
MP	Member of Parliament
MPP	Manhood Peninsula Partnership
MR	Managed Realignment
MStAG	Medmerry Stakeholder Advisory Group
RSPB	Royal Society for the Protection of Birds
SOS	Save Our Selsey
UNB	Untere Naturschutzbehörde (Lower Nature Conservation Authority)
WWF	World Wide Fund for Nature

1 Introduction: The need to understand and react to climate risks

"Climate impacts and risks are becoming increasingly complex and more difficult to manage. Multiple climate hazards will occur simultaneously. Climate risks will interact with other threats to compound the overall risk. Risks will cascade across sectors and regions. […] We are not on track to achieve a climate resilient, sustainable world. Action on adaptation has increased but progress is uneven and we are not adapting fast enough" (Lee, 09.06.2022)

This is one of the latest warnings of IPCC[1] chair Hoesung Lee that action is required urgently in regard to climate change adaptation. In the course of his speech, he refers especially to global warming, a fact which should also be relatable after the summer of 2022 in Germany. Heat records were set in many federal states, reaching 40,1°C in Hamburg (DWD 2022). At the same time, some regions in the west of the country experienced the driest summer since records began in 1881 (ibid.), resulting in forest fires and dried-out river courses. On the other side, Germany has also experienced extreme rain events with devastating outcomes, as the flooding of the Ahr valley in July 2021, causing more than 180 deaths and damage amounting to billions (MDR 2022). Climate change is evident, it is here and we have to cope with its impacts, which become more and more visible and palpable. However, adaptation seems not to be taking place at a proportionate speed, as called for in the speech by Lee above, and implies many additional challenges which need to be tackled while simultaneously trying to find ways to handle climate risks (Ratter and Leyshon 2021).

1.1 Context of this thesis

At the core of local climate change adaptation is the question of how different risks are perceived and approached. This depends on the individual interpretation of a certain threat and is very subjective and influenced by a variety of different factors (Dominicis et al. 2015; Wachinger et al. 2013). How and if a risk is perceived and assessed accordingly determines if prevention measures are taken at all and what these entail. However, so far no linear or functional connection between the perception of a risk and related action could be identified (Dominicis et al. 2015). Nonetheless, many influencing factors of how (climate) risks are dealt with locally have already been recognised. Among these are aspects of identity and place attachment (Quinn et al. 2015), 'cultural settings' (Costas et al. 2015) and specific place-based factors (Costas et al. 2015; Masuda and Garvin 2006). How certain risks such as those

[1] Intergovernmental Panel on Climate Change

posed by climate change are framed and handled by different communities and individuals is thus obviously a social and cultural question, as adaptation measures often affect the direct living environment of people and the various attachments and relations connected to the area (e.g. Clarke et al. 2018; Maldonado 2016; Amundsen 2015; Quinn et al. 2015). Moreover, the local meaning of climate change is generated by the communities themselves (Hulme 2017; Adger et al. 2013) and how associated risks are framed and dealt with is negotiated against the local context. Accordingly, adaptation cannot solely be approached by technical means but imperatively needs to be understood as a social challenge. However, connected social conflicts and potential social barriers of climate change adaptation urgently need an improved understanding, as overcoming these is crucial for a successful and timely adaptation (Hinkel et al. 2018).

Nevertheless, the relevance of social and cultural aspects has only relatively recently been recognised within risk research and only gained importance in the last 40 years (Beck 1986; Douglas and Wildavsky 1982), which is why a comprehensive understanding of these components is still lacking. Recent works of Kienitz and Herlyn (2018) and (Fischer 2016) provide an advanced view (of the so far quite static understanding) on the concept of risk cultures by stressing culture not only as something dynamic but also as being interdependent with individuals. Risk cultures, as compound of beliefs, values, practices and social structures provide the basis for decisions of what is to be framed as a risk and in what way and also how it is handled. Accordingly, this approach offers a good starting point to increase the understanding of local sense-making and negotiation processes about climate change adaptation and thus address existing research gaps in (cultural) risk research. Various scientists have identified aspects that are missing in current research, but have not resolved them so far.

In order to gain an improved understanding of how risks are negotiated locally and which factors influence this process, I will elaborate on the following gaps within this thesis:

- The connection between risk perception and risk preparedness by considering the societal context (e.g. Dominicis et al. 2015; Wachinger et al. 2013; Raaijmakers et al. 2008);
- Individual perceptions, behaviours and the resulting framings of risk and its influencing factors on the local scale (e.g. Merz et al. 2020; Aerts et al. 2018; Maldonado 2016; Lupton 2006);
- The dynamic understanding of local culture and associated risk cultures by mapping contradictions and changes (e.g. Fischer 2016; Maldonado 2016; Oltedal et al. 2004).

According to one of the latest reports of the IPCC (2022b), low-lying coastal areas are particularly exposed to the impacts of climate change. This report not only states the dynamic nature of coastal risks, but stresses that existing adaptation worldwide is mostly "*a reaction to current coastal risk or experienced disasters*" (IPCC 2022a, p. 323). In light of the urgent need of these regions to adapt to

future coastal risks, two coastal case studies prone to the effects of climate change have been chosen. Although facing comparable future impacts of climate change, the two case studies vary with respect to the measures adopted in response to the dynamics of the coastal risks they are facing. Case study I is located in North Frisia (Germany) in the region around the city of Husum. The area (low-lying marshland) has a longstanding history of land reclamation and dike building, which results in a strong path dependency regarding their coastal protection measures. Case study II is located in the South of England (United Kingdom) on the Manhood Peninsula (West Sussex County). In this region, coastal protection is not uniform at all, but rather fitted to the small-scale context of the coastline (within a larger strategy).

1.2 Research objectives and structure

In order to gain an understanding about how risks are negotiated locally, which factors are of influence for these negotiation processes and thus increase knowledge on societal dynamics in regard to climate change adaptation, a more comprehensive concept of risk cultures will be developed. This concept conceives culture as inherently dynamic and acknowledges the interconnectedness of its constituting dimensions.

By applying this concept to the two case studies introduced above, this thesis will try to answer the following overall research question:

How do climate change adaptation discourses influence local negotiation processes and how do they affect the local risk cultures and the materiality of coastal areas?

This research question is further divided into five sub-questions that address the identified dimensions of the newly developed concept of local risk cultures (risk perception and –preparedness, formal and informal institutions, (historic) identification with place).

1. What kind of climate change adaptation discourses/ strategies exist in the case studies?
2. Which structuring role do attachments to the dwelling place and spatial concepts have in regard to contested or agree-upon negotiation processes?
3. In what way do different contexts affect certain spatial visions and which role do actors fill?
4. How are local negotiation processes and practices about climate change adaptation structured and which dynamics were/ are they subject to?
5. In what way did the handling of or the dealing with risks change against the background of climate change and how is this change expressed?

The two coastal areas will be analysed and compared in regard to their negotiation processes about the (potential) realignment of their dike line. Empirical data on these processes has been collected by conducting 24 in-depth qualitative interviews with participants of the respective projects. The insights gained by the analysis of the two case studies will help to improve the dynamic understanding of local and individual approaches to handling risk and thereby contribute to addressing the research gaps mentioned above. Although the two cases represent coastal communities and demonstrate the challenges of adapting the local coastal protection measures, the processes can be seen as exemplary for climate change adaptation and negotiation processes in many fields that affect the immediate living environment of people.

The thesis is structured in three main parts. Starting with a theoretical section (Chapter 2) that addresses the role of culture and risk for climate change adaptation and the dimensions, which have been identified within this thesis as important constituents of risk cultures. This section ends with the newly developed concept of risk cultures and the methodological approach that was taken in order to investigate these risk cultures in the two case studies. Chapter 3 focuses on the practical perspective of climate change adaptation in coastal areas. It thus addresses how coastal areas are impacted by climate change and the basic conditions under which climate change adaptation has to be managed. Further, it includes the case study analyses of Husum and Medmerry and ends with a comparison of the respective outcomes. The final chapter addresses the findings of this work, discusses their relevance and provides an outlook of future challenges.

2 The theoretical frame of risk cultures

Climate change poses new challenges and risks for society, which result in the need to handle them differently. While the emergence of risks as related to climate change is relatable, it is often seen as a political task to find and implement the right solution to handle these risks. However, in regard to coastal protection, climate change adaptation and the ways risks are dealt with is often first and foremost a social and cultural challenge, as adaptation measures affect the direct and multifaceted living environment of coastal inhabitants. Adger et al. (2013) address the problem that *"most attempts to integrate adaptation into models of climate change assume simple cause-and-effect relationships between environmental risks and social responses. Such responses seldom appear in practice [and in culture]"* (p. 113). Hulme (2017) takes this aspect even further and argues that *"Climate-change should rather be seen as the latest stage in the cultural evolution of the idea of climate, an idea which enables humans to live with their weather through a widening and changing range of cultural and material*

artefacts, practices, rituals and symbols" (p. xiii). He thus challenges the dominant scientific approach of adequately understanding by exclusively using mathematic modelling. Instead, his main argument is that *"climate - as it is imagined, studied and acted upon - needs to be understood, first and foremost, culturally"* (p. xii) because *"climate [change] […] is given meaning through cultures"* (p. xiii). This framing clearly conceptualises climate change as a culturally generated and historically contingent entity which defines the context within which meaning is attributed to climate change and which determines the ways of encountering it today: Climate change and its risks cannot be tackled against the backdrop of a simple cause-and-effect rationale because it is a multi-layered socio-cultural object. Consequently, an approach is needed that is capable of analysing the internal heterogeneity and the dynamics of social processes and thus helps to elucidate how and why risks are framed differently in different places. The following sections will explore the role that culture (and its constituents) plays for climate change adaptation, address risk and how it is approached, and interlink climate change, risk and culture by developing a new understanding of the concept of risk culture.

2.1 The role of culture for climate change adaptation

Culture is the overarching frame of social cohabitation. Ratter (1992) defines culture as *"the entirety of all material and immaterial peculiarities and manifestations of life created by mankind, which evolved in a community over generations and has been passed on"* (p. 4). One important aspect of this definition is the fact that culture is not only something symbolic or immaterial, but can have material forms of expression as well. Additionally, culture is a dynamic process although it contains large elements of tradition and is therefore often perceived as static. This dynamic originates from interactions on different levels and changes that are continually negotiated against the established frame, as explained by Maldonado (2016): *"Culture is fluid, evolving, and intertwined with a host of economic, political, and social relations and tensions that are constantly altering seemingly stable processes"* (p. 53). Hence, cultural peculiarities are the result of these social processes but in turn also frame individual modes of thought and behaviour. Ratter (1992) describes these cultural peculiarities as *"dominating factor of a society"* (p. 2) that shapes the daily life of an individual by *"determining cultural boundary conditions, restricting actions and enabling adaptability"* (p.2). Accordingly, culture is a dynamic construct that frames individual reality. Culture is the outcome and regulating frame of social processes at the same time, restricting and enabling behaviour and shaping individual relations. This understanding is in line with Reckwitz (2002), who sees culture as a set of symbolic structures and experiences, which people use to create reality and which enables or restricts their actions based on structures of knowledge. This structuring aspect is also captured by Hörning and Reuter (2006), as they see culture as to be found within social practices that create meaning and structure. Broadly speaking,

this is what culture provides for individuals: structure and meaning. A frame of orientation, which evolves over time and gets changed by individuals from within, as well as by influences from outside a certain society, while not having fixed boundaries. The structure that is provided by culture got stabilised over time by means of institutions, which structure almost every part of societal life. Institutions span from expected appropriate behaviour in certain situations on the personal level (informal institutions) to laws and constitutions (formal institutions). All this contributes to forming a certain identity of communities, but also of its individuals, which again feeds back and constantly alters culture. Consequently, institutions and identity are important analytical components of culture that might help to understand how communities react to the challenge of climate change adaptation, as they provide an insight into how societal processes function: *"Institutional change shapes the way societies evolve through time [and space] and, hence, is the key to understand historical change"* (North 1992, p. 477).

2.1.1 Institutions – enablers or barriers to change?

North (1990) describes the role of institutions in a very basic manner: *"The major role of institutions in a society is to reduce uncertainty by establishing a stable […] structure to human interaction"* (p. 6). What institutions are or what they are not, what they include and how to define them is subject of much scientific debate, although stability is always at the core of definitions. While North has an economic background, Gukenbiehl (2006), for example, also stresses the stabilising function of institutions but emphasises the role of culture in his definition of institutions from a sociological perspective: *„A unit of meaning of habituated forms of behaviour and social interaction whose sense and explanation derive from the specific culture and whose permanent regard secures the surrounding society"* (p. 174)[i]. Hence, institutions form part of a culture that stabilises society based on certain ways of acting and interaction. Their functioning is the result of historical processes that legitimised existing structures and practices, and therefore stabilise social interaction. Accordingly, it is absolutely essential to examine the respective institutional setting and the roles actors fill in order to understand the heterogeneity and dynamics that lead to certain behaviour in regard to new challenges such as climate change adaptation.

Gukenbiehl (2006) tries to grasp the basic structure of institutions based on a model, which shows that institutions are embedded in a society's culture and rooted in individuals as well as society. He explains the four basic elements that structure an institution. First of all, it's the 'central idea' of an institution, which is agreed upon in the respective group or society. The second element is the 'staff', those people who fulfil the defined roles of an institution. Third are the 'norms' of behaviour, which people belonging to a certain institution follow. The last element are 'material objects', which mostly have a symbolic character. Institutions are mere societal constructs, but once they are established, they also feed back on the system of origin. The model below (Fig. 1) shows this interconnectedness, by placing the institution in the middle of the mental and physical world, as well as the individual and societal dimension. Institutions and their developments form parts of an individual's biography and there is a historical dimension to institutions as they develop over time. Consequently, institutions are not only anchored in individual awareness and form part of a society's culture on the mental side, but are also rooted in the physical world – through the individual itself, but also through institutionalised objects that form material culture.

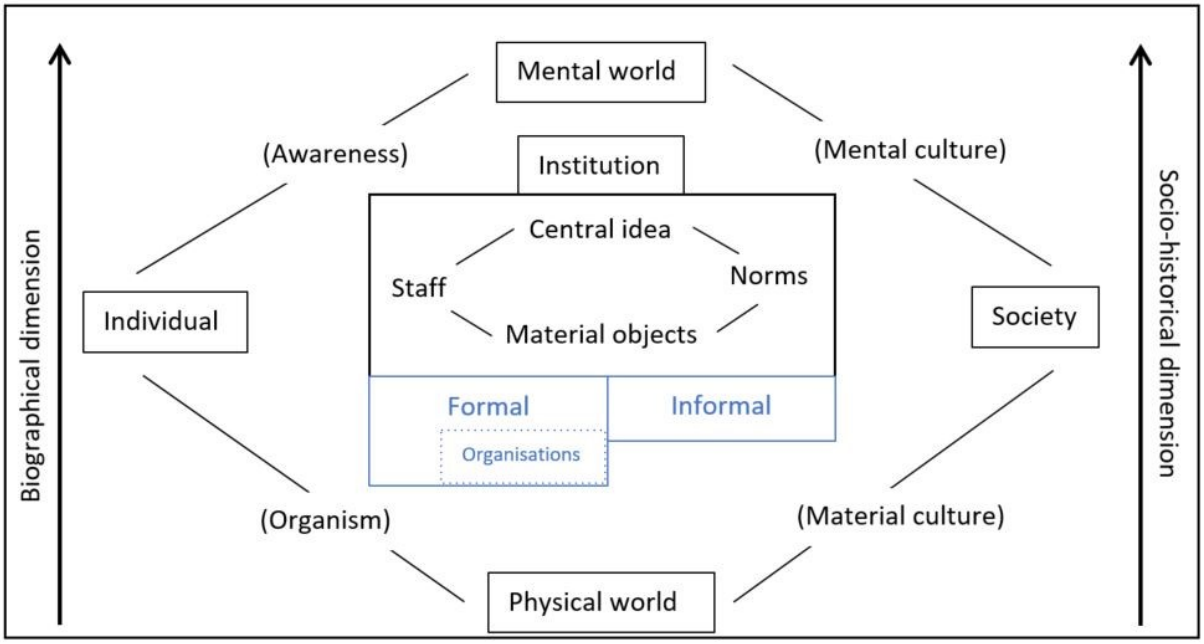

Fig. 1: Structural model of institutions (adapted from Gukenbiehl 2006, p. 177)

According to Gukenbiehl (2006), institutions create *"[…] points of reference for the common […] view of the world and the reality, as well as for the cohesiveness of individuals and their cultural and social identity"* (p. 178). In regard to coexistence, institutions make everyday life easier, as the behaviour of other persons does not surprise individuals but can be anticipated, which relieves interaction (Berger and Luckmann 2016). As explained by Berger and Luckmann (2016) from a sociological perspective, individuals habituate their behaviour for recurring situations or actions, so that the effort of thinking and deciding how to behave is reduced. Therefore, typifications of persons, things or situations take place, which simply means that in situation A, person B acts in a certain way. Accordingly, Berger and

Luckmann define the process of institutionalisation as follows: *"Institutionalization occurs whenever there is a reciprocal typification of habitualized actions by types of actors"* (Berger and Luckmann 1991, p. 72). The result of this typification and the habitualization is the institution. In Fig. 1, the staff, norms and material objects represent the resulting types. At the doctor's, for example, roles are clearly defined: the ill person is the patient, the one who helps is the doctor. It is also usual for the patient to register and normally take a seat on a chair in the waiting room until one is called up. As can be seen from this example, institutions create behavioural patterns that simplify and pre-structure many situations, and lessen the effort for making decisions (Gukenbiehl 2006). In other words, institutions are the result of successful and normalised behaviour, as the resulting routines have shown to be pertinent and hence are kept up.

Institutions are often divided in formal and informal institutions (as this division was missing in the depiction of Gukenbiehl (2006), I have added it to Fig. 1). According to Tridico (2004), *"formal rules or institutions are generally defined as the law sphere, with constitutions, regulations and organisations. There is a direct connection between formal rules and the political-economy structure such as governance, property rights, and the judiciary system. Thus, the reinforcing of the formal institutions is guaranteed by the legal system"* (p. 6). In this definition, organisations are part of formal institutions, while Weig (2015), for example, argues that organisations have to be seen as separate to them. North (1990) also distinguishes between institutions and organisations, but sets them in relation to each other. While institutions are the rules of the game, he sees organisations as the players[2]. Therefore, he defines organisations as *"groups of individuals bound by some common purpose to achieve objectives"* (p. 5), which in this example would be to win the game. North lists political (e.g. parties, authorities), economic (e.g. firms, cooperatives), social (e.g. churches, clubs) and educational bodies (e.g. schools, universities) as to be included in his definition of organisations. However, Gruševaja (2005) argues in line with Tridico (2004) and describes formal institutions as the regulatory framework of a society consisting of *"all (social and legal) deliberately created bodies, whose existence is exogenously guaranteed by state authority"* (p. 4)[ii]. Thus, she also agrees with Tridico (2004) in the fact that organisations are part of formal institutions and cannot be conceived beyond these, as she puts emphasis on the fact that organisations are 'deliberately created'. The convincing element in Gruševaja's (2005) point of view is her explanation of the difference between formal and informal institutions: *"the difference is that formal rules can basically be changed by a decision, while informal institutions can't be changed deliberately"* (p. 4)[iii]. This distinction is also made by North (1992): *"While formal rules can be changed over night by the polity, informal constraints change very slowly"* (p.477). As this generally holds true for organisations and they are deliberately created as well, they can be

[2] See e.g. Giddens (1986) on the topic of structure and agency

associated to formal institutions in some circumstances, as argued by Gruševaja (2005) and Tridico (2004) above. This is also done by Weig (2015), albeit she generally understands institutions and organisations as separate. Nonetheless, she argues that some functions of organisations (not the organisation itself) can be labelled institution. To further delineate this special case, she terms these functions "formalised institutions" (p. 59) and refers to their framing and organising role in order to reduce societal uncertainties. Accordingly, there is no scientific consent about the affiliation of organisations, but their role is explained differently by different authors.

Just like formal institutions, informal institutions also fulfil their specific role in society. For Pejovich (1999) *"informal rules are traditions, customs, moral values, religious beliefs, and all other norms of behavior that have passed the test of time. Informal rules are often called the old ethos, the hand of the past, or the carriers of history. They embody the community's prevailing perceptions about the world, the accumulated wisdom of the past, and a current set of values"* (p. 166). This definition clearly illustrates why informal institutions cannot be changed by decision, unlike formal institutions. The emphasis here is strongly on the historical part of informal institutions that bear an impact on how people behave today. Another important point is the role of perceptions, which is also addressed by North (1992), as he states that *"both [formal and informal institutions] are ultimately shaped by people's perceptions of the world around them; those perceptions in turn, determine explicit choices among formal rules and evolving informal constraints"* (p. 477). Consequently, institutions grow out of individuals' perceptions of the world, which in turn means that there are fundamental differences between informal but also formal institutions across the globe, depending on the specific living conditions and the environment.

Institutions are ultimately created by shared worldviews and perceptions. This is inevitably linked to a process of identification, as people hold certain 'roles' and expect others to act according to the societal norms or routines. Hence, institutions have a self-reinforcing characteristic, which results in certain social practices, specific symbolic systems, but also materialised artefacts. And even if they do not materialise as objects, Gukenbiehl (2006) states that institutions are elements of the 'lived' culture of people and that they are perceived as objective reality, which exists independent of people. They are perceived as "*self-evident: "It's like this", "that's how we do it*" (p. 175) and often remain unquestioned. Therefore, certain forms of behaviour materialise in routines and practices. In sum, institutions create social stability and provide a frame for identification through various mechanisms, depending on the circumstances and contexts.

However, institutions can also change. According to Gruševaja (2005), institutional change can take place 'naturally' from within the society due to technological development or a change of values, but can also be initiated from outside through new formal institutions for instance. As explained earlier,

formal institutions can theoretically be changed quite easily by decision and might lead to a subsequent change of informal institutions, as ways of behaviour or routines might not prove useful anymore. Vice versa, gradual change of informal institutions can also result in a change of formal institutions. Although formal and informal institutions normally *"coexist in harmony"* (Pejovich 1999, p. 171) conflicts can emerge, especially in phases of change. Natural change, as described above, of informal institutions is likely to be slow due to the self-reinforcing process of informal rules and established routines. Not only do *"mechanisms such as imitations, traditions and other forms of teaching"* (Tridico 2004, p. 5) strengthen institutions, social sanctions also *"facilitate the self-reinforcing process"* (p. 5). Such social sanctions are mentioned by Pejovich (1999) *"as expulsion from the community, ostracism by friends and neighbors, or loss of reputation"* (p. 166). In combination with the mutual expectation and the reinforcing of formal institutions by the legal system, these mechanisms keep society running and make it the stable construct it is.

If change occurs, be it naturally from a change of values, through new laws or even through catastrophic events, it always hits path dependencies. According to Schreyögg and Sydow (2010) *"path dependence implies at the very least a sequence of events narrowing the scope of action eventually resulting in a state of persistence or inertia"* (p. 4). Djelic and Quack (2007) describe path dependencies as results of past events that *"set institutional patterns with deterministic properties into motion"* (p. 161). Past events seem to be decisive for the creation of path dependencies. Thus, North (1990) explains path dependencies with a focus on history: *"History matters. It matters not just because we can learn from the past, but because the present and the future are connected to the past by the continuity of a society's institutions. Today's and tomorrow's choices are shaped by the past. And the past can only be made intelligible as a story of institutional evolution"* (vii). Developments therefore always face existing institutions, formal and informal, as well as their materialisations. *"Institutions define and limit the set of choices of individuals"* (North 1990, p. 4), so the institutional heritage inevitably leads to path dependencies. This is why conflicts between formal and informal institutions can emerge, if a change is either too rapid or too severe. As already mentioned, formal and informal institutions normally coexist in harmony, adapting to each other within a certain limit. If a change or decision deviates beyond this natural dynamic, conflicts are very likely. A decision which differs strongly from the existing, historically grown, path cannot always easily be implemented on the informal side (conflicts can also occur vice versa). If this possible collision is not taken care of, problems can emerge. Mercer et al. (2012) mention that *"[…] a strong culture can result in rigidity in institutional beliefs, leading to introversion and inertia in the face of environmental change, and therefore 'institutional vulnerability' or increased levels of risk"* (p. 87). Consequently, an unwillingness to change can also lead to problems. If these aspects are not taken care of, the stability and structure provided

by institutions can likely be a barrier for adaptation to changing circumstances, as for example connected to climate change.

Stability, orientation in everyday life and for decisions: institutions are the backbone of social cohabitation and therefore provide a stable frame against which everything new has to prevail. Accordingly, also the framing of (emerging) climate risks is negotiated based on this fundamental social framework and thus institutions constitute an essential dimension to look at in regard to local risk cultures.

As institutions are to a large extent made up of individual and societal behaviour, aspects that shape and create a person's identity will be discussed in the following sub-section in order to better understand how and why institutions of a community exist and develop in the way they do.

2.1.2 The identification with place

Social cohabitation is intimately connected with processes of identity construction, as these are another way of creating social stability, next to those of institutions explained above.

> *"Identity is an act of social construction: The self or someone else is conceived within a web of meanings. The question of identity has a universal and a specific cultural dimension. It is always about creating a fit between the subjective 'inside' and the societal 'outside', thus the production of an individual social situatedness. The necessity of an individual construction of identity refers to the human basic need of recognition and belonging*"[iv] (Keupp 2000, p. 1).

Accordingly, individual situatedness is always connected to the 'outside'. This outside can also be referred to as cultural identity or the *"society's self-image"* (Assmann and Czaplicka 1995, p. 132). Seen as collective knowledge of the past, this is what *"each group bases its awareness of unity and particularity"* (ibid.) upon.

However, the feeling of belonging is not only achieved by the creation of institutions and interaction with others, but people's identity (and of course cultural identity) is made up to a large extent by their interaction with the particular location they inhabit and the traditions and culture that origin from there. Therefore, place and its distinctive characteristics play a major role in how an individual's identity evolves (the specific location of coastal areas will be explained in section 3.1). As Quinn et al. 2015 state concisely: *"A strong element of identity is bound up with notions of place"* (p. 164). While there is a variety of aspects that contribute to building a persons' identity, for the context of this work, the focus is on the role of place and its identity constituting characteristics. By choosing this focus,

insights might be gained that help to elucidate the role of the local context for negotiation processes about climate change. Therefore, the concept of place will be explained in the following sub-section, as well as attachments to place and the role these bonds play in the face of climate change adaptation.

Place and place attachment

According to Gieryn (2000) *"a place is a unique spot in the universe"* (p. 464) and has any form of physicality. A common distinction often made is those of space and place, where the latter stands out as it is culturally interpreted and therefore given meaning and value (e.g. Tuan 1977). Adger et al. (2011) see places as *"spaces that have been given meaning by people associated with them […]"* (p. 3) and Gieryn (2000) states that *"place is space filled up by people, practices, objects, and representations"* (p. 465). As such, places contain the history and tradition of people and their perceptions, which makes them a dynamic construct (Amundsen 2015). Therefore, places and their specific role(s) are strongly connected to the formal and informal institutions of a community and how they develop. Gieryn (2000) argues in this regard that *"the meaning or value of the same place is labile – flexible in the hands of different people or cultures, malleable over time, and inevitably contested"* (p. 465). Not only the meaning of a place can change, but also its materiality, even though materiality is normally seen as *"relatively enduring"* (Gieryn 2000, p. 465). Possible reasons for physical change can be environmental catastrophes or new developments (Devine-Wright 2014), which in turn influence how people perceive that place and accordingly ascribed values and meanings. *"Place incarnates the experiences and aspirations of a [sic!] people. Place is not only a fact to be explained in the broader frame of space, but it is also a reality to be clarified and understood from the perspectives of the people who have given it meaning"* (Tuan 1979, p. 387). In short, *"[…] places are dynamic, with a past, a present, and a future"* (Williams and Stewart 1998, p. 20), they are filled with history and meaning and therefore there's a mutual influence of places and people's identity. This interrelationship is often explained with place attachment.

There are various conceptions and notions of how people develop bonds to places and which circumstances play a role for different types of attachments. In general, one can say that *"place attachments are emotional bonds that form between people and their physical surroundings. These connections are a powerful aspect of human life that inform our sense of identity, create meaning in our lives, facilitate community and influence action"* (Manzo and Devine-Wright 2014, preface). Not only does place influence our identity, the fact that we attach to it can be seen as another way of creating stability in one's life, as people do with the creation of institutions as well. Scannell and Gifford (2014) describe this process as follows: *"Bonding is central to the human experience. We necessarily form meaningful connections with particular people, groups, objects and places. These many ties situate and secure us in broader social and physical environments, connect us to the past and influence*

future behaviors" (p. 23). Of course, these bonds can change due to a variety of reasons (e.g. changes to the place itself, a person's ascribed meaning or changes in societal context), which is why place attachment is dynamic and socially constructed (Devine-Wright 2014; Manzo 2014).

A concept which is closely connected to that of place attachment is the German notion of Heimat (translated to English "homescape", "home" or "homeland" come closest, but do not fully grasp the meaning the word holds in German). The term has been used and also misused in different ways. The misuse of the Nazi regime is a relatively recent example, where the innately local or regional notion of Heimat became synonymous with nation and race and was misused for propaganda purposes (Ratter and Gee 2012; Kühne 2011; Blickle 2004). There are many attempts to grasp the concept of Heimat, often connected to the place of birth (e.g. Türcke 2014) and early socialisation experiences (e.g. Gebhard et al. 2007; Brepohl 1952). Ratter et al. (2009) argue that *"Heimat is a place, where one likes to be; Heimat is a feeling, which affects the innermost; Heimat are those people, who are important"* (p. 11)[v]. This view does not only explain Heimat as a certain place, it also shows the strong emotional and social attachments that are inherent to Heimat. It is the *"elements of comprehensibility and predictability, providing us with a sense of security and reliability and triggering experiences of deep familiarity"* (Ratter and Gee 2012, p. 128).

How Heimat is perceived on the German North Sea coast has been explored by Ratter and Gee (2012). According to their research, it is not only social relationships that constitute Heimat here, but also *"a wide range of intangible values such as the aesthetic value of the seascape or the symbolic values assigned to the sea"* (p. 127). Heimat is not easy to understand and some even argue that it is only understood through a form of identification with place that is from within and not through analysis (Ratter and Gee 2012; Blickle 2004). This aspect shows parallels to the concept of sense of place (e.g. Buttimer 1976), which is also characterised by *"strongly felt values, meanings and symbols that are hard to identify or know (and hard to quantify), especially if one is an "outsider" or unfamiliar with the place"* (Williams and Stewart 1998, p. 19). Williams and Stewart (1998) further argue that a sense of place is created by *"[…] social and historical processes by which place meanings are constructed, negotiated, and politically contested"* (p. 20). Accordingly, senses of a place can be competing and create conflicts (ibid.). A universally valid, analytical, definition of Heimat or sense of place is therefore not possible, as it always depends on specific and very personal but also collectively shared dimensions.

While the notion of Heimat is often reduced to being the place of birth, this is not a necessity, it can also be an active choice. This form of belonging refers *"more to aesthetic and other physical qualities of the place"* (Gustafson 2014, p. 39). In this case there are often no prior connections to place (Savage 2010) and the history and social context are not as important as the fact that *"…a chosen place of*

residence is congruent with one's life story" (Savage et al. 2004, p. 54). This elective belonging refers to *"[…] seeing places as sites for performing identities"* (Savage et al. 2004, p. 29). It is therefore a choice for a place where one feels comfortable and 'at home'.

Whether attached through being born and raised in a particular place or as an active choice, *"the attachment to a certain place serves to secure identity. Through the feeling of belonging to a place one can also attach to a group: Both serves the creation of the personal identity – a process that takes a lifetime"* (Ratter et al. 2009, p. 12)[vi]. Thus, the attachments to a place and its specific societal context form part of the identity, which is also referred to as place identity.

Place identity

Place identity is a sub-structure of identity and is described as the way *"in which physical and symbolic attributes of certain locations contribute to an individual's sense of the self or identity"* (Devine-Wright 2009, p. 428). Or as Buttimer (2015) states: *"It appears that people's sense of both personal and cultural identity is intimately bound up with place identity"* (p. 167). Proshansky et al. (1983) see place identity as:

> *"[…] a sub-structure of the self-identity of the person consisting of, broadly conceived, cognitions about the physical world in which the individual lives. These cognitions represent memories, ideas, feelings, attitudes, values, preferences, meanings, and conceptions of behaviour and experience which relate to the variety and complexity of physical settings that define the day-to-day existence of every human being"* (p. 59).

Place identity *"… is constructed, traversed by power, and never fixed"* (Escobar 2001, p. 140). It describes the process of place becoming a substantial part of one's world, where *"one unself-consciously and self-consciously accepts and recognizes the place as integral to his or her personal and communal identity and self-worth"* (Seamon 2014, p. 17). Important here is the reference made to the communal (cultural) identity, as place identity is not only shaped by individual cognitions, but rather by the societal context one is embedded in:

> *"[…] it must be noted that what is true of self-identity is also generally true of its sub-structure, place identity. Other people are important in shaping the place-identity of the person. It is not simply a matter of the child's experience with his physical settings but clearly a function of what other people do, say, and think about what is right or wrong and good or bad about these physical settings"* (Proshansky et al. 1983, p. 60).

This argument is crucial for understanding the relationship between the attachment to a certain place, the role of the community and how one's own identification with place is constructed and shaped by

these components. Identification with place is spatial, social, emotional and always connected to the past. Nonetheless, it shapes the present and thus also influences the future. As shown, it is a process that normally takes time, includes a variety of components and results in seemingly stable conditions, which can get reinforced over a whole lifetime.

It is not surprising that a construct which aims at creating stability might get in conflict with (prospective) change, as represented by dynamics of climate change. Institutions as well as the components that make up place identity consolidate existing routines and convey the impression of safety. Reliable surroundings – the predictable behaviour of fellows, a known place and one's secure self-identification etc. – minimise possible feelings of unease and provide the basis for how visions of future are constructed. Nonetheless, individuals always have to deal with change in one or the other way. Climate impacts are very likely to entail local changes that have to be dealt with by the communities. The next section will thus outline potential reactions towards this possibility of change.

Change of place and the role of place attachment

As touched upon above, *"[…] places themselves can change in numerous ways, with consequent implications for emotional attachments"* (Devine-Wright 2014, p. 168). Changes can not only be physical, also the meaning of a place can be changed through social or political modifications (Adger et al. 2011). The consequences of such changes can be positive, enhance place-attachment (Devine-Wright 2011) and even create a sense of pride among residents (Devine-Wright 2014). However, the literature more often deals with the negative outcomes of place changes (often disruptive), that lead to distress, feeling of loss and helplessness, especially when a (temporary) relocation is necessary (Quinn et al. 2015; Devine-Wright 2014, 2009; Adger et al. 2013). Changes whatsoever, to places we are attached to, strongly impact emotional bonds and place identity. For the context of this work, climate change is the potential driver for changing places. According to Quinn et al. (2015), *"climate risks that involve adaptations through changing places and locations have significant impacts on identity"* (p. 164). However, how reactions on proposed adaptations look like, can vary strongly, depending on different factors as place attachment for example. If a proposed change is perceived as a threat to emotional attachments and place identity, opposition is often the consequence, also described as place-protective action (Devine-Wright 2009). Stedmann (2002) takes his description of opposition or resistance even further and stresses the role of symbolic meanings and thus the emotional motives people have to fight for 'their' places: *"[…] we are willing to fight for places that are […] central to our identities […]. This is especially true when important symbolic meanings are threatened by prospective change"* (p. 577). This statement underlines that the possibility of change is already enough to feel threatened, without actual physical change even having taken place (Devine-Wright 2009). A changing climate will inevitably mean a change to many places and in consequence

adaptation might be necessary. This in turn is a matter of decision making, be it reactive or proactive: *"given how important place is for people, and the psychological desire for consistency, these are changes that will need to be carefully negotiated to ensure sensitive, sustainable and fair adaptation"* (Quinn et al. 2015, p. 165). Clarke et al. (2018) stress in this regard that *"[…] understanding emotional place-related values early in the adaptation process may contextualise attributes of place by detailing what aspects cause concern where disruptions are proposed"* (p. 87). How people attach to places influences the way they are willing to adapt to climate change impacts (Quinn et al. 2015). While (potential) change can trigger opposition, it can also create new implications of a place: *"[…] proposed changes to the physical environment may lead to the articulation of new meanings, and actual changes to the physical environment may contribute to the renegotiation of meanings"* (Adger et al. 2011, p. 3). Amundsen (2015) also argues along this line, stating that *"[…] place attachment […] can be a powerful motivating force for adaptation because it directly connects with what matters to people and what they care about"* (p. 258). Prospective change can therefore also be positively connoted, and even be an applicable driver for adaptation. However, if one's identity is strongly connected to the symbolic value of a certain place, a possible change of a place can be seen as a threat to the stability of one's life. Thus, how change is framed and reacted upon, is always a question of how the underlying dynamic, climate change in this context, is perceived and reacted upon and whether the need to act is seen as more important than the possible threat to one's identity. Consequently, local attachments and their influencing role are crucial to understand how climate change is negotiated locally and consequently how risks are framed.

2.2 Risk

How a potential risk is perceived decides about if and how it is reacted upon, which in turn impacts the role a certain risk plays in people's lives. As explained in the previous sections, potential change as the result of a risk or as a consequence of adaptation to it can be perceived as a threat to social stability and to one's identity, while change and adaptation can likewise be seen as something positive. In order to better understand how different reactions and responses emerge, the following sub-sections will explain the concept of risk and risk perception and elaborate on influencing factors of risk perception and how this leads to certain actions and preparedness.

The etymology of the term 'risk' is most likely the ancient Italian term 'risco' or the Greek term 'rhizikon', which both translate into cliff (Koch 2013, p. 2; Kalwait 2008, p. 24). Accordingly, the term traces back to shipping and sea trade, as those cliffs were a threat that needed to be bypassed. Despite all possible threats, sea trade thrived as taking the risk possibly resulted in wealth. This view of risk as

an opportunity was still dominant in the 19th century, as Dake (1992) describes this time with the proverb *"nothing ventured, nothing gained"* (p.22). The positive connotation is still found in the Chinese expression for 'risk', as it consists of the two symbols for 'danger' and 'opportunity'. The 20th century, however, was rather shaped by a growing concern about risks from technology and industrialisation, i.e. negative outcomes of development (ibid.). Today, the term is still mostly correlated with a negative outcome: The Cambridge online dictionary defines 'risk' as *"the possibility of something bad happening"*[3] and also the German Duden explains 'risk' as *"possible negative outcome of a venture"*[4vii].

From a technical perspective, assessment of risk is approached by using the product of the probability of a risk and the magnitude of the possible consequences (Raaijmakers et al. 2008; Kasperson et al. 1988). This is an objective way to calculate risk, often used by insurances to determine their premiums. However, this view considers risk to be quantifiable and neglects the multifaceted societal dimensions individual risk perception includes. From a sociological perspective, risk is "*a social, collective and cultural construct*" (Gerkensmeier 2018, p. 11). Accordingly, *"it is cultural perception and definition that constitutes risk"* (Beck 2010, p. 213). Risks in this context do not exist per se, but are the result of social assessment and interpretation of uncertainties or threats (Bonss 2014). According to Bonss (2014), risks are the consequence of conscious decisions to face an independently existing threat and how to handle it. Consequently, it is necessary to distinguish between threat and risk. Threats exist independently, while risks emerge as a consequence of decisions and consequent actions (Bonss 2014) or, as Slovic (2001) puts it, *"[…] danger is real, but risk is socially constructed"* (p. 23). In other words, threats are omnipresent, but risk is what you (more or less) consciously take. The threat of a hailstorm for example cannot be influenced, but it is a conscious choice if we leave the house and take the risk to get affected by the threat. This choice depends on a person's judgement of the risk to get hurt or if one is willing to take this personal risk. Depending on the context of the threat, the individual decision can vary. A hailstorm might be a quite simple situation, while there can be situations that are less tangible and harder to assess, often characterised by uncertainty. Climate Change, for example, is a threat per se, but its consequences inevitably affect society in almost every field. Accordingly, in this regard it is often not a choice to take the risk, but an inescapable fact. Thus, climate change and its consequences pose a new challenge for risk management and -assessment[5], as *"responding to climate change is about adjusting to risks, either in reaction to or in anticipation of changes arising from changing weather and climate"* (Adger et al. 2013, p. 112). This again is subject to societal negotiation

[3] https://dictionary.cambridge.org/dictionary/english/risk
[4] https://www.duden.de/rechtschreibung/Risiko
[5] Risk assessment is part of a larger, overall risk management and can be further divided into a more detailed risk analysis and evaluation (cf. Gerkensmeier 2018)

and therefore roots ultimately in the way this possible risk is perceived, defined and counteracted, which will be elaborated on in the next section.

2.2.1 Risk perception and – preparedness

Dominicis et al. (2015) define risk perception as *"an individual's interpretation or impression of the risk related to the object perceived as a threat"* (p. 67). Thus, risk perception is seen as a process, in which signals about uncertain consequences of events are collected, selected and interpreted (Wachinger et al. 2013). This process does not only depend on the specific risk, the person itself or the social environment, but is also based on previous experiences, values, emotions and knowledge (ibid.). How and if a risk is perceived and assessed therefore determines if prevention measures are taken at all and what these entail. How perception and action are related remains hard to grasp, as there is no linear or functional connection between the two. Raaijmakers et al. (2008) try to elucidate this connection and see risk perception as the relationship between different risk characteristics, which they defined in relation to flood risk as awareness, worry and preparedness (Fig. 2). As will be outlined below, I rather see these 'characteristics' as ensuing steps of risk perception and not as constituents of it. In order to be aware of something, it needs to be perceived first. Nonetheless, the depicted relationship gives an idea about the steps needed from perceiving a risk to actually taking action.

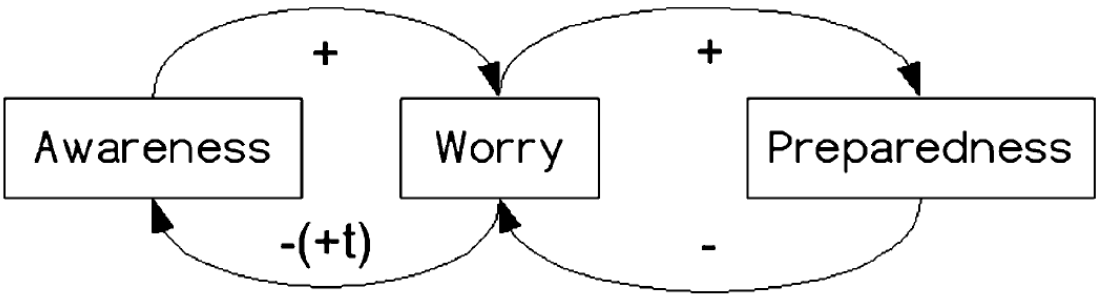

Fig. 2: Relationship between characteristics of risk perception (Raaijmakers et al. 2008, p. 312)

Fig. 2 illustrates how awareness, worry and preparedness are interconnected. In their study of flood hazard mitigation, Raaijmakers et al. (2008) define awareness as *"knowledge or consciousness of the flood risk"*, worry *"depends on the awareness of the frequency of occurrence of certain hazards"* and *"the expected severity of the consequences"* (p. 311). Out of these two, Raaijmakers et al. (2008) argue, preparedness can be created, which they define as *"both the capability of coping with a flood throughout the inundation period, and post-flood recovery capability strategies"* (p. 312). A more

general definition of risk preparedness is given by Wachinger et al. (2013), who see risk preparedness *as "[…] behavior of individuals, who, based on their risk perceptions and other motivations, undertake special measures to mitigate or avoid the respective risk"* (p. 1051). This understanding is in line with my view of perception being the initial point, which is needed to take action and be prepared. If something is not perceived as a risk in the first place, no action will be taken at all.

According to the depicted relationship (Fig. 2), a high level of awareness can lead to stronger worry and consequently to a higher preparedness of individuals or societal groups. On the other hand, a society or individual, who feels well prepared, will worry less about a risk. This in turn might lead to a reduction of awareness over time, if no hazardous event occurs. Raaijmakers et al. (2008) emphasize in this regard that *"awareness will not necessarily lead to worry, and worry not necessarily to preparedness"* (p. 312). This phenomenon has also been observed by Wachinger et al. (2013) who refer to it as the 'risk-perception-paradox'. According to them, three reasons exist why perception and awareness of a risk do not necessarily lead to preventive action. The first reason refers to the fact that there might be other risks or problems that are perceived as more important, or that the benefits of a situation simply outweigh the possible negative consequences, as the threat is perceived to be low. The second reason is based on trust and responsibility. The responsibility to act in regard to a specific risk is in this case seen somewhere else. High trust in authorities or existing (defence) structures, for example, reduces the probability of individual preventive measures. The last reason is based upon individual ability or ignorance. A lack of economic or personal resources can therefore create the inability to act. Ignorance, in contrast, is a conscious decision not to act.

Comparable patterns of a 'risk-perception-paradox' have been defined by Raaijmakers et al. (2008). According to them, the risk characteristics awareness, worry and preparedness can be used to describe social risk typologies, which almost completely match the reasons provided by Wachinger et al. (2013) for why no measures are taken despite awareness of a risk (see Table 1). Close to the first reason provided by Wachinger et al. (2013), the type 'safety' is described by Raaijmakers et al. (2008). This type is aware of a risk but not worried, the individual may take the risk because it is accepted or believed to be small (also benefits may outweigh). The second reason also matches the second type, which Raaijmakers et al. (2008) call 'risk reduction'. Here, the individual is aware and worried, but the responsibility is seen at the level of authorities and no individual action is taken. Also the last reason can be found in the type called 'ignorance', where an individual is not aware, not worried and consequently not prepared, hence no action will be taken. The difference to Wachinger et al. (2013) in this case is the absence of awareness.

Table 1: Typology of reasons for a lack of risk preparedness

Wachinger et al. 2013	**Raaijmakers et al. 2008**	
"Risk-perception-paradox"	*Awareness and worry*	*Type*
Other problems perceived to be more important	Aware but not worried	Safety
Responsibility seen somewhere else	Aware and worried (Responsibility for risk reduction seen somewhere else)	Risk reduction
Lack of ability, ignorance	Not aware, not worried	Ignorance

Raaijmakers et al. (2008) argue th*at "awareness and preparedness can be directly influenced by public policy"* (p. 313) but worry (as located in the middle) only changes as a result of changes in awareness and preparedness. However, the perception process itself is missing in this perspective. Therefore, I argue that awareness, referred to as knowledge by Raaijmakers et al. (2008) is the result of risk perception, seen as a process of collecting, selecting and interpreting signals. At the same time, existing knowledge (awareness) certainly influences perception as well. However, in my opinion, perception is the necessary preceding step to awareness. How a risk is perceived and which factors influence this perception consequently plays a crucial role for the awareness-worry-action chain. Hence, I added perception as a starting point for the individual assessment of risk to the visualisation of flood risk characteristics by Raaijmakers et al. (2008) (see Fig. 3).

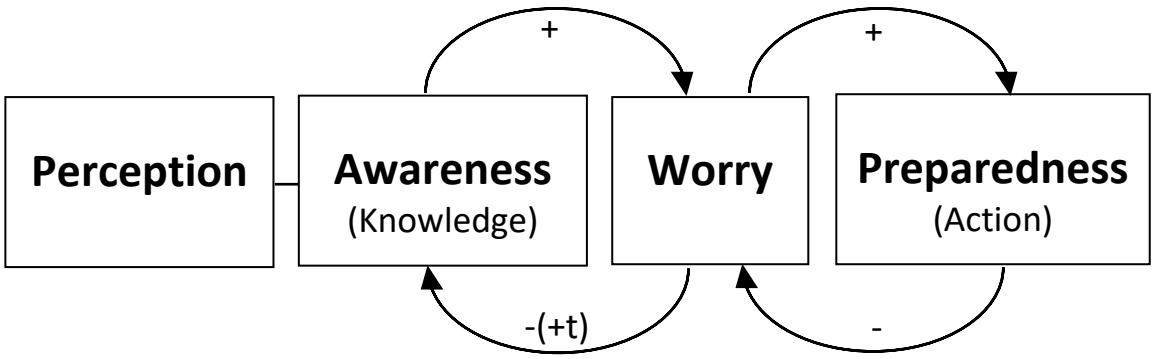

Fig. 3: Risk perception-action chain (based on Raaijmakers et al. 2008, p. 312)

As stated above and explained with the examples of Wachinger et al. (2013) and Raaijmakers et al. (2008), it is still not clear how risk perception is linked to risk preparedness. Risk perception is very subjective but depends on a variety of factors. *"Perceptions may differ depending on the type of risk, the risk context, the personality of the individual, and the social context. Various factors such as [prior] knowledge, [direct/indirect personal] experience, values, attitudes and emotions influence the thinking*

and judgement of individuals about the seriousness and acceptability of risks" (Wachinger et al. 2013, p. 1049). It is therefore obvious that preparedness to risks is not simply a matter of public policy, but subject to various influences. Thus, there is a need to try and understand as much of these influences and local context to get an idea of which actions are taken and why. The following paragraphs will point to some influencing factors in this regard.

The role of place (attachment) was already mentioned in the last section in regard to its identity-establishing role and it is also of importance for how risks are perceiveived and dealt with locally. While Quinn et al. (2015) stress *"that identity and place attachment are central to […] how risks, such as those posed by climate change, are framed and managed […]"* (p. 160), Dominicis et al. (2015) state that *"there is still not a consensus about what exactly encourages people to carry out preventive behaviours to cope with environmental risk"* (p. 67). To develop a functioning risk communication and accomplish adaptation processes, it is of vital importance to increase the understanding of the connection between risk perception and individual preparedness measures. However, many factors influence risk perception and lead to biases, hampering the direct link between risk perception and preparedness. Dominicis et al. (2015) argue that affective based biases, as place attachment for example, can lead to non-adaptive behaviour, or at least act as a barrier: *"[…] even though higher levels of risk perception may exert a positive effect in improving people's willingness to cope with an environmental risk, this effect is weaker when it is associated with strong place attachment"* (p. 66). Here, the authors explain this finding with the strong link of place and identity and that place attachment acts as a defense mechanism to protect one's identity when a threat is perceived. Quinn et al. (2015) also argue that consistency of place and identity is crucial for psychological well-being and that strong place attachment may hamper adaptive changes. However, other studies show different or even contradicting results. Bernardo (2013) for example found in her study *"that place attachment contributes to amplifying high probability risks and attenuates the perception of low probability ones"* (p. 323). Although results may not indicate how exactly place attachment is linked to perception and action, it stresses the need to consider place attachment for climate change adaptation and therefore the importance to address risk perceptions on the local level (Dominicis et al. 2015), which will be done in the context of this work. This is also emphasized by Masuda and Garvin (2006), as they explain *"that risks are socially constructed according to a complex array of localized factors specific to particular places*" (p 451). Accordingly, values, emotions and attachment to a place are not just individual factors, but embedded and embodied in the broader societal and risk context. Therefore, Costas et al. (2015) argue that *"the cultural settings of a group […] in a place-based context strongly influence the perceptions and actions taken"* (p. 10). In regard to climate change adaptation, place attachment might consequently be an important factor that influences whether implementation succeeds or fails (Amundsen 2015).

Once high awareness and worry about a risk is there and *"the more people worry about the risk, the larger the demand from that group of individuals is to reduce the risk"* (Raaijmakers et al. 2008, p. 311). The large demonstrations of Fridays For Future, which represent the movement of young climate activists, give an idea of what it means if a large group demands action. Such a high level of worry also creates a *"greater societal basis for risk reducing measures"* (ibid., p. 313). However, high awareness and worry tend to fade. *"Over long periods of time, the sense of familiarity with sources of risk increases, as does the population's sense of control"* (Bernardo 2013, p. 324). This can be due to the fact of infrequent occurrence of an event (Raaijmakers et al. 2008), but also after a disaster experience (Wachinger et al. 2013), when daily live slowly moves back to normal. A special case in this regard is the belief to be safe in a place if a catastrophic event already happened. Certain hazards are perceived as 'once-in-a-lifetime' event, which one will consequently not experience again (ibid.). Therefore, it is crucial to keep the memories of personal experiences alive and preserve awareness. In order to do so, a risk communication needs to be developed, which takes the factors of individual risk perception into account, as simply informing people is not enough to keep or make people aware of a potential risk and to encourage preventive behaviour (Dominicis et al. 2015; Mercer et al. 2012).

Another important factor is the *"increased pace of change occurring today […]"* which *"may result in communities being increasingly unaware of the resulting impact of […] for example climate change"* (Mercer et al. 2012, p. 89). Additionally, the phenomenon of climate change is so difficult to grasp for individuals, because it creates the feeling of helplessness (Nerlich and Jaspal 2014) and the result of potential individual measures become rarely visible directly, but rather after years or even decades. This makes the abstract entity of climate change intangible for the majority of people, which often leads to inaction as possible impacts can hardly be referred to own actions.

One way risks are communicated is through media like news on TV or in neswspapers (Nerlich and Jaspal 2014; Wachinger et al. 2013; Masuda and Garvin 2006). Nerlich and Jaspal (2014) studied the symbolic meaning that images about extreme weather carry in regard to their emotional response. They found that most images of extreme events (floods, droughts, heat waves, hurricanes, ice/sea-level rise) and their consequences *"represent human suffering and loss"* (p. 272), symbolise vulnerability and have emotional meanings that are very negative. In conclusion, they argue that all these images *"to some extent, symbolise helplesseness and may thus lead to disengagement rather than engagement with the issue of climate change"* (p. 253). However, Wachinger et al. (2013) are more sceptical on how media influence risk perceptions and refer to studies that indicate *"that individuals select elements from media reports and use their own frame of reference to create understanding and meaning"* (p. 1060), and therefore use media to reconfirm prevailing attitudes. Kühn (2017) frames this phenomenon as 'confirmation bias', in which existing reservations get

confirmed. Thus, the integration of this selected meaning to the wider framing of a societal group even strengthens a certain understanding, as new information is always considered against this frame of reference and might therefore be resisted (Lupton 2006; Kasperson et al. 1988). Dake (1992) states in this respect: *"No doubt risk perception is socially constructed and culturally biased in the sense, and to the degree, that individuals respond to and reshape prevailing opinions in their own social circles"* (p. 32).. Hence, the strong influence of existing values in regard to new information and the barriers to updating these attitudes have to be taken into account for adequate risk communication (OECD 2019).

In this context, the role of trust, as one of the most important aspects for the communication of risk, needs to be explained. Lewis and Weigert (1985) describe trust in social systems in the way that "*the members of that system act according to and are secure in the expected futures constituted by the presence of each other or their symbolic representations"* (p. 968). They describe trust as *"collective attribute"* (p. 968), as it is necessary for structuring social relations among people. Therefore, they argue, *"the primary function of trust is sociological rather than psychological, since individuals would have no occasion or need to trust apart from social relationships"* (p. 969). According to them, trust is cognitive, emotional and behavioural. *"The manifestation of trust on the cognitive level of experience is reached when social actors no longer need or want any further evidence or rational reasons for their confidence in the objects of trust"* (p. 970). Moreover, trust is always characterised by a more or less emotional bond between people, where betrayal can threaten the relationship itself, not only in regard to the subject at hand. For the behavioural aspect, Lewis and Weigert (1985) argue that trust creates trust so that, for instance, if someone has the feeling to be trusted by a person, he/she is likely to also trust that other person. Subsequently, Liebermann (1981) is right with his statement that *"trust can be promised and trust can be earned, but it cannot be ordered"* (p. 134), an aspect which emphasizes the point of trust being a social construction. For Lewis and Weigert (1985), *"trust begins where prediction ends"* (p. 976) and it is the *"functional prerequisite"* for solidary groups. Wachinger et al. (2013) argue similarly in regard to risk perception: *"Trust is employed by individuals to manage personal risk through externalized faith: as a result of an increasingly complex world, individuals are not able to inform themselves about all threats that they face. Therefore, they are forced to trust in authorities and experts"* (p. 1053). Moreover, whether a new information (e.g. about a risk) seems trustworthy, strongly depends on the source, and if an individual can relate to underlying values (OECD 2019). If so, trust in authorities is likely to be used as a 'shortcut', bypassing the need to make own judgements about a potential risk (Wachinger et al. 2013) and therefore serves as a mechanism to simplify the situation (Kasperson et al. 1988). Trust in authorities also reduces the probability of individuals to take individual preventive measures, as they feel protected. At the same time, trust in authorities is needed for warnings etc. to be taken seriously. Fig. 4 depicts the relationship between trust and individual risk preparedness. It is therefore crucial to find the right balance of conveying trust while encouraging

individuals' preparedness to take actions. Another important point is mentioned by Anderson (1978), as he argues that trust declines in contexts of rapid change (p. 173), representing another challenge in an increasingly dynamic world.

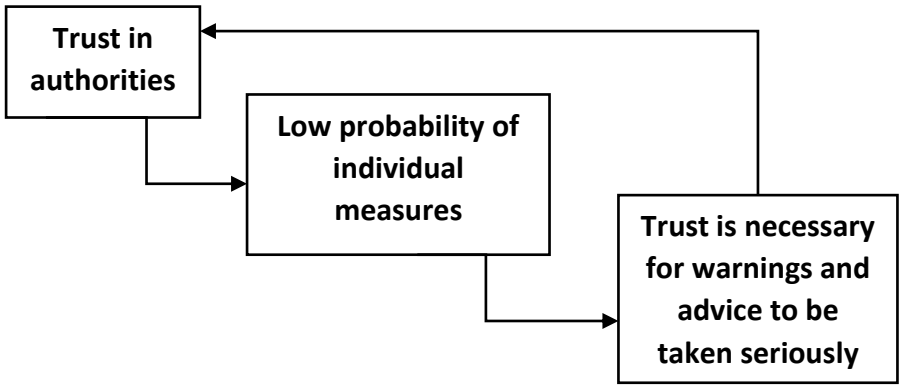

Fig. 4: The role of trust for risk preparedness (own depiction, based on Wachinger et al. 2013)

Trust (in authorities for example) has a strong element of power, as Slovic (2001) points out in regard to the framing of risk:

> *"Whoever controls the definition of risk […] controls the rational solution to the problem at hand. If you define risk one way, then one option will rise to the top as the most cost-effective or the safest or the best. If you define it another way […], you will likely get a different ordering of your action solutions. Defining risk is thus an exercise in power"* (p. 23).

This aspect is also acknowledged by Masuda and Garvin (2006), who see risk communication as conflict about appropriate decisions and tolerable risk levels. According to them, the negotiation about risks depends on who is allowed to talk and advocate the respective view of a risk. They describe this as *"politicised process"* (p. 437), in which some are more privileged than others (see also Dake (1992) on this topic). Risk communication is therefore a question of negotiation, but also of legitimacy, which will be addressed in the following section.

2.2.2 Risk as a matter of social framing and practical negotiation

How risks are perceived and how respective preparedness measures look like, is obviously socially negotiated. The process of communication is iterative in character, and defines how societies handle potential risks such as climate change. Formal and informal institutions as well as identity strongly influence not only how risks are perceived, they also affect the nature of the negotiation process, who takes part in it and how risks are consequently approached. Hence, the perception of climate induced

changes and risks is negotiated locally against the background of an existing risk culture (see section 2.3). The outcome of this negotiation process determines how and if individuals and communities take preparedness actions and therefore it also shapes the materiality of coastal areas. As the determining factors of risk culture, institutions, identity and treatment of risks are all interlinked, the results of the negotiation process feed back into risk cultures, which is why they are not static, although changes might not always be visible. The heavy dynamics inherent to climate change and the large uncertainty connected to its precise consequences tend to rock the stable construct of risk culture, which has often not considerably changed for decades. Due to the uncertainty bound to climate change, various opinions exist of how to tackle necessary adaptation measures. Therefore, it's hardly surprising that negotiation processes about climate change adaptation often lead to heated discussions about different ways of adaptation and best options, even more so when existing strategies are questioned.

First of all, *"[…] negotiation is defined as a process of value and behavior modification in which peaceful means are used to alter divergent positions toward a common convergence of values"* (Spector 1977, p. 608). Participating groups in risk communication are those, who are responsible (e.g. authorities), but also those who are affected (Masuda and Garvin 2006), while one group or individual can indeed be responsible for taking measures and be affected at the same time, especially when looking at preventive measures on the personal level. However, public participation is often still limited, although it is argued by Slovic (2001) that *"there are legitimate, value-laden issues underlying the multiple dimensions of public risk perceptions, and these values need to be considered in risk-policy decisions"* (p. 21).

An important basic assumption when looking at such a process, is that *"[…] all actors participating in the communication process transform each message in accordance with their previous understanding of the issue, their application of values, worldviews, and personal or organizational norms as well as their own strategic intentions and goals"* (Renn 2003, p. 377). It is therefore also very likely that although the interest of a certain group is represented, individual interests may prevail or at least be of influence in the negotiation process (Spector 1977). Accordingly, communication is always biased by diverse factors. Johnson and Covello (1987) describe these biases as perceptual filters, which *"admit concerns relevant to their day-to-day experience, while blocking those ideas that are irrelevant or would place obstacles in the way of their daily lives"* (p.21), which is why people often talk past each other. If these filters are not recognized and new conceptions are not even considered, this 'closed-mindedness' can obstruct a fruitful negotiation process (Spector 1977).

As touched upon, communication and negotiation about risk is a question of power (Masuda and Garvin 2006; Slovic 2001) and legitimacy. In order for the resulting measures to be accepted, *"dialogue, coordination, political will and transparency"* (Costas et al. 2015, p. 10) are crucial. Slovic (2001) argues

that it is necessary to introduce *"more public participation into both risk assessment and risk decision making in order to make the decision process more democratic, improve the relevance and quality of technical analysis, and increase the legitimacy and public acceptance of the resulting decisions"* (p. 23). To maintain trust and include the contextual factors of risk communication, it is crucial to recognize *"interested and affected citizens as legitimate partners"* (p. 23). This was also found by Quinn et al. (2015): *"If people were given voice, felt they had been treated well, and that established relationships and identity roles were honored, […] they were more likely to be happy with procedures even if the outcome was not particularly favourable to themselves"* (p. 163).

Climate change and its uncertain outcomes are perceived as a threat to identity and places that people have established bonds with. It is very likely that many places will change as result of adaptation measures. *"Given how important place is for people, and the psychological desire for consistency, these are changes that will need to be carefully negotiated to ensure sensitive, sustainable and fair adaptation"* (Quinn et al. 2015, p. 165). This entails how a community negotiates the perceived risks and the necessary preparedness measures, which determine how coastal areas look like. *"If the future development of a region is co-determined by the people that live in it, then their ideas and views, values, knowledge and past experience become all-important factors in determining the trajectory of a system"* (Ratter and Gee 2012, p. 127). Hence, in order to achieve the acceptance of measures by the people who are living in an area, a trustworthy, participatory and transparent process is needed, which recognises views and perceptions of the public and consequently reduces power imbalances.

2.3 Risk cultures: from rigidity to process

Apparently, the concept risk culture consists of the two terms risk and culture, which have been elaborated upon in the previous sections. In combination, the compound represents the beliefs, values and practices, which are the basis for the decision of what is to be framed as a risk and how to handle it. In the following paragraphs, I will give a brief overview of the research (and its criticism) that has been done so far in the field of risk culture and reveal existing gaps in research.

As mentioned earlier, risk was and is often still seen as something objective, an external phenomenon. It is only within the last 40 years that societal aspects and dimensions have gained prominence in risk research. These considerations were triggered by concerns about risks of technology, hardly surprising after the atomic bombing of Hiroshima and Nagasaki in 1945, decades of cold war and the nuclear disaster in Chernobyl in 1986. Such kinds of risk represent the initial points of departure for Ulrich Beck to develop his idea of a '(world) risk society' by taking risk away from logic and rationality towards a

new modernity driven by the *"logic of ambiguity"* (Beck 2015, p. 178). In his concept of a risk society *"internal risks are generated by the processes of modernization which try to control them"* (Beck 2003, p. 257) *"and cannot be socially delimited in either space or time"* (Beck 1996, p. 1). He further argues that a *"risk society is not an option which could be chosen or rejected in the course of political debate. It arises through the automatic operation of autonomous modernization processes […]"* (Beck 1998, p. 28). Although this concept leaves room for discussion as it creates the impression of human subjection to modernisation processes, it represents one of the first attempts to grasp the connection between risk and societal processes. When looking at the role of culture and social context in the discussion about risk, it is moreover inevitable to mention the work of Mary Douglas and Aaron Wildavsky (Douglas and Wildavsky 1982). Their view on the cultural influence on risk perception in America is rooted in the concern about technical dangers as well, but also results from environmental pollution from e.g. nuclear waste and chemicals. Their ideas, as those of Ulrich Beck, became prominent in the 1980s (Cornia et al. 2016; Rippl 2002), while the discussion about the cultural aspect in risk research has moved on considerably since then. In their cultural theory of risk, Douglas and Wildavsky argue that *"the choice of risk to worry about depends on the social forms selected. The choice of risks and the choice of how to live are taken together"* (Douglas and Wildavsky 1982, p. 8). Accordingly, *"individuals choose what to fear (and how much to fear it), in order to support their way of life. In this perspective, selective attention to risk, and preferences among different types of risk taking (or avoiding), correspond to cultural biases – that is, to worldviews or ideologies entailing deeply held values and beliefs defending different patterns of social relations"* (Wildavsky and Dake 1990, p. 43). Douglas and Wildavsky (1982) define four types of social relations: hierarchical, egalitarian, individualist and fatalist, using the dimensions of *"control (grid) and social commitment (group)"* (Rippl 2002, p. 149), which can be either high of low. *"For each of the four types, cultural theory offers clear hypotheses about modes of risk perception"* (Rippl 2002, p. 150), *"pre-established cultural beliefs [that] help people to make sense of risk […]"* (Lupton 2006, p. 13). This sociocultural perspective therefore does no longer frame risk as something objectively ascertainable, but as a social construct: *"[…] Risk perception patterns and the ways in which risks and disasters are managed are the result of social and cultural influences within groups sharing common cultural values, moral principles and world views"* (Cornia et al. 2016, p. 289).

The attempt of Douglas and Wildavsky (1982) to explain *"why some risks are ignored or downplayed, while others are responded to with high anxiety, fear or anger"* (Lupton 1999, p. 39) has been criticised a lot. According to Sjöberg (2000) cultural theory does not explain much of risk perception and only got attention because of *"the persuasive power of speculation"* (p. 6). In his view the lack of explanatory power also accounts for the psychometric paradigm (Slovic 1987), where risk perception is measured

based on cognitive factors as dread risk[6] and unknown risk. Sjöberg (2000) argues that neither the psychometric paradigm nor cultural theory sufficiently explain the variance of results. In regard to cultural theory, criticism was even more diverse and multi-layered. First of all, it is criticised for a lack of empirical evidence (Lupton 2006; Oltedal et al. 2004; Sjöberg 2000); second, it is argued that appropriate measurement instruments need to be developed in order to get profound empirical results (Oltedal et al. 2004; Rippl 2002); third, the term 'risk' is used in a non-precise way, as it is not clearly separated from 'hazard' or 'threat' (Kühn 2017); fourth, cultural theory lacks a clear understanding of what 'culture' actually means (Oltedal et al. 2004) and the fact that culture is not something static or pre-established, is not taken into account (Fischer 2016). This uniform view of culture seems to be the major weakness of cultural theory: *"Culture is often treated as tangible, homogenous, static. The diversity of communities, places, on-the-ground actions and networks for how things are actually accomplished, intricacies of local politics and maneuvering, and layers of sociohistorical inequalities are often missing from expert calculations and official frameworks for action"* (Maldonado 2016, p. 52). Oltedal et al. (2004) additionally point to a methodological problem of Douglas and Wildavsky's approach to capture social relations: for logical reasons they argue that *"the mobility view of culture makes it possible to adhere to different cultures in different situations or parts of life. When people answer a questionnaire, which of the cultures determines their answers? If someone is hierarchical at home but individualistic at work, how will this be captured by a questionnaire that presupposes people to adhere to only one culture?"* (p. 28). Accordingly, culture is not only a highly dynamic construct, it is in particular difficult to ascribe to only one 'culture' or way of life, as also mixed forms are very likely to exist, depending on specific contexts and living conditions. Another important point that has to be taken into account here is the fact that the relationship between culture and risk perception is not a one-way road as assumed in cultural theory, it is rather characterised by multifarious relations. It is, hence, not plausible that culture represents a prefixed set of concepts which determines how a risk is perceived and framed, as risk perception is inherently subjective and dependent on various factors (see section 2.2.1 risk perception and –preparedness above).

Nonetheless, the four types of social relations developed by Douglas and Wildavsky (1982) can be helpful in order to develop a heuristic of different worldviews and the concomitant potential behaviour of individuals. Cornia et al. (2016), for example, used cultural theory as a starting point for their own model in order to analyse how societies as a whole interpret risks and disasters.

[6] Slovic (1987) categorises risks based on judgements of how high the *"lack of control, dread, catastrophic potential […]"* (dread risk) and how *"unobservable, unknown, new […]"* (p. 283) (unknown risk) a certain hazard is perceived.

They applied the aspects disaster framing, trust in institutions and blaming in their work[7]. By means of these three aspects, they positioned seven countries in a triangle of state-oriented, individual-oriented and fatalist risk culture. Although this approach makes use of generalizations, it helps to identify main trends of how a society could deal with possible risks (for a quantitative approach of 'climate cultures' at European coasts see Heimann (2016)).[8] However, their understanding of risk culture as *"the specific approach to risks and disasters shared among the majority of the members of a given group or community"* (Cornia et al. 2016, p. 290), is too general and obviously lacks a dynamic perspective that takes account of the internal heterogeneity of culture.

In addition, more gaps have been identified in cultural risk research that address similar problems. In order to understand the transition and controversy that risk cultures are subject to, there is a need to grasp the societal dynamics inherent in them (Fischer 2016). *"It is important to bear in mind that risk concepts are fluid and dynamic over time and space. It therefore remains vital for researchers to carry out empirical studies that are able to map complexities, contradictions and changes in risk understanding, on the part of both lay publics and experts. In particular, research which investigates the meaning of risk in people's everyday lives […]"* (Lupton 2006, p. 21). Although the highly relevant roles of individual behaviour and societal context at the local scale are increasingly acknowledged in disaster risk-assessment, for impact forecasting and climate change adaptation, an improved understanding and representation of these dynamics is still addressed as challenge for future research (Merz et al. 2020; Aerts et al. 2018; McNeeley and Lazrus 2014). This aspect is also stressed by Maldonado (2016), who criticises that even when culture (tangible and intangible) is acknowledged, the basic approach fails "*to acknowledge the internal heterogeneity of cultures or include the ways in which local cultural framings could potentially guide recovery processes"* (p. 52). A recent publication of Merz et al. (2020) argues for the need of a much broader forecasting system in regard to extreme events, which also grasps societal consequences. They conclude that *"impact forecasting needs to consider societal systems and the structures that support them. Although this environment has been largely shaped and created by human intervention, our knowledge of it is surprisingly weak […]"* (p. 36). They further state:

> *"Exposure and vulnerability can be highly dynamic in space and time. Impact forecasting may require very detailed knowledge about the societal context, such as local risk reduction policies or*

[7] Disaster framing is looked at in respect to whether people stress human mastery or subjugation to hazards. Trust in institutions elaborates on the role and relevance of responsible authorities and mass media. The last aspect of blaming is used to shed light on whether responsibility is attributed to authorities, the victims itself or other forces such as fate.

[8] Heimann 2016 used a quantitative approach to explain the cultural aspect of differing interpretations and behaviour in regard to climate change. He identifies climate cultures at European coasts based on shared vulnerability and resilience constructions. To explain differences, so called background knowledge was used, which consists of values, beliefs and identification (with place).

risk perception of exposed people. A closer collaboration of natural sciences, engineering, and social sciences is required to understand the role of the human factor and its influence on the transformation of a hazard forecast into an impact forecast" (p. 36).

Accordingly, the urgency to include local cultural perceptions and framings, as well as their dynamics in risk research has been recognised by many scholars, but so far this has not been implemented. This does not only hold true for natural science, but a dynamic cultural perspective is also still lacking within cultural risk research, as outlined by Fischer (2016) and Lupton (2006). Thus, existing research already revealed many research gaps, but did not address approaches to fill these weaknesses still prevalent in social risk research so far. In order to contribute to filling these research gaps, this work will address the following aspects:

- Gain an understanding of how risks are negotiated locally and which factors influence this process
- To do so, it seems essential to elaborate on:
    - The connection between risk perception and risk preparedness by considering the societal context
    - Individual perceptions, behaviour and the resulting framings of risk and its influencing factors on the local scale
    - The dynamic understanding of culture and risk cultures by mapping contradictions and changes

There are very few theoretical approaches in regard to these shortcomings, as for example of Kienitz and Herlyn (2018), who define risk culture in an advanced manner: *„[…] risk culture [is a] dynamic web of relevant practices and interpretations […] in and with which involved actors position themselves"*[viii] (p. 6). This interpretation defines culture as inherently dynamic and individuals and culture are conceived as interdependent, therefore providing an advanced view to Douglas and Wildavsky (1982). Based on the view of Kienitz and Herlyn (2018), Fischer (2016) also pleads for a dynamic view of risk culture and proposes three dimensions to describe and analyse risk culture:

1. Risk perception, interpretation and handling of risk
2. Ascription of responsibility and fault
3. Ascription of identity (oneself and towards others) and social positioning. (p. 199)

Her approach has not been applied yet, but provides a promising frame to address the research gaps identified above. As I have demonstrated in this chapter, risk cultures have to be understood as a dynamic social construct, as it is contested and always negotiated against personal and local frames of reference. Building on Fisher's dimensions, I will provide a more comprehensive account of the make-up of risk cultures and thereby enhance the concept, while also adding a spatial dimension. My dimensions of risk culture are shown in Table 2 below. Risk perception and the connection to action and preparedness in regard to perceived risks will be analysed. Institutions (formal and informal),

match Fischer's dimension of responsibility. This aspect is also found in the model of Cornia et al. (2016), both, in their dimension of 'trust in authorities', as well as 'blaming' (attribution of responsibilities). By investigating institutions, a core element of social stability will be looked at, which plays an important role for individual orientation. The last dimension of Fischer is that of identity, which I modified into identification with place in order to grasp the spatial and emotional dimensions of a place and their identity-establishing role. By doing so the concept also addresses the important local context and its influence on the framing of risk.

Table 2: Dimensions of risk culture

Fischer (2016)	**Stumbitz (2022)**
Risk perception/ action	**Risk perception/ preparedness**
Responsibility	**Institutions**
Identity	**Identification with place**

All three dimensions (risk perception/preparedness, institutions and identification with place) are strongly interlinked, as changes in one dimension also bear an impact on the other dimensions. Especially institutions and identity creating processes aim at generating and maintaining stability of social contexts and everyday live. Conceiving these coherences and the history of developments within a community is fundamental, as they can provide an understanding about why the perception of risk and connected actions and practices can vary substantially between different communities and explain why new dynamics as associated with climate change can lead to conflicts within an already existing risk culture. Whether and how a certain risk is perceived therefore needs to be considered against all the other dimensions and cannot be studied in an isolated way. By applying my concept of risk culture to two case studies of coastal areas (in Germany and the UK) prone to the effects of climate change, empirical insights will be gained that help to improve the dynamic understanding of local and individual approaches to handling risk and thereby contribute to addressing the research gaps mentioned above.

2.3.1 The cultural dimensions of risk: risk cultures as dynamic processes

Three key dimensions of risk culture and its mutual dependency have been described in this chapter. In regard to current climate change adaptation debates, the question arises how the dynamics and uncertainties are handled by the coastal communities affected. With the help of the following overarching research question (RQ) and sub-questions (SQs), two case studies will be analysed in depth:

How do climate change adaptation discourses influence local negotiation processes and how do they affect the local risk cultures and the materiality of coastal areas?

In order to understand the importance and mutual influence of the different components of risk culture, the following sub-questions were used to gain an understanding of the case-specific risk culture:

1. What kind of climate change adaptation discourses/ -strategies exist in the case studies?
2. In what way do different (institutional?) contexts affect certain spatial visions and which role do institutional actors fill?
3. Which structuring role do attachments to the dwelling place and spatial concepts have in regard to contested or agreed-upon negotiation processes?
4. In what way did the handling of or the dealing with risks change against the background of climate change and how is this change expressed?
5. How are local negotiation processes and practices about climate change adaptation structured and which dynamics were/are they subject to?

The answers to these questions can only provide a snapshot of the case studies at a certain point in time, but can help to gain a better understanding of how climate change is negotiated and which role the local context plays for climate change adaptation. With the help of these insights an improved understanding of how communities handle change might become apparent, which can possibly assist in overcoming the multiple social barriers of adaptation.

The figure below (Fig. 5) shows the structure of risk culture as developed in the previous sections. The three main analytical dimensions institutions, identification with place and risk perception/preparedness each represent a corner of the green triangle, which itself has two layers. The dark green bottom layer refers to informal institutions, historic influences on identity and risk perception, dimensions which can hardly be changed (anymore) or for which change normally takes a long time. The light green triangle in contrast consists of formal institutions, current identification with place and risk preparedness, aspects that are potentially more dynamic as they depend on topical developments. Thus, change can take place much faster. In combination, these layers of dimensions depict (in a simplified way) the constitutive and strongly interwoven characteristics of a risk culture of a community. Risk culture (including its path dependencies) is a social construct which aims to create stability and has recently become increasingly confronted with the emerging dynamics of climate change (as shown at the top of the figure). The challenge of climate change adaptation and how to handle accompanying risks is negotiated against the background of this established risk culture. This negotiation results in a certain materiality of the coastal area, bearing an impact on the community and also feeding back into the existing risk culture.

In order to answer the question of how discussions about climate change adaptation influence local negotiation processes, local risk culture(s) and the materiality of coastal areas, the five sub-questions

are assigned to different parts of the analytical concept. The first question about existing climate change adaptation strategies will draw a greater picture of the case studies and how the topic has been and is currently handled. The second sub-question addresses the distribution of different roles and aims at elucidating the existing institutional setting. Question 3 deals with the identity dimension and aims at understanding the role of place attachment within the negotiation process. The fourth question investigates possible changes in the handling of risks due to climate change with the aim to better understand the impact of climate change on this topic. The same applies to Question 5, which seeks to explore whether and how climate change modifies negotiation processes and if this has an impact on the risk culture.

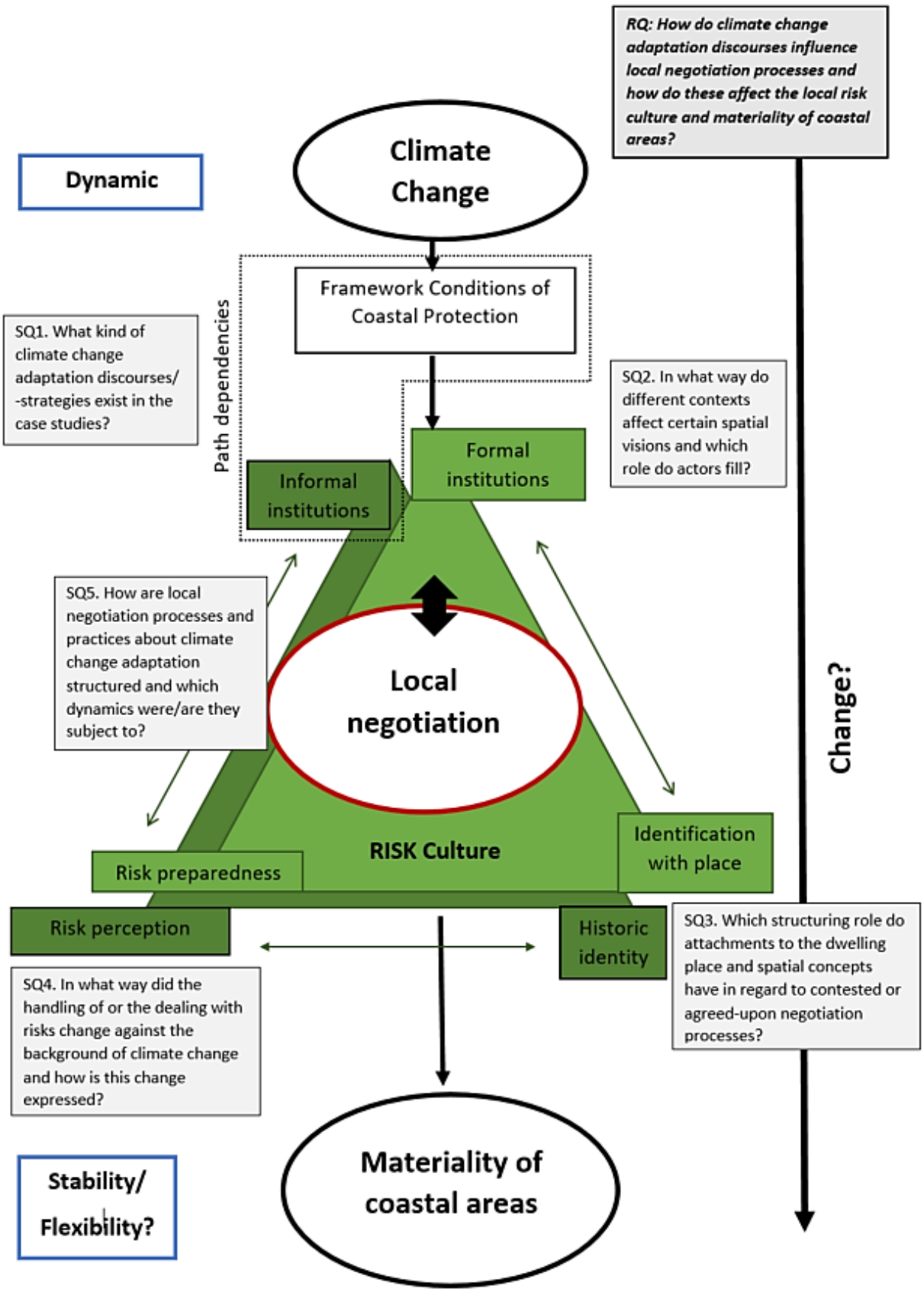

Fig. 5: Analytical concept of risk cultures

2.4 Methodological approach: Investigating risk cultures

To get an insight into local and individual framings and to grasp the various dimensions of a community's risk culture calls for a qualitative methodological approach. Qualitative methods in social research aim at disclosing and systematising meanings by trying to understand the sense of social action (Meier Kruker and Rauh 2005). The underlying perspective for the present work is theoretically based on a constructivist rationale which recognises *"social phenomena and their meanings [as] continually being accomplished by social actors. It implies that social phenomena are not only produced through social interaction but are in a constant state of revision"* (Bryman 2016, p. 29). Accordingly, social reality results from processes of communication, action, routines and practices, as well as their respective interpretation by those involved in these processes (Reuber and Pfaffenbach 2005). In order to understand the various social constructions of reality, it is essential to try and grasp the *"social (e.g. cultural or historic) conventionalizations which influence perception and knowledge in everyday life"*[ix] (Flick 2000, p. 151). Hence, social reality is no measureable object or predictable process as claimed in many positivist approaches, it rather has a subjective meaning, which needs to be revealed and looked at in order to understand social order and action (Bryman 2016; Fox 2008). The epistemological position of this work is thus to be found in approaches that contrast positivism. These are interpretivism or post-positivism, which root in the work of sociologist Max Weber and his concept of *Verstehen* (understanding) (Bryman 2016; Fox 2008; Meier Kruker and Rauh 2005; Reuber and Pfaffenbach 2005). As explained above, the aim of the present work consists of analysing the role of individual and local framings with regard to climate change adaptation: it thus tries to reveal, analyse and understand individual action and the underlying dynamics of it. The resulting analytical procedure to this purpose is an inductive and qualitative one, which helps to disclose the local sense making instead of testing hypotheses by using a deductive approach. However, research is seldom purely inductive, as interpretations of existing data and theories provide a basis for how research is conceptualized (Strauss and Corbin 1998). This certainly holds true for the context of this work since the interview guide and thus the frame for the collection and first analysis of the data was developed on the basis of preliminary considerations against the frame of existing theoretical approaches. Accordingly, this work started with deductive elements but was complemented by an inductive analysis later on (as will be described below).

Case study approach

Following the interpretivism paradigm and to gain insights and findings that can extend existing knowledge about risk cultures and their role for climate change adaptation, a case study approach was chosen. This provides the possibility of an in-depth exploration of the respective case by analysing

relationships and processes in regard to specific topics (Thomas 2021). Yin (2003) defines the aim of a case study as *"an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident"* (p. 13). Accordingly, the core focus of this approach is on contextual aspects which are of particular importance when looking at social processes. The term "case" itself is rather unspecified and used broadly to describe different things, e.g. a specific phenomenon, a group of people, a country or a period of time (Babbie 2010; Kaarbo and Beasley 1999). For the context of this work, the cases represent two coastal areas in two different European countries, Germany and the UK, and their respective negotiation process about the adaptation of a particular coastal protection measure.

The rational for selecting the case studies was the different result of the respective negotiation process (as identified in the document analysis). While in case study I (Husum, Germany) the negotiation process had ended with no visible change, in case study II (Medmerry, UK) the landscape had got changed significantly by implementing a substantial realignment scheme. This approach was chosen in order to identify if and which dimension(s) of risk cultures determine outcomes of negotiation processes about climate change adaptation. Esser and Vliegenthart (2017) state in this regard that *"comparative research aims to understand how characteristic factors of the contextual environment shape communication processes differently in different settings"* (p. 7). Both cases had largely similar conditions, which is besides EU legislation (the UK was a member state until January 2020) the need to act due to climate change. Furthermore, both cases aimed to adapt coastal protection at the open coast by creating polders[9] that get influenced by the tide. Additionally, the areas were uninhabited and thus chosen to be suitable for an adaptation measure that differed from the existing strategy. Having many similarities, the cases do, however, not match classical comparative research standards, as for example the most different and most similar systems design of Przeworski and Teune (1970), in which cases are chosen that are as similar as possible in order to reduce the number of explanatory variables for the different outcomes. However, another difference between the two examples is the way the coast has been protected in the past: While Husum has a longstanding history of diking, the coastline around the Medmerry area was usually protected by a shingle bank, which got maintained by the responsible authorities. Nonetheless, in both cases negotiation processes took place that appeared suitable to extend the understanding of the dimensions local risk cultures consist of and elaborate on the role of the local context. The comparison of the two different negotiation processes was thus

[9] A polder (koog) is a diked area of land at the coast or next to rivers. In the coastal context along the North Sea coast of Danmark, Germany, the Netherlands and Belgium, polders are areas of (marsh-)land reclaimed from the sea, which got diked and drained.

chosen as applicable in order to answer the research question. However, managed realignment at the open coast has not been undertaken in many places, which further restricted the possible choice.

Data collection

A first step consisted in a document and online analysis that provided the information needed (scope of the project, existence of controversial negotiation process about the adaptation, involved interest groups etc.) in order to select the two cases and get an overview about the preceding developments. The document analysis consolidated the impression that the adaptation projects of the respective cases were both quite controversial. The variety of written sources comprised newspaper articles taken from online databases, political and administrative documents – such as published opinions or written statements of the various parties involved in the process – available on the web, in archives and provided by participants of the projects. Insights from these documents helped to contextualise the contested topic around coastal adaptation in Husum as well as the realignment measures carried out in Medmerry. This procedure was complemented by a close examination of written project reports (WWF 2016; Maplesden et al. 2016; Cobbold and Santema 2008, 2001) and scientific publications (Hofstede 2019; Reise 2016; Gray et al. 2016; Cunningham and Cobbold 2015; Esteves 2014a) that contributed to gathering and comparing various perspectives on the problem cases. Although this first step facilitated to structure the developments in the cases and assisted in developing the research question, the insights were still rather superficial and limited with regard to personal opinions and social processes that took place beyond published documents. Accordingly, semi-structured interviews with local actors involved in the projects were chosen to get a deeper understanding of the disputes revolving around the topic of local climate change adaptation in both cases.

Semi-structured interviews

While the access to the research field was already established in Husum, being my hometown, and already having done research about the topic there for my master thesis, Medmerry was a completely new area for me. The document analysis provided some contact data of people who were involved in the project, with whom I got in contact via e-mail end of 2017. To create a more personal relationship with the people involved and to encourage acceptance and trust (Rieker et al. 2020), as well as to get an impression of the area, I decided to visit Medmerry prior to the actual data collection phase. During this first, explorative trip to Medmerry in January 2018, I talked to different people being more or less involved in the Medmerry project, among them also two key actors, who provided promising insights into the process of the project.

In Medmerry as well as in Husum, project groups existed (Medmerry Stakeholder Advisory Group (MStAG) and Projektgruppe Dockkoog), which consisted of different interest groups around the

adaptation process. These groups were a main source for recruiting interview partners (based on availability of contact data and whether potential partners replied). These interview partners were complemented by other key actors from the political sector or authorities involved, if they were not part of the project groups, to create a cross-section of the major opinions within the negotiation processes (see Table 3 below for list of interview partners). Accordingly, the group of relevant actors was quite restricted in both cases, which is why it was not possible to achieve an even distribution of gender, age or education level. However, in both cases almost all interview partners lived in the respective area (except for five, who lived in the wider area) and thus additionally provided insights in their views as part of the community and not only in regard to their role as representative of a certain group. In both cases 12 face-to-face interviews were conducted. The interviews in Medmerry took place during a second field trip in May 2018 and those in Husum between September and November 2018. The location of all interviews was chosen by the interviewees to make sure that they felt comfortable, enhance the interviewees' empowerment and create a social setting in which they would feel at ease to speak freely (Elwood and Martin 2000). All interviews lasted between 45 to 90 minutes, were recorded with participants' verbal consent and transcribed verbatim afterwards (257 pages transcript in total). The interviews in Husum were conducted in German and quotes were only translated to English if they were used for the empirical analysis in Chapter 3.

A semi-structured interview guide (see Appendix) was developed beforehand to make sure that all aspects identified as relevant (within the theoretical frame) for analysing local risk cultures would be addressed. The interview guide was critically inspected and revised in the course of the interviews. Structurally, all interviews started with questions regarding the social and emotional attachment to the dwelling place, followed by queries about individual experiences with local and regional weather phenomena and the resulting local framing of climate change and adaptation to it, including the role of different institutions. These first sections aimed at situating the interviewees and me as interviewer socially and emotionally within the case study area as well as in regard to the framing conditions and the context of local climate change adaptation. In the main part, the questions addressed the respective projects, their details and the experiences made during the negotiation process about the respective adaptation measure. This part included queries about the negotiation process and different roles, questions addressing individual reflection about possible improvements as well as assessment of project outcomes. The final question dealt with the future development of the region and whether climate change was expected to entail or lead to local changes.

Table 3: List of interview partners

Case		Interest group	Type
Husum	Project Group[10]	WWF	international non-governmental nature conservation organization
		LKN	Federal coastal authority
		Nordsee Tourismus Service	Local tourism agency
		Citizens' Initiave	Citizens' Initiative
		UNB	Lower Nature Conservation Authority
		City of Husum	City administration
		Deich-und Sielverband Husum Nord	Local dike association
		CDU	Political party - Christian Democratic Union
		SPD	Political Party – Social Democratic Party
		Bündnis 90/ Die Grünen	Political Party – The Green Party
		SSW	Political Party - South Schleswig Voter Federation
		WGH	Political Party - Association of Independent Voters
Medmerry	MStAG	Environmental Agency (x2)	Coastal authority
		Birdham, Earnley and Sidlesham Parish Council	Parish Councils
		Selsey Town Council	Town Council
		Chichester District Council (x2)	District Council
		Ham residents group	Interest group
		Manhood Wildlife Group	Interest group
		Medmerry Park	Private tourism sector
		Wicks Farm	Private tourism sector

Data analysis

In a first analysis, all interviews were deductively coded along the interview guide, using the computer programme MAXQDA, resulting in a total number of 1312 codings (see Fig. 6). Therefore, answers to the questions of the interview guide were searched for and tagged with a code. For some categories sub-codes appeared to be useful within the coding process, creating a multi-layered and interconnected category system, which helped to structure the huge amount of interview material (Schreier 2012). The tagged parts were extracted from the program and the assigned answers of each code were analysed content-wise.

[10] The project group in Husum only consisted of eight different interest groups. Unfortunately the involved members of Husumer Wirtschaftsgesellschaft and Industrie- und Handelskammer (IHK)
had left their positions by the time the data collection of this thesis started and were thus not available for an interview.

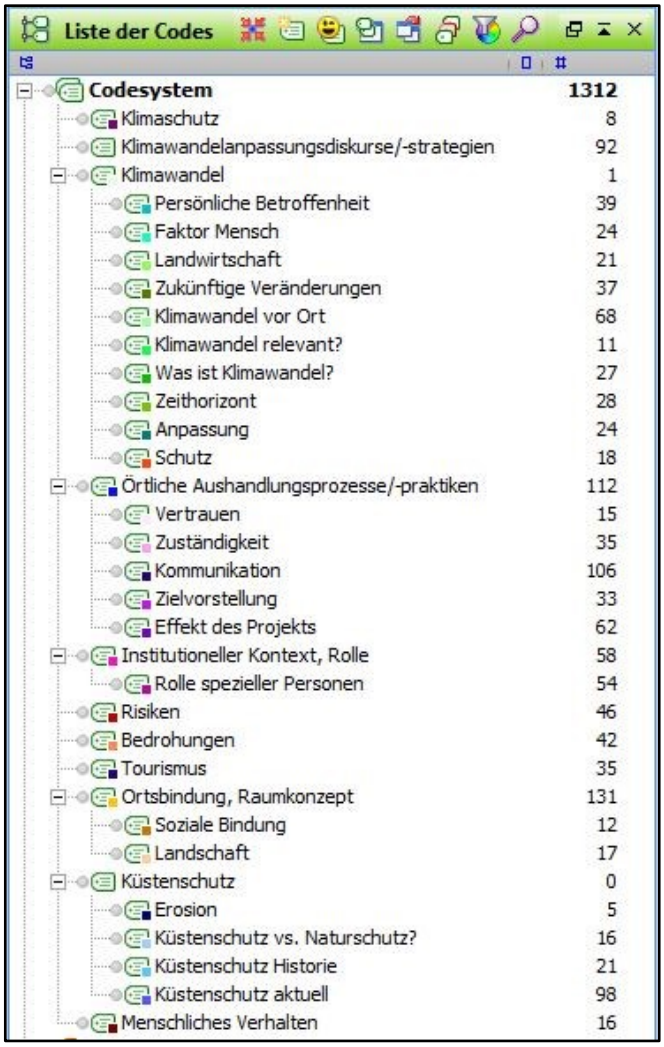

Fig. 6: Multi-layered category system (screenshot from MAXQDA)

Accordingly, MAXQDA was mainly used to structure the transcribed interviews by categorising and coding the given answers and therefore iteratively creating a category system (Kuckartz 2007) that went beyond what was originally included in the interview-guide This procedure represents the first seven steps of a structuring content analysis as described by Mayring 2010 (see Fig. 7). While analysing each coded category, opposing mind-sets between different interview partners were identified in the interviews that were conducted in Husum. As the identification of mind-sets was not intended originally, all pre-structured interviews were read more openly and inductively in a further round of analysis with a focus on emerging topics beyond the interview guide and subsequently analysed from a grounded point of view using an inductive approach (Charmaz 2014; Babbie 2010). This second round of analysis assisted in avoiding any preconceptions and resulted in a different set of analytical categories in regard to climate change adaptation. This more inductive approach (also part of step 7 of the content analysis) was first applied to four randomly chosen interviews meaning that once central themes or topics emerged, segments of the interviews transcribed were individually grouped in preliminary analytical categories. These bottom-up categories were discussed step by step with a

colleague to assess their general meaning, analytical plausibility and empirical relevance for the case of Husum. This procedure resulted in a set of two main categories: the preservationist and the changer, including subcategories which represent the respective line of argumentation. A detailed explanation of these mind-sets and their respective proportions in Husum will be given in the empirical analysis of sub-question two (section 3.2.2.). Subsequently, all remaining interviews were analysed following the identified code system of preserve and change, which corroborated the code system. The interview material gathered in Medmerry was also analysed in search for opposing mind-sets (illustrating contrasting endpoints of a spectrum), but differences found were not as distinctively structured as in Husum. Results of this analysis will be elucidated in section 3.3.2.

Fig. 7: Process of structuring content analysis (translated from Weig 2015, p. 114, based on Mayring 2010, p. 93)

Reliability of the data

Quality criteria of qualitative research are not as easily met as in quantitative research. In quantitative research, reliability refers to the replicability of findings across time, contexts, and research instruments (O'Connor and Joffe 2020). Such replicability is hardly possible in qualitative research, as it is neither possible nor desirable to conduct exactly the same interview twice (Meier Kruker and Rauh 2005). Furthermore, as emphasised by Clarke and Braun (2013), reliability is not an appropriate criterion for assessing qualitative work. However, comparability of results can be ensured by using standardised methodological procedures (ibid.) as for example the use of the semis-structured interview guide in this work. The case-study approach aimed for an in-depth understanding of the cases and the context they are embedded in, which is why aspects of generalisability were not of importance for this work.

Positionality and reflexivity

Research, especially qualitative social research can never be fully objective, as the researcher is also socially and culturally shaped over the life course. Some of these aspects of positionality are regarded as being fixed, e.g. gender, skin-colour or nationality, others such as e.g. experiences, political views or geographical location are rather flexible (Holmes 2020). However, these aspects influence and individual's world view and are thus relevant for the research process. This was especially of importance, as I conceive myself as an 'insider' of one of the cases. The insider and outsider position to the culture that is studied, as well possible (dis-) advantages are discussed by Holmes (2020). There are obviously many advantages of being an insider, which I experienced myself in the case of Husum. First of all, access to the field was pretty easy as some interview partners had even heard my last name in different contexts before. At the latest when I mentioned that Husum is my hometown, I was regarded as one of them. I had the impression that this created a higher willingness to participate in my research, as being a 'local' increased the trust and also generated a more open atmosphere during the interviews. However, and although I tried to be aware of a neutral researcher perspective, being an insider to this case might also have implied unknown biases. In Medmerry, I had the position of an 'outsider' and thus less knowledge about the local context and interconnections of the people involved. Wherever possible, I tried to reflect on the fact that my personal background is of influence for the analysis and interpretation of the data.

Ethical considerations

Doing social research implies to be aware of certain ethical agreements (Babbie 2010). These were adhered to by ensuring the voluntary participation of the interview partners as well as by guaranteeing anonymity and confidentiality. However, given the nature of the research and the small sample size,

the issues of confidentiality and anonymity posed a particular challenge and care has been taken regarding the possible identification of persons, organisations and places. All reasonable precautions were taken to ensure that the participants were in no way harmed; for example, regarding their professional and personal reputation, by invasion of privacy or deception. Participants were given as much information as possible, including the motivation for the study, the nature of their involvement in the research, how long their participation was going to take, that they could withdraw from participation at any time, that recording equipment would be used, and how the data would be used.

Reflection on methods

The comparative approach of this study provided detailed insights in the negotiation processes of the two case studies, and showed the relevance of the three dimensions of risk cultures, while clearly underlining the dynamic and heterogeneity of it.

Although the chosen cases contributed to a better understanding of how (climate) change is socially negotiated, analysing two cases with the same history in regard to coastal protection would have provided a better comparability of the respective outcomes of the negotiation processes. Both processes were already completed when the field work for this study started, which is why the answers given in the semi-structured interviews had a retrospective perspective. Participant observation during the processes itself would have complemented the perspective of the interviewees and given the opportunity to get a personal impression of the process (especially about situations of conflict that were described). Additionally, a survey of inhabitants of both areas could have helped to verify statements that were made about e.g. 'the opinion of the majority' (especially in Husum) and thus to clarify whether the individual perspectives of the interviewees match the real societal perspectives about certain points within the process and the final decisions that were made. A survey could have also provided a more diversified societal picture (e.g. in regard to age and gender of the interviewees) and get a broader impression of general points of view (e.g. how climate change and possible threats are perceived). Accordingly, a broader range of perspectives that include those beyond the people who were directly involved could have contributed to gain a deeper understanding of the local societal perspective within which the negotiation processes took place.

3 Risk cultures and climate change adaptation: a practical perspective

The last chapters elaborated on the theoretical background of risk cultures and their constituent components, as well as on methodological aspects to analyse them. The following part will shed light on how coastal areas and their communities deal with climate change adaptation in practice. The

chapter will start with a brief geographical overview of coastal areas, the impact of climate change on them and their basic framework conditions to adapt to climate change. Subsequently, the case studies will be presented, followed by the empirical findings as generated by the in-depth analysis of the interviews (based on the five sub-questions presented above) and a comparison of the cases.

3.1 Coastal areas and littoral societies

Coasts and coastal areas represent unique living environments, which are composed of the manifold different uses, functions and meanings that concentrate on and permeate the place where land and sea meet:

> *"Coasts are defined by their location between land and sea and, unless they have been fixed by anthropogenic intervention, are highly dynamic, subject to constant change. Coasts are the product of complex interactions between abiotic, biotic, and anthropogenic processes on land and in the sea. Over centuries, coastal landscapes have been shaped by human activity—by a long history of settlement, agriculture, and fishing, land reclamation and coastal protection structures, maritime transport and shipping, etc. At the same time, coastal landscapes are characterized by changing attributions of meaning in the past and present. Against the inviting character of the fertile coastal regions and the exploitable fish resources in the shelf area, the threat of the storm-swept sea is omnipresent"* (Ratter and Leyshon 2021, p. 2).

The circumstances of such an environment inevitably lead to certain structures that share at least some characteristics around the world, which is why there have been attempts to define or characterise coastal communities in research: *"[…] there is such thing as littoral society, that is, that we can go around the shores of an ocean, or a sea, or indeed the whole world, and identify societies that have more in common with other littoral societies than they do with their inland neighbors"* (Pearson 2006, p. 353). What is expressed here is that littoral societies are characterised by living in a symbiosis between land and sea, being characterised by traditional ways of living of, together with and in the sea. In an earlier article, Pearson (1985) describes the historic aspect of littoral societies as follows:

> *"Our definition of the history of littoral societies is simply that it is a history focussing on people whose lives were connected with the sea, and who often travelled over salt water or were influenced by what occurred on it. The history of such people is not restricted to the sea. Influences on littoral society of which we must take note can come from far inland. It is always a matter of interaction between the affairs of land and sea. This interaction will never cease at sea, for no one lives totally on the water and completely uninfluenced by the land. The land*

> *frontier is porous, elastic; all we can say is that when a land activity is in no way influenced by the sea, then we are not interested. This then is the land frontier, the end of the littoral"* (Pearson 1985, p. 6).

Ritson and Smalen (2021) whereas argue that there is much more to take from the historic perspective of the littoral (in this case the area of the Wadden Sea), which is cultural imagination. In their perspective, *"the Wadden Sea […] is a globally important wetland site that is historically entangled with the legacies of Enlightenment, empire and extractivism […] [and] constitutes an imaginatively and physically porous edge where modernity and scale can be reimagined and reinterpreted"* (Ritson and Smalen 2021, p. 295). Accordingly, they argue, the exploration of how coastal areas and water have been imagined and developed is not only significant for the imagination of the future, but also for the response to current issues as climate change. This is especially important, as the symbiosis between land and sea, which originally had an impact on the lives of people in coastal areas is under transformation. *"People still live on the coast"* (Pearson 2006, p. 373) but littoral societies have been subject to *"more major changes, huge stresses, even transformations than was ever the case before this"* (Pearson 2006, p. 373). Although this does not hold true for all coastal societies, it is certainly true that globalisation, digitalisation – the 'modern' way of living today massively influenced traditional ways of living on the coast. The historian Gillis (2012) stresses that currently people do not know about the dangers of the sea anymore and need to be reminded constantly because *"humanity's current relationship to the shore is that of the stranger, for after millennia of coastal existence, it has forgotten how to live with coasts and oceans"* (p. 4). This means that the sea is still often regarded as a threat, but there is a gap between what is thought and told and what is really done at the individual level. Bönewitz (2020) also finds an estrangement of coastal dwellers in East Frisia (Germany), as a lived experience of threats from the sea is simply lacking and responsibilities are delegated towards authorities. Nonetheless, he argues, the threat and the historic relationship with the sea are still proclaimed as being important for forming local identities.

Bearing all these aspects in mind, the focus of the present work is on European coasts, more precisely those of the UK and Germany, whose dwellers no longer live from the sea (e.g. by means of fishing etc.), but rather focus on the recreational qualities and benefits of coastal areas. However, they still depend on protective measures, probably more than ever before. *"Coasts have long been recognized as potentially hazardous regions where the population concentrated in low-lying areas frequently face extreme events"* (Sterr 2008, p. 380). In order to fight the sea, dike building and other structures for protection became prominent (Fischer 2021). After centuries of more or less successful protection through rigid constructions (e.g. dikes), this concept of coercion is still the dominant rationale among

coastal inhabitants (Fischer and Reise 2011), in politics and within responsible institutions, although deviations of this rationale already become visible in patches.

The reasons for these deviations are mainly new challenges that coastal areas face, within which the tradition of coastal protection needs to be considered nonetheless, as stressed by Storch et al. (2021): *"Coastal societies have historically evolved and developed culturally embedded relationships with their environment, which influences how these societies experience and react to climate change impacts in their region"* (p. 2). These relationships are often shaped by the existence of dikes (or other engineered structures), representing a certain path in regard to the protection strategy. In the case of structures such as dikes, protecting developments and infrastructure in the hinterland, the tradition of coastal protection often implies path dependencies, which can be challenging in face of the necessary changes connected to climate change. In order to be able to encounter these dynamics of climate change, Gillis (2012) argues for the need to abandon seeing the sea as an antagonist and to rather create a new mind-set:

> *"Engineering will provide no fix. Nothing less than a new mind-set, a new cultural paradigm is needed if we are to live with rather than simply on our shores. For too long we have thought of sea and land as two different things, when historically they constitute one single dynamic system. We must stop drawing lines so rigidly and begin to practice […] "mental plasticity"* (p. 196).

Leyshon (2018) and Döring et al. (2021) also argue to overcome this dichotomy and see coasts as dynamic and under constant transformation, as liminal or relational spaces: *"We need a new language to think and relate to the coast, and liminality is aligned with change, transformation, possibility – in space, time and practice. Liminality as a concept insists that we see and accept coasts as places of transition, and ourselves within them"* (Leyshon 2018, p. 156). Accordingly, changes to the physical environment need a change of mind-sets too, which requires that changes are dealt with. Although coasts are often fixed through rigid constructions from a physical perspective, they are nevertheless highly dynamic areas. However, this dynamic is often not perceived directly anymore by the people living there, which is likely to get problematic with the expected impact that climate change and its abstract implications can be expected to have on coastal areas and thus, on the people themselves.

3.1.1 The impact of climate change on coastal areas

A recent press release by the Intergovernmental Panel on Climate Change (IPCC) states that *"Coastal areas will see continued sea level rise throughout the 21st century, contributing to more frequent and*

severe coastal flooding in low-lying areas and coastal erosion. Extreme sea level events that previously occurred once in 100 years could happen every year by the end of this century" (IPCC 8/9/2021, p. 2). Sea-level rise scenarios project that the global mean sea level can rise as much as 1,1m by 2100 (under RCP8.5 scenario) (IPCC 2022a, p. 327). Such a change implies consequences for coastal ecosystems, including *"habitat contraction, geographical shift of associated species, and loss of biodiversity and ecosystem functionality"* (IPCC 2022b, p. 13), but also for coastal communities. Those areas that are protected by dikes, do not only have to cope with higher water levels in front of the dike, but the situation behind the dike will also aggravate due to more extreme precipitation events (Schaper et al. 2019). Accordingly, drainage of these areas is more and more dependent on the use of pumps, as the water is increasingly also coming from the back, creating new challenges for these low-lying areas (Ratter and Schaper 2019). Given the fact that coastal areas *"are more densely populated than the hinterland and exhibit higher rates of population growth and urbanisation*" (Neumann et al. 2015, p. 1), a trend which is likely to continue (ibid.), the following finding of the IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC) is a wake-up call and stresses the imperative need to increase adaptation efforts in order to mitigate the effects of climate change on coastal communities:

> *"In the absence of more ambitious adaptation efforts compared to today, and under current trends of increasing exposure and vulnerability of coastal communities, risks, such as erosion and land loss, flooding, salinization, and cascading impacts due to mean sea level rise and extreme events are projected to significantly increase throughout this century under all greenhouse gas emissions scenarios (very high confidence). Under the same assumptions, annual coastal flood damages are projected to increase by 2–3 orders of magnitude by 2100 compared to today (high confidence)"* (IPCC 2022b, p. 27).

This call for adaptation and its urgency is backed by many experts, although climate change impacts do vary regionally, resulting in a variety of different views, perceptions and accordingly diverse measures. One way of adapting to climate change is to upgrade existing defence structures, albeit this often implies challenges:

> *"Higher water levels and enhanced storminess reduce the level of protection offered by existing coastal defences and increase maintenance costs. At many coastal locations worldwide, upgrading of hard engineering defences is now constrained by both high economic costs and undesired environmental impacts"* (Esteves 2014b, p. 2).

Very important factors missing from this quote are the social and political barriers, which are inevitably implied in the process of climate change adaptation. As stressed in the quote by Leyshon (2018) above, there is an urgent need of coastal inhabitants to conceive themselves as an important part of the

coastal system and thus, as part of changes taking place. With such a change of mind-set, the impacts of climate change on coastal areas, which have a physical origin, but result first and foremost in societal challenges, could be addressed and explored with new perspectives that go beyond the dichotomy of sea and society. The predictions are quite clear in their statement that there will be more water in the future, be it from sea-level rise or extreme precipitation events. In some way this implies the need to develop socially balanced ways to live with the water, without neglecting certain framework conditions within which climate change adaptation takes place. The most important ones will be elaborated on in the following sub-section.

3.1.2 Climate change adaptation and its framework conditions

Adaptation in the context of *actual or expected* climate change is defined by the IPCC in the following way: "*The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects"* (IPCC 2014, p. 5). This definition stresses the social process that climate change adaptation mainly is, a statement which is supported by Martinez (2014): *"[…] humans in their capacity as end users, decision-makers and local residents are key factors in creating and solving the challenges of climate change and hence need to be addressed and appreciated by those seeking acceptance for adaptation measures and taking action"* (p. 11). This quote points to social negotiation as a basic requirement for all successful adaptation processes, which are often not taking place. She also refers to decision makers, which indeed play an important role, but are also limited in their decision-making authority by legislative frameworks.

At the time when data was collected for this work, the UK was still a member of the European Union and thus acting according to European law. The review of important laws, events and relevant papers in regard to coastal protection and climate change adaptation shows that there is an obvious difference in actions between UK and Germany (see Table 7 in Appendix). There is not only a temporal difference with respect to the start of discussions about alternatives, but also one in regard to the type of strategy applied. While Germany mostly adheres to its 'hold the line' approach (dike gets enhanced at the current location), UK's approaches look more versatile. However, one likely reason for this is the fact that, being an island, the UK has comparably more coastline than Germany.[11]

[11] Lengths vary depending on how small-scale the measurement is done. Nonetheless, the coastline of the UK (12.429 km) is more than 5 times longer than the one of Germany (2389 km) (https://www.laenderdaten.de/geographie/kuestenlaenge.aspx).

While there have been a variety of proposed adaptation measures and strategies towards climate change in the UK for the last 20 years, the verbalisation of any other options beyond the existing dike lines is treated very cautiously in Germany and Schleswig-Holstein. Fig. 8 below shows different types of coastal protection and possible adaptation strategies to sea-level-rise.

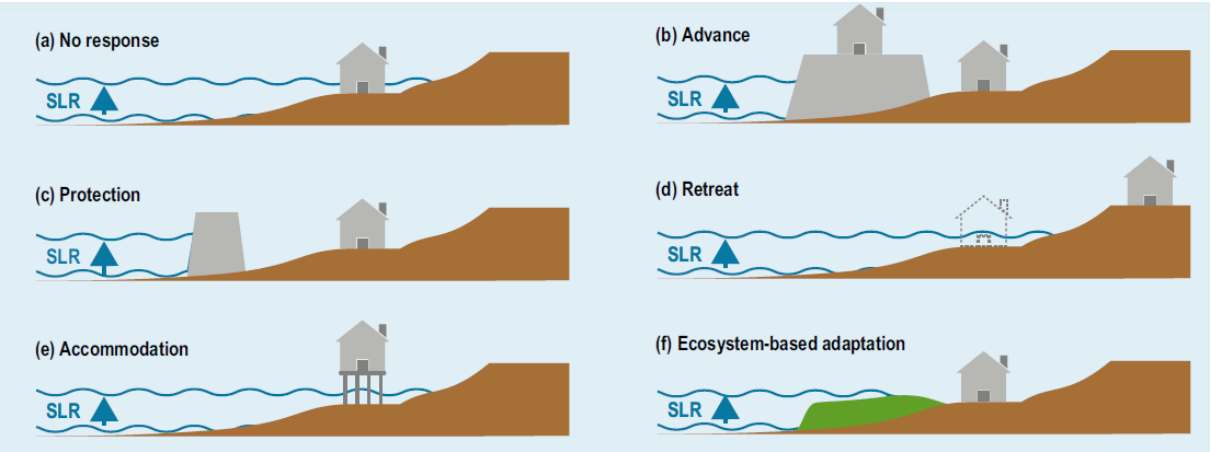

Fig. 8: Different coastal protection types and adaptation strategies to sea-level-rise (IPCC 2019, p. 386)

Most coastal areas (both in Germany and the UK) are protected in one way or the other (c), be it through hard structures as dikes or seawalls or by soft structures, which are based on sediment nourishments to the beach or the shore, but can also include ecosystem-based measures (f). Advancing the coastline (b) has been a longstanding tradition e.g. in Germany's Wadden Sea, as land has been reclaimed from the sea and diked afterwards to use it for e.g. agricultural purposes. The last polder of reclaimed land in Germany was completed in 1987 (Beltringharder Koog). Since then, the accretion of sediments in Germany has been undertaken for coastal protection purposes only and no longer for economic ones (e.g. land reclamation for agricultural use). Retreat (d) can be a voluntary decision or happen involuntarily, e.g. if natural forces destroy settlements. However, accommodation (e) is a purposeful way to live with the water by elevating infrastructures (e.g. on stilts) or using floating constructions.

Coastal protection in combination with sea-level-rise increasingly creates a phenomenon called coastal squeeze. Rising sea levels push coastal habitats, such as salt marshes, landwards. Static coastal protection structures (e.g. dikes, seawalls) prevent the landward migration of this habitat – they are squeezed between the force of the water (higher water levels and resulting erosion of the seaward edge of the habitat) and the dike (Doody 2013; Pontee 2013). If the coastal habitat accretion does not keep pace with sea-level rise, it will drown, unless supported artificially (van Loon-Steensma and Vellinga 2013). This is problematic, as salt marshes dissipate wave energy and therefore reduce the direct impact on dikes (Hofstede 2003). On the other hand, these habitats are conceived as very

valuable from the ecological side and salt marshes are protected areas under the Habitats Directive (Council Directive 92/43/EEC, 1330 "Atlantic salt meadows"). This close connection of coastal protection and natural habitat often results at least in a potential conflict with nature conservation aspects, as protection measures, especially those that are upgraded, often need more space than before.

Adaptation does not only need to compromise with nature conservation and tackle technical issues, but also needs to find solutions that are accepted by the local communities, while still providing safety. In general, there is a feeling of safety especially behind dikes and other engineered structures, which again often leads to increased development but also a decrease in individual responsibility, as the structures are trusted in. Paradoxically, this often results in an increased exposure and vulnerability, which is why this process is referred to as 'safe development paradox' (Haer et al. 2020) or 'control paradox' (Wiering and Immink 2006) (depicted in Fig. 9).

As explained in Chapter 2, high trust in authorities often leads to a decrease in individual responsibility and willingness to act, which is the same mechanism as in this paradox. Accordingly, coastal protection is not an easy task, as new challenges - on the ecological side, but also on the social side - need to be tackled in regard to climate change. This task implies the provision of safety and the creation of trust on the side of authorities, while at the same time there is a need for individual responsibility as well.

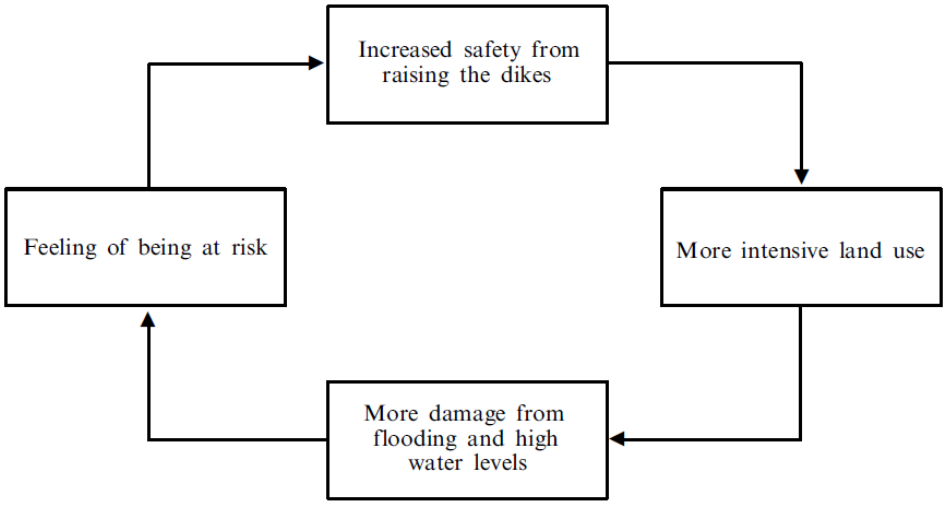

Fig. 9: Control paradox (Wiering and Immink 2006, p. 430; Remmelzwaal and Vroon 2000, p. 4)

Additionally, the changing circumstances very likely lead, or have already led, to a change in the coastal protection strategy: *"Climate change and environmental and financial concerns have led to a shift from the traditional 'hold-the-line' approach of coastal protection towards more flexible soft engineering options"* (Esteves 2014b, p. 2). Different strategies than those that are known to local communities,

are often encountered with uncertainty or fear, which is why climate change adaptation inherently implies the need of information, communication and negotiation of all those affected by the changes. This is needed to fulfil the shift from simply reducing the probability of flooding by technical measures, towards the reduction of the impact flooding might potentially have on a community. Given the different interests that accumulate in coastal areas (economic, social, political, recreational, and natural) on different levels and often against different backgrounds, worldviews and perceptions, negotiation of climate change adaptation appears to be a major challenge. One might think that one coastal community refers to one common risk culture, but as a risk culture is to a large degree dependent on individual factors and subject to many dynamics from the outside (e.g. climate change discussions, personal perceptions), such negotiation processes are not predictable. The following section will provide insight into two climate change adaptation negotiation processes and their diverging results.

3.2 Case I – Husum (Dockkoog)

North Frisia is the most northerly district of Germany, spreading across more than 2.000 square kilometres along the west coast of Schleswig-Holstein and holding a population of 166.000 (Statistisches Amt für Hamburg und Schleswig-Holstein 2020). Its capital city Husum – like many other towns on the German North Sea coast – has been influenced by storm tides that repeatedly flooded the surroundings of the city throughout history. The city covers a total area of approximately 25 square kilometres and holds a population of more than 23.000 inhabitants (ibid.). Husum builds an administration community with the island of Pellworm and its mayor Uwe Schmitz (2011-2023) presents himself as politically neutral. Main parties on the municipal council are the Christian Democratic Union (CDU), the Socialist Democratic Party (SPD) and the Greens followed by more local parties and the Federal Democratic Party (FDP). Representing the centre of the regional labour- and housing market, Husum has recently been suffering from emigration to surrounding communities while its main economic factors, the shipbuilding industries and fisheries, have suffered from an enormous decrease over the last decades and hardly exist anymore. Furthermore, the two remaining important areas of economic relevance, tourism and the wind industry, have to compete with other coastal regions. In 2017, the last manufacturing company of wind turbines shut down its factory in Husum. Nevertheless, every two years the exhibition ‘Husum Wind’ attracts more than 15.000 visitors interested in regenerative energy technologies.

Spatially seen, the city of Husum is not directly located on the coast. Dikes, pastures and two polders surround Husum seawards. As touched upon in the last section, the region has a long history of dike

building, starting in the 11th century. However, the polder of interest here (the Dockkoog) was finished in 1848. The polder directly adjacent to the city of Husum is the Porrenkoog, its dike represents the second line of defence (yellow line in Fig. 10). The Dockkoog (black dotted line in Fig. 10) is located behind the first dike line. Many citizens use the area in front of it (blue line in Fig. 10, Fig. 11) as a recreational area, as it provides canopied beach chairs, a diner and sanitary facilities. Attempts to develop the whole area for tourism already started at the beginning of the 1970's after the dike broke during the storm surge in 1962. Due to this experience, a campsite as well as a hotel[12] were built behind the dike (red line in Fig. 10, Fig. 12).

Several attempts to develop the area have been made, of which building a holiday home estate was a big topic that was never realised for various reasons at different times, including a lack of investors, money and political majority. Huge effort has now and again been made by planners to initiate several projects resulting in enormous protest and resistance from local residents and interest groups (Ström 2011). Finally, in 1995, a referendum took place which stopped all plans, as 78 % of the citizens in Husum generally voted against any kind of development of the Dockkoog (Peters 2011). The area became a protected landscape, established by the county in 2007 (except for the red area in Fig. 10) with the explicit aim to keep the natural area free of any kind of construction (Ström 2011).

[12] The hotel was completely destroyed by a fire in February 2018.

Fig. 10: Location of the Dockkoog (based on map by Anja Boekenoogen)

Fig. 11: View towards the recreational area (blue line in Fig. 1) in front of the dike (own picture, 2020)

Fig. 12: View towards the Dockkoog with the hotel and campsite in the front and parts of the harbour in the back (own picture, 2020)

3.2.1 Case description

In 2010 an investor presented his plans for a holiday-resort at the Dockkoog, combining a hotel with multi-storey apartment blocks next to it (Peters 2011). By mid-2011, a citizens' initiative had formed in reaction to this project, aiming to prevent the realisation of the holiday-project and to preserve the local recreational area with its so-called natural landscape. A list of 2500 local signatures against the project was handed over to the mayor by the end of September 2011. As a reaction to this concerted action, the municipal administration of Husum initiated a citizen workshop ('Bürgerwerkstatt'), which took place at the end of February 2012, to gather and discuss local ideas and visions for the Dockkoog. In this venture, plans to build a new hotel were stopped, as the update of the administratively and legally binding Generalplan Küstenschutz (General Coastal Protection Plan) – including the adaptation of flood protection structures on the North Sea Coast of Schleswig-Holstein – was announced (see Table 7 in Appendix). The Dockkoog dike became part of the adaptation plan and an improvement procedure, because the waves overtopping it at that time were too high (MELUR-SH 2013). This reinforcement might lead to an approximate loss of 100m inland as the dike is likely to be broadened landwards where the projected holiday-resort was planned.

Due to the fact that the official planning process for the strengthening of the dike was not anticipated to start within the following few years, the local branch of the WWF used this opportunity to start an informal process to collect ideas for the development of the Dockkoog.

Fig. 13: Illustration of the option "Husumer Hallig" (WWF 2016, p.24, visualisation: rabe Landschaften I studio urbane landschaften - hamburg)

Local politicians and authorities in charge supported the idea and after funding for the project was granted in 2015[13], a project group was arranged including representatives of the World Wide Fund For Nature (WWF), the responsible coastal authority (Landesbetrieb für Küstenschutz, Nationalpark und Meeresschutz Schleswig-Holstein (LKN)), City of Husum, Lower Nature Conservation Authority, Chamber of Commerce and Industry (IHK), local economic society (Husumer Wirtschaftsgesellschaft), tourism agency (Nordsee Toursimus Service) and members of the citizens' initiative aiming at the enhancement of local recreation, coastal protection, climate adaptation, nature conservation and tourism in the Dockkoog area (WWF 2016). The group assessed four different options for the Dockkoog with different locations of the main dike line and a potential hotel. The option 'Husumer Hallig', which is illustrated in Fig. 13, was highly controversial. Here, the first dike line would have been opened and a new hotel would have been built on a terp (in the red area of Fig. 10), creating the impression of a holm (hallig).

3.2.2 The Dockkoog: A contested place in the context of climate change adaptation

The analysis of this case study will be done based on the analytical concept of risk cultures that has been developed in the beginning of this thesis. The five sub-questions of the overall research question have been allocated to the different dimensions and aspects of risk cultures and negotiation processes (see Fig. 5 in section 2.3.1) and provide the structure for the following analysis of the empirical data.

1. What kind of climate change adaptation discourses/ -strategies exist in the case studies?

Schleswig-Holstein is protected by 433 km of main dike line (MELUR-SH 2022), which is thought to be well-suited to protect the area for further decades and therefore represents the official strategy of the federal state:

> *"At the moment, the approach […] and also the policy of the federal state of Schleswig-Holstein, which is responsible for the construction of dikes, it is, so to say, dikes get basically raised and enhanced at the place, where they are today"*[x] (IH#4, 97).

[13] The WWF (World Wide Fund for Nature) initiated the project group "*Zukunft Dockkoog*" (Future Dockkoog) which is part of the 'PiKKoWatt' project (Pilotmaßnahmen zur Klimaanpassung mit Kommunen in der Schleswig-Holsteinischen Wattenmeer-Region/ Pilot projects for adaptation to sea level rise in the Wadden Sea region of Schleswig-Holstein). The main objectives of PiKKoWatt, which is funded by the BMUB (Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety), are nature conservation and coastal protection in the face of climate change.

This quote describes the current climate change adaptation strategy, which is to heighten and strengthen the existing dikes, also known as 'hold-the-line approach'. Coastal protection is confronted with climate change and subsequent changes in sea level, as emphasised in the following quote, but also has to deal with a change of wave energy and storm frequency/intensity.

> *"We are certain that we can protect the main dike line, the way it exists today, for the upcoming 100 years. That is to say that the concept of the so-called climate dike, which we realise today, of that we are sure that it will fight the risks, which especially sea level rise implicates for the exposure of the dikes"*[xi] (IH#5, 91).

As expressed in the quote above, adaptation of existing measures and structures is necessary to be able to keep a certain level of safety, also in the future. With regard to this, anticipatory action is

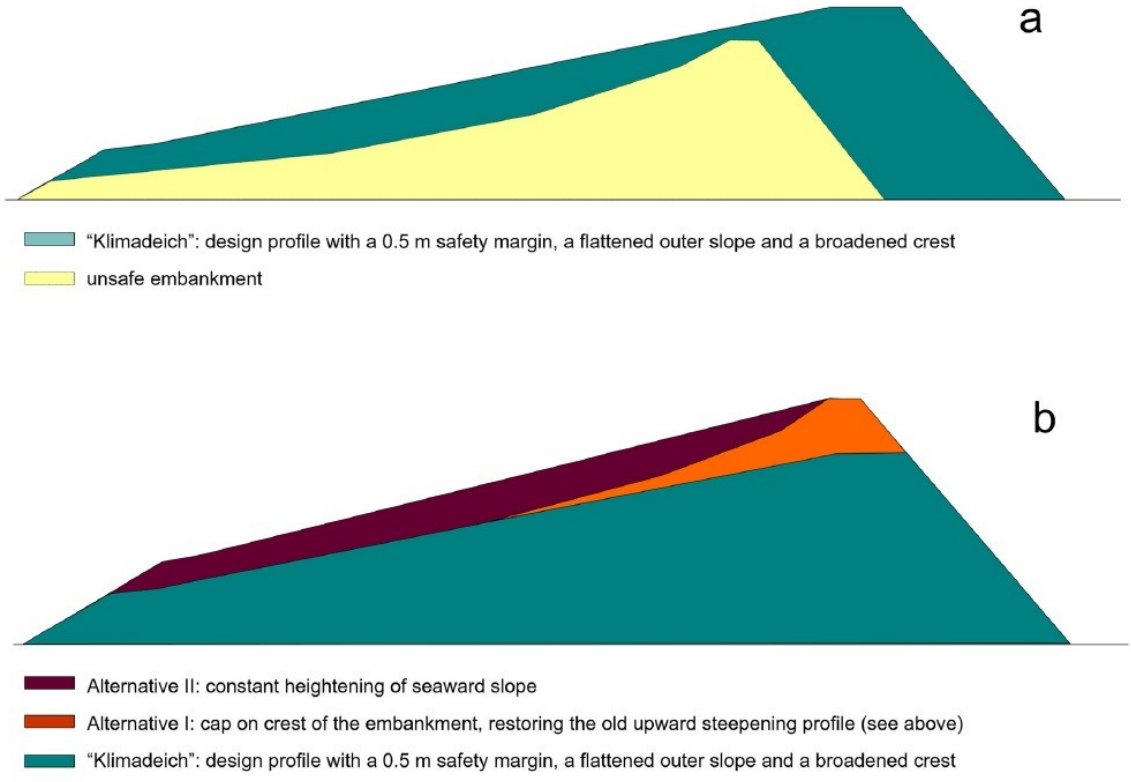

Fig. 14: New shape of the climate dike (Klimadeich) as it is build today (a) and how it might look in the future (b) (Hofstede 2019)

required to handle the uncertainty climate change incorporates. This is why the concept of the so-called climate dike is used by the LKN– it includes the option to further raise the dike in the future due to a new shape, in case anticipated changes call for action (see Fig. 14). However, the point in time when this will be necessary remains rather vague and timeframes vary, as also delineated in the following quotes.

The quote below not only stresses the safety of the climate dike, as the upper one, but especially the anticipatory aspect of its new profile (see Fig. 14 for the different profiles). Although both interviewees expect the climate dike to be future-proof, disruptive forces of extreme events are also taken into account here, emphasising that also the new dike profile does not provide entire protection:

> *"We do react, we do build climate dikes already. Now to more than 8m and with a slope that flattens out more and in a way that the cap can be put on top. That's very foresighted and will surely last until 2100 or 2150, we will see. Nonetheless, extreme events can always occur, where it's not enough, that's simply as it is"*[xii] (IH#9, 279).

However, impacts of climate change on the coast do not only concern the dike. It is argued by some interviewees that climate change will inevitably lead to changes in the region as a whole, depending on the decisions that are made today:

> *„It will definitely change, there's no getting around it. I hope it's not getting as terrifying as some prognoses predict, otherwise we do really have a problem here. In this case, the region, as we know it at the moment, will not exist anymore in 50 years or 100 years. There will no longer be holms[14] and also no islands, so, the marshland will also not exist anymore the way it does today"*[xiii] (IH#6, 337).

This quote clearly focuses on the fact that the sea-level rise induced by climate change might drown the pieces of land in front of the dike, which is referred to as a terrifying change to the region. A change to the Wadden Sea and the region as a whole, which includes islands and holms is outlined here and also mentioned in the next quote, albeit in a more general way. The focus is rather on the way decisions are made today, which should be done cautiously, as the consequences will reach well into the future:

> *"Well, in 100 years it will certainly look different and the Wadden Sea will have changed and also the coast will change perhaps. And I think a lot will depend on the decisions we make today. If you enhance or change a dike, this has consequences for 50 years or 60, 70 years, the lifetime of such a construction, which is a long time. Exactly. But more generally, I do think the region will change in any case and if climate change has the impact we expect it to have today, we will have gained some experience in the next 50 to 100 years in regard to storm surges and will experience the effects of climate change"*[xiv] (IH#4, 332).

Although these two interview partners agree with respect to the fact that the existing strategy of 'holding the line' will protect the area for some more decades, there is considerable variation regarding the expected timeline, ranging from 50 to 130 years. Nonetheless, this uncertainty about the temporal

[14] Small undiked islands off the coast of North Frisia

aspect of change does not alleviate its inevitability, while also the learning aspect is stressed here. Experience is an ongoing process *('we will have gained some experience'*), which might lead to future adjustments of the existing adaptation strategy. Most interviewees agree that climate change will especially have a large impact on islands and holms but that the change will be noticeable on the mainland as well. Nonetheless, this long time range, which spans generations, makes climate change and its impacts an intangible phenomenon for many, as can be seen in the next interview excerpts:

> *„And I think our problem with climate change is simply our perception, which is not calibrated on noticing, on sensing such long-acting developments and to react on that"*[xv] (IH#2, 32).

One important aspect in this quote is perception, the other one is time. Most consequences of climate change develop slowly and over long periods (e.g. sea-level rise, change in weather- and precipitation conditions) and seem thus harder to perceive than abrupt changes. This temporal aspect of continual change is also depicted in the next quote. The time horizon in which a fundamental change of living conditions (at the point when dikes cannot be further enhanced) will take place, is described as hard to grasp, as exactly the slow development (of sea-level rise) makes climate change a very abstract phenomenon:

> *„And with this sea level rise that's of course really abstract and it's obviously a time horizon which spans generations, which makes it difficult for the individual, well, of course you take a look at how long you will have, how fast is it really becoming as threatening that things really change here. In a way that dikes cannot be enhanced as would be needed"*[xvi] (IH#1, 109).

The last four quotes clearly stress the social and individual components climate change has, as it potentially effects the living conditions in the area. How real consequences look like includes considerable uncertainty, implies various challenges in regard to necessary responses and they will also confront future generations with diverse problems. Although climate change is seen as an abstract phenomenon, also tangible consequences are outlined, as the question is raised whether the existing strategy will reach a technical or physical limit in the future.

> *"You cannot heighten dikes infinitely. […] That are simply technical and physical reasons that you reach a limit at a certain point"*[xvii] (IH#8, 154).

This quote contains a large uncertainty about the point of time, a limit will really be reached. The aspect of undefined temporality is also expressed in the next quote and further adds the point of economic efficiency, which connects to the previous quotes.

> *"The question really is, and no one really knows, whether these models that have been calculated in regard to sea-level rise are accurate. […] But these self-enforcing processes which*

take place, they can't really be calculated after all. […] But the question obviously is how long it is doable and how long will it be economical"[xviii] (IH#6, 102).

Heightening dikes is expensive and the stronger and higher they need to be, the more needs to be invested. This heightening reaches physical limits, as mentioned, but the question rather is, if the same level of protection is needed everywhere or if future strategies will be much more based on cost-benefit analyses. Such an aspect is raised by an interviewee in the following quote:

"*But I do think that with the accelerated sea-level rise, discussions will look different and there will be the question within society, especially when things do not work well: What's the use of dikes? So cost-benefit analyses will increasingly come to the fore, of that I'm pretty sure*"[xix] (IH#1, 465).

All in all, the current strategy, building climate dikes, is framed as the right way, but it is uncertain at what point in time it reaches a limit and at what point living conditions in the area will change incisively. The descriptions used for this are very vague: *'really abstract', 'time horizon which spans generations', 'at a certain point', 'no one really knows', 'can't be really calculated'*. The way these temporal aspects are depicted by the interviewees clearly stress the perceived uncertainty in regard to climate change and its potential consequences. And although climate change is referred to as something abstract and intangible, technical implications (*'you cannot heighten dikes infinitely'*) seem to be quite obvious and tangible despite the uncertain timeframe. However, considerations for future changes do not only have to deal with technical or economical aspects, but also the obvious spatial aspect and, even more importantly, the social aspect have to be taken care of. Building dikes is an inherent path dependent strategy, as developments in the low lying areas behind the dike are strongly dependent on the protection provided by these. The time frame of climate change impacts is hard to predict and while modelled scenarios do exist, there is no 'one fits all' solution, let alone experience in how to handle all the uncertainties that accompany the dynamics of climate change. Some interviewees therefore stressed the need to already adapt timely and think about alternative or additional strategies, respectively, to keep the low-lying areas as space to live on the long-run:

"And if you adapt a little in time and perhaps build on terps again in such polders, where the water is let in once in a while, you would probably be rather on the safe side in order to be able to further live in this area"[xx] (IH#1, 275).

This view is based on a spatial adaptation to face climate change impacts and promotes the strategy of 'living with the water'. Others, however, insist on the inherent phenomenon of fighting the sea:

„The battle against the North Sea, this is deeply rooted here. And that is something I immediately noticed, when I moved up here"[xxi] (IH#1, 2).

This battle seems inextricably linked to the widely spread and culturally rooted image that land is not given (back) to the sea:

> *"I have little use for the philosophy to give land to the sea, which has not belonged to the sea so far"*[xxii] (IH#2, 55).

From a historic perspective, the land of the Dockkoog unequivocally belonged to the sea once[15]. However, there is still an important symbolic value of the historic battle with the sea, which strongly influences today's perspective on coastal protection. This perspective is not based on technical or economic arguments, but it is purely social and historically embedded.

These last opposing views already gave an idea about the frame against which climate change adaptation is negotiated in Husum. The official strategy for climate change adaptation is the construction of climate dikes, which is thought of as safe option for the coming decades. Nonetheless, there is still uncertainty about the temporality of climate change and the effects of it, that is to say, when will changing conditions become so threatening that dikes cannot be further enhanced. The mostly slow development of impacts, as sea-level rise, makes the phenomenon of climate change even harder to grasp, which is why it is seen as something abstract. To be prepared for future changes, some interviewees referred to the need to start adapting now, to let the water back in, at least in parts and in a controlled way, and argued for a spatial strategy of living with the water. In contrast to this, the historic battle against the sea was quoted, which inherently seems to imply that land is never given back to the sea. Although alternative scenarios (other than the climate dike) for the protection of the coast only exist as thought experiments and are not part of the official strategy of Schleswig-Holstein or tested on specific sites, these contrasting mind-sets exist and are situated on a continuum between preserve and change with the respective endpoints as the preferred options. Preservation roughly refers to the strengthening of the existing dike line ('hold the line'), while change is more open-minded towards new or different strategies that complement or replace (in parts) the existing dikes ('living with the water'). The important and opposing lines of argumentation will be elaborated on in the next section.

2. Which structuring role do attachments to the dwelling place and spatial concepts have in regard to contested or agreed-upon negotiation processes?

The unique landscape, its vastness, the sea and the specific type of people are among the most mentioned reasons why the interviewees feel attached to Husum and its surroundings, as summed up briefly by an interviewee: *"The vastness, the sea, the people"*[xxiii] (IH#10, 16).

[15] The polder (Dockkoog) got diked in 1848

While the bonding to people in the area represents a social attachment, the experience of the landscape also creates an emotional attachment, as described in the quote below:

> *"Well, I think this landscape unfolds a sense of well-being for me, I like the vastness and this extent and not being confined […]"*[xxiv](IH#8, 80).

The well-being that is explained here, arising from landscape, people or other sources, is the reason why many interview partners see themselves as attached to their dwelling place. Often it is hard to give proper explanations, as attachment to a place, the feeling of 'Heimat', is something emotional, commonly connected to many different experiences or kinds of bonds:

> *"Well, the reasons, simply said: Sense of home [Heimatgefühl]. And that is essentially something emotional"*[xxv] (IH#7, 56).

Although the interviewees feel attached to the area, the degree of place attachment does not seem decisive in this case study, as none of these aspects played an important role within the discussion revolving around the Dockkoog and the location of the dike, respectively. First of all, spatial concepts, as asked for in this sub-question, could not be identified in this case study, at least not in the way it was originally intended. It is therefore not the idea of a certain landscape design, but rather the preferred climate change adaptation strategy and the role of the dike, which are of importance. This preference is not backed up by spatial visions, but by ideas on how living in the area will be possible in the future.

As explained at the end of the last section, two main categories were identified by coding the interviews: the preserver and the changer as contrasting endpoints of a spectrum characterising the case of the Dockkoog. The strategy 'preserve' prefers to enhance the dikes where they are ('hold the line'), while 'change' is more open-minded towards strategies that promote the idea of 'living with the water'. Although the different reasons for place attachment were not really important for the process, both, changer as well as preserver use their attachment to place as a strategic argument for their respective perspectives on the issue. The arguments used structured the negotiation process, which is why the reasoning of preservers and changers will be presented below. All parties involved aimed at achieving the best possible future for the area. The difference is rather to what extent one sticks to historic developments, as the history of 'fighting the sea' is still very much present in what many people identify with and still provides the background for how things are reasoned nowadays:

> *"Especially North Frisia has a changeful history in regard to the North Sea. There has always been an up and down with the accretion of land and the North Sea bursting into the farmed land. This history is about 1000 years old. Accordingly, this feeling of having a fight with the sea is still deeply memorised by humankind"*[xxvi] (IH#5, 3).

The long history of dike building in North Frisia and it being a symbol for the Frisian tradition is depicted in the excerpt above, which is obviously still highly valued and memorised in the region. The background of this strong attachment to the dike roots in the urge to have stable living conditions and enable a livelihood, as described in the following quote:

> *"But this claim to let this land get static and to provide for predictable living conditions is a human aspiration. Thus, you should rely on the fact that the immediate living environment is always as imagined, without surprises happening"*[xxvii] (IH#1, 31).

Especially the wish for stability and safety (*'static', 'predictable', 'without surprises'*), which is provided by dikes, appears to be of high relevance. This is not surprising, as the sea is described with a certain awe and as holding a considerable power:

> *"The sea has an incredible power and it does not ask whether we would like that"*[xxviii] (IH#10, 92).

The history of diking and the battle to create safe and predictable livelihoods characterised the region for hundreds of years. Although no private person has to fight the sea anymore today, this mind-set is still very present, as visible in the arguments of the preserver, which will be demonstrated below.

The preserver

The preserver uses very tangible and experiential arguments to back up the more traditional opinion about coastal protection. The five main categories of arguments are protection of the coast, cultural tradition, landscape, interest of citizens and economic aspects. The first argument 'protection of the coast' is strongly intertwined with the symbolic role of dikes and the real protection, stability and safety they provide. Throughout the history of diking, the main goal was to create protection against the caprices of the sea and therefore to establish stable living conditions. People learned from disasters and improved the way dikes were and are constructed, which is why nowadays a breach in a dike is a relatively rare incident. Still, all low-lying areas behind dikes are at risk, which is why the dikes represent stability and safety for many coastal dwellers. The wish for protection is expressed in the following quote:

> *"[…] and of course safety against the North Sea. If you know the North Sea, I like to be at and in the North Sea and know it, but if you know that the North Sea can be different, with storm and hazards that belong to it, then you see that people who live behind it are in danger. Therefore the dike is somehow a synonym for safety and protection"*[xxix] (IH#3, 14).

Understandably, a main driver for this view is either personal experience *('I […] know it'*) or fear that gets nourished during storm events, to some extent also by narratives of people who witnessed storm

surges and the damage that results from natural forces. The dike line, as it is today, proved to work quite well during the last decades, resulting in mistrust of emerging new options. One interviewee describes this aspect as follows:

> *"That is still in the back of peoples' minds and the ones who grew up here probably see it like that. Or who has seen the sea during a real storm surge can imagine that there are fears among inhabitants, of course. And that people said: no – that's something new and that didn't exist before, so we don't do it"*[xxx] (IH#10, 152).

This quote mainly addresses fear. On the one hand of storm surges and on the other hand of the possibility that a different way of protection will not work as good as the existing dike line. Accordingly, the protection of the coast from a preserver's point of view is mainly based on the construction of dikes that provide safety for coastal communities, a proven strategy that has been experienced as protective. Nonetheless, to be prepared for the consequences of climate change, such as sea level rise, the concept of climate dikes is used, which leaves room for additional adaptations, as it can easily be further heightened if necessary. Although the existing dike stands for a strong path dependency, which can't be easily changed, preparedness for future changes is taken care of with this new concept:

> *"The coming heightening of the Dockkoog dike will be managed in a way that you can top it up once more. The dike will be constructed as necessary at the moment, but there will be a buffer which can be used to further heighten the dike for protection. And I think that's reasonable and also a good thing to be done"*[xxxi] (IH#3, 118).

This path, the dike and its position, is firmly rooted in many peoples' minds and should – as expressed here – not be changed at all, which is why the climate dike is described as 'a good thing to be done'. An important argument that is used by preservers consists in the longstanding tradition of diking in the region. A famous proverb about the old tradition of diking says: if you don't want to dike, you have to give way[16]. Although this motto originally refers to the obligation to perform maintenance work on the dike adjacent to your property, it is nowadays more generally used to stress the relevance dikes have for being able to settle in the low-lying coastal areas. In combination with the hard physical work that was necessary in former times to build a dike, it is clear that once diked land claimed from the sea is not given back to it. This motto and state of mind still exists today:

> *"[…] it was already said in the discussions around the Dockkoog: diked land will not be given back. As if it is a law. You don't do that"*[xxxii] (IH#11, 193).

[16] Wer nicht deichen will, muss weichen.

That dikes have to remain where they are is not only seen as something like a law by some interviewees (quote above), an attempt to change something was even articulated as being an attack to existing cultural values, as expressed in the following quote:

> *"In my view this is to some extent a pessimistic attitude in regard to culture, which is enunciated here. Where it is tried to create counterweights to the established culture"*[xxxiii] (IH#2, 248).

Accordingly, a huge part of the North Frisian tradition and culture consists of the identity of the people who conceive themselves as shaped by the living conditions in a coastal area and especially by living behind a dike. A change of location of the dike as part of a strategy which promotes the idea of living with the water, is thus perceived as irreconcilable (*'counterweights'*) with present cultural values. The large construction of a dike expresses a certain superiority in the eternal struggle with the sea. Not only do people identify with it and embody it as part of the community: *"[…] the dike belongs to us"* (IH#12, 309), its existence is also taken for granted, as people grow up with the awareness of the need of a dike:

> *"[I'm] used to the life behind the dike. And I know that we have to live with the fierce North Sea and dike building. For me it's like that since my childhood and that's somehow internalised. […] So I am familiar with that, that there's the sea out there, that there has to be a dike between us so that we are protected"*[xxxiv] (IH#12, 4).

This basically describes an accustoming-effect: the dike has always been there, so it is seen as a given fact and is not questioned. Next to the strong aspect of habituation (*'I'm used to the life', 'internalised'*), the interviewee also collectivises coastal dwellers (*'we have to live'*), which are imprints that took place since earliest childhood, and accordingly addresses aspects that are identity-establishing but also relevant in regard to temporality. Looked at in combination, the dike forms part of the interviewee and its identity, as it creates stability in everyday life. Hence, the path dependence in regard to diking does not only consist of the obvious physical existence, but it is in great part also accounted for by social and cultural aspects. This established tradition or rationale of 'as little change as possible' also shows up with regard to the development of the Dockkoog. As already mentioned earlier, several attempts to develop the area in touristic ways failed. One reason for this seems to be the lack of willingness of many citizens to change, as described in the following quote:

> *"People didn't want that. Back then, the holiday-home estate wasn't accepted. Then, the holiday-resort was in planning, and people also didn't want that. So inhabitants of Husum basically want to keep their Dockkoog as it is"*[xxxv] (IH#12, 323).

One reason for this resistance towards developments (*'want to keep their Dockkoog as it is'*) is described from a scenic perspective in the next quote: the aesthetic dimensions of the landscape are highly valued the way they can be experienced at the moment – without intense touristic development:

> *"But there is a part of the population, who loves this situation that I just described, who loves this situation. And they love the access to the North Sea Husum has and you go there and feel freshness and wind and no buildings and other […]. And therefore the sheep […] and the fields and the Porrenkoog and what belongs to it and […] the fresh wind, the experience of the landscape, the experience of elements, […] that is what these people love […]"*[xxxvi] (IH#8, 351).

The first impression might be that the landscape in and around the Dockkoog seems to be of such high importance to many people that change, whatsoever, is not welcome. In fact, the problem here would not be a different location of the dike – which wouldn't harm the landscape experience. It is much more the touristic development, as a holiday resort would indeed imply a huge modification of the area. Accordingly, landscape experience is important to the citizens of Husum, but in this case it is questionable whether it is a reasonable argument against a relocation of the first dike line, as neither the vastness nor the experience of elements would be harmed. At this point, a mixing of arguments is very likely, as not only the location of the dike, but also the touristic development of the Dockkoog was up for discussion in the project. Another argument is put forth with regard to the landscape, concerning the protective function of the space. With reference to the uncertainty related to future developments, the area of the Dockkoog is seen as significant protection measure against the sea. Opening this part of coastal land would mean the loss of the second dike line, which would become the first dike line and would increase the perceived threat of flooding. The relevance of the polder is stressed as follows:

> *„But it's also that we said: no, we want to use the space that we have there as protective element. And I still think this is important as you don't know how the whole situation will develop"*[xxxvii] (IH#3, 429).

The argument outlined here is in line with what preservers quoted as the interest of citizens of Husum. According to this, the majority of the residents do not want any change to the existing dike line due to aspects of safety and protection:

> *"The majority of the citizens said that the idea is indeed nice, but not feasible because of safety. This issue was very strongly articulated among citizens that they said: no, this can't be, we want to have protection here"*[xxxviii] (IH#3, 417).

The two quotes above frame landscape in terms of safety. Here, the 'loss' of the polder itself and the landscape experience is rather subordinate with regard to the perceived increased threat from the sea. Subsequently, landscape is valued for its vastness, but aspects of protection seem to be more important.

A further reason against opening the dike that was mentioned by preservers is based on economic reasons. Not only would the opening of the first dike line restrict the possibility to design and structure the area, it would mean the complete loss of the area as building land. Additionally, it was not clear how maintenance of the remaining part of the dike would be financed, as it would no longer fall within the responsibility of the federal state. There were serious concerns that the maintenance of the remaining dike as well as of the road behind that dike would have to be financed by the city and that this decision would end up as a financial burden, also for following generations:

> *"I answered the question about the economic efficiency with total loss, because I think we would have been obliged to take over the part of the dike which would stay. We would have had to – somehow – handle the traffic out there"*[xxxix] (IH#7, 264).

Next to the economic concerns of potential maintenance works in the quote above, the quote below adds a generational aspect, as an opened dike line and the resulting change of landscape would still affect future generations:

> *„In the end, concerns about the annual operating costs, because it […] would have been flooded and would lie in the responsibility of the city. And that would have, we would have left something for our children, because once you open it, and it would have happened, the dike line would have been here and we would have had to burden our children with the follow-up costs"*[xl] (IH#12, 67).

Overall, the preserver is characterized by a strong bond to local traditions and deeply shaped by the history of diking. The dike and its cultural and symbolic value are firmly rooted in peoples' minds and lives. It clearly has an individual and regional identity-establishing role, being part of the everyday world for many from childhood days, never being questioned. Consequently, varying levels of resistance to change are expressed and reasoned with arguments of protection and safety, tradition, landscape aspects, as well as economic interests. Anticipatory actions to address implications of climate change are also regarded as important, but mostly within the existing path of traditional diking.

The changer

The other end of the spectrum is represented by the changer who appears to be more open-minded concerning different or new ways of doing coastal protection. In contrast to the preserver, the changer

tries to be more responsive to uncertainties and aims to think 'outside of the box'. This approach does not only apply to views on climate change impacts more generally, but also with respect to possible limits that traditional ways of coastal protection might reach in a certain future. Additionally, potential ways to tackle the uncertainties and still provide protection against the sea are implied. This does not necessarily mean to abandon the construction of dikes, but rather the identification of potential new ways of living *with* instead of only fighting *against* the sea. Changers stressed in the interviews that it is necessary to start the process of change now in order to be prepared for the future. Thus, changers and preservers both agree on the need of anticipatory action, albeit in completely different ways. The following quote reflects how changers assess required foresight:

> *„Exactly, this gradient will increase and if you can't heighten the dikes anymore some day or if they fail, the catastrophe will be even worse. And these ideas have already existed for quite a while, Karsten Reise[17] is sort of the most prominent advocate of letting the sea, at least in a controlled way, back in the polders to create sedimentation. And that you no longer stick to the rigid dike line, but try to reach a more adjusted way of living together – the North Sea and man. I think this approach is worth pursuing, if something happens all of a sudden, which can still take a few hundred years, it is possible that we lose the whole marshland at once and have to retreat instantly to the moraine. Because in that case, the Wadden Sea will swash in low-lying areas and flood them, which means nothing will work anymore. The whole infrastructure will be gone. And if you adapt a little in advance and maybe build on terps again in such polders where you let the water in, it might be the safer way for the next centuries in order to be able to further settle in this area"*[xli] (IH#1, 263).

This quote combines the aspects of temporality and spatiality again, as already pointed out in sub-question 1. While the uncertainty of the temporal aspect is mentioned again in terms of consequences of climate change (*'some day', 'can still take a few hundred days'*), it is at the same time used as argument to start with some spatial adaptation as early as possible to prevent sudden flooding of the low-lying areas and its dramatic consequences (*'all of a sudden', 'lose the whole marshland', 'nothing will work anymore', 'the whole infrastructure will be gone'*). The scenario described in this quote would basically be the outcome of the safety paradox (explained in section 3.1.2), which is proposed to be prevented here by spatial adaptation. Often implied in this line of thinking about different options and also mentioned in the quote above, is the use of natural forces, such as e.g. sedimentation (*'polders where you let the water in'*). Many ideas are thus not new per se, as they are often based on rather traditional ways of protection (like the use of terps). Nonetheless, there is quite some reluctance

[17] Prof. Dr. Karsten Reise is known for his very open approach towards possible futures of coastal areas e.g. floating houses and multifunctional dikes (see e.g. Reise 2015)

amongst preservers to think about a possible change of measures (even though it might be traditional ones). However, contrasting to the argument of preservers, changers argue that there are many people who are open and willing to think about possible changes:

> *"The hall was full of people and it was articulated that this is a missed chance [not to open the main dike line], also by people, for example, a very dedicated man from Uelvesbüll, who said: Oh my! We have to think about, we can't build higher dikes forever, maybe we have to sacrifice diked land, we have to think about giving polders back to the sea. He said something like that, that was extremely interesting and I thought: gosh, too bad that the voice of someone like that was not heard before"*[xlii] (IH#11, 6).

As described in this quote, the fact that a traditional option was chosen for the Dockkoog has been observed as a missed opportunity for Husum by many interview partners. Another Interviewee stated this as follows:

> *„Nevertheless, especially the uninhabited Dockkoog, besides the touristic use, is much more suited than many other polders along the coast, which are populated. As such, the area would have been a good opportunity, because you could have started constructions, build a new terp with a hotel on top for example and the campsite next to it perhaps. In this regard, it is a missed chance for me, somehow. Both, for tourism and for showing different options for coastal protection"*[xliii] (IH#1, 427).

It was particularly perceived as a missed chance, because the Dockkoog was seen as an ideal location (*'much more suited than many other polders'*) to try something new with regard to finding an optimal solution for integrating coastal protection, tourism, local recreation and nature conservation. The polder is not inhabited and safety would have been provided through the strengthened second dike line. It is obvious that there is no such tangible line of argumentation as with the preservers' view. This reveals two different levels: The preservers are very specific, as it is easy to argue based on the existing path: tradition and practice that is hundreds of years old, proved to work and is experienced as safe. The changers, however, try to cope with the more abstract level of change and uncertainty, while using the same line of argumentation in regard to their place attachment, with the aim of continuing to be able to live in the area in the future. Changers also highly value the area they live in and also want to preserve it for the future. Still, different levels of reasoning can easily produce problems of mutual understanding, if communication with each other is not sufficient. One example which shows the different aim behind the use of the same argument is that of spatiality. Both, preservers and changers urge the argument that the space of the polder is needed for safety reasons. While preservers see this as an argument for keeping the existing dike line and using the polder as additional safety buffer,

changers argue that letting the water back into the polder will create more safety in the long run, as this timely adaptation will prevent a sudden drowning of the area. Although these mind-sets seem to be very opposing, the figure below (Fig. 15) clearly depicts that there is more to the spectrum than its endpoints change and preserve. A variety of mind-sets is located between these two, many views and opinions include at least some aspects beyond the existing strategy, while the nuances vary in their intensity (the black dots each represent one interviewee, placed by the author according to their statements).

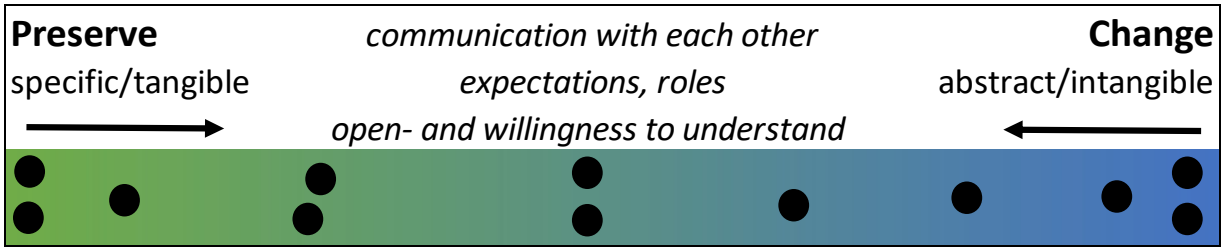

Fig. 15: Spectrum of mind-sets between preserve and change

The mind-sets in this figure all have one common source: their attachment to the area and the wish to preserve it for the future. As the framework conditions to keep the area liveable are changing, climate change adaptation entails to find new solutions, which raises the following question:

> *„How does society handle the new, which is there? Because traditionally it was different. And the thought that it could be different again in another way was never at issue"*[xliv] (IH#8, 1).

The different contexts, opportunities and challenges underpinning this negotiation process will be discussed in more detail in the next sections.

3. In what way do different contexts affect certain spatial visions and which role do actors fill?

In order to better understand the role of institutions within a risk culture, the institutional setting, including responsibilities and roles of parties involved, will be looked at in this section, and whether or not a certain background influences different perspectives and framings. Again, as in the case of sub-question 2 presented above, the data revealed that it is the adaptation strategies, rather than spatial concepts or visions that influence the process. In this case, especially the location and existence of the dike guides different perspectives and diverging opinions, ranging from preserve to change.

The institutional background, i.e. the values, beliefs and visions of an organisation or group, does not always influence the individual opinion of a group member about a topic. However, groups as the citizens' initiative, which was established to prevent the holiday resort, or the WWF, which acts on behalf of nature conservation, have of course certain interests that guide opinions. In this case, not all people involved necessarily hold the official view of their political party, group or organisation. Especially one interviewee spoke very open in this regard:

> *„It would have been an option for [group], but honestly, within [group] not consistently. And out of this uncertainty, it did not have majority appeal within [group]. Personally, I think it would have been an option – Husumer Hallig"*[xlv] (IH#12, 72).

While this interviewee was very open about diverging opinions within his/her group, he/she observed it differently for other involved groups:

> *"Individuals […] would have certainly been in favour of it, but then a parliamentary group votes and externally they were agreed"*[xlvi] (IH#12, 280).

The quotes above stress the internal differences a topic can create within a group and reveal the different ways, how these were handled. Nevertheless, especially in politics it seems of importance to demonstrate unity, at least externally. Local politics plays an important role in this case study, as the discretionary competence lies with the responsible committee. As this aspect is especially crucial for the negotiation process, it will be further elaborated on in the next sub-question (4.).

In regard to other important roles, two main participants need to be mentioned: The WWF as initiator of the negotiation process and the LKN as responsible authority for the main dike line. The task of the LKN within the process consisted in assessing whether the suggestions made within the project group in regard to the location of the dike would be feasible and safe. In its role as responsible authority, the LKN is confided in by most interviewees:

> *„We do have full confidence in our LKN. They are getting it right"*[xlvii] (IH#12, 134).

This quote does not only highlight the trust the LKN is met with, but it is also seen as part of the community and identified with (*'our LKN'*). In regard to the safety of dikes, the LKN is considered as experienced and competent to make decisions:

> *"I think the safety, whether it is safe or not, this has to be decided by the LKN in the end, as they have the competency for this"*[xlviii] (IH#10, 273).

Additionally, they are attributed to be aware of future developments and act in an anticipatory way:

> *„Those, who decide, they are the ones who have a sense for what will happen in the future. Who act anticipatory and that is important"*[xlix] (IH#3, 141).

The following quote sums up important aspects, whatever the LKN says, is metaphorically seen as a law, as they have the competence and are trusted to make the right decisions:

> *"As I moved up here, what I always heard is that what the coastal authority says, is a law"*[l] (IH#1, 444).

Another very important aspect in regard to trust is the personal level. If those in leading positions were not seen as trustworthy and competent, it would likely lead to a decrease or even lack of trust in the authority as a whole. In this case, the head of the LKN[18] is trusted and people believe in what he says:

> Interviewer: "Do you think that we are well protected at the moment?" – *Interviewee: "Yes, that is what the head of the LKN always said and I trust him"*[i] (IH#6, 100).

The role of the LKN as authority that protects the coast of Schleswig-Holstein is therefore not only a self-ascription, as their slogan is 'we protect the coasts of Schleswig-Holstein', but this task is also attributed to them, they are trusted to protect the community. As organisation officially in charge and therefore formal institution, it is mostly perceived as reliable, while the role and trust in individual responsible persons plays an essential role as well. Nonetheless, also doubts in regard to the impartial role were raised and a certain preference of the LKN was alleged:

> Interviewer: "The LKN said that the safety is not decreased, regardless which dike will be enhanced." -
> *Interviewee: "Yes. And saves us 7 million."* -
> Interviewer: "because the dike line is shorter" -
> *Interviewee:* "*Exactly. Certain actions can only be understood, if you know all kinds of motives and associate them. I do not want to allege that the LKN wanted that or considered it possible because of the money, but there are other things as well. The LKN needed compensatory habitat for an enhancement of a dike in the North, where something was taken away from the national park"*[ii] (IH#2, 392).

The LKN rated both options (enhance old dike/ make second dike line the main line of protection) as equally safe. This fact was doubtful, according to this interviewee, and other reasons as cost reduction and the need of compensation areas were assumed. While the last quote expressed that at least some people supposed a hidden agenda of the LKN, others argued that the view of the LKN was simply too advanced to be trusted by some people:

> *"In this case I had the feeling, for the first time, that the opinion of the coastal protection authority is no longer a law. That this authority was conceptually more advanced than local politics or the community, at least in the main publicised concept. That is the impression I got. And in the end [head of LKN] was no longer trusted in regard to his assessment of the safety of the dike. That was denied"*[iii] (IH#1, 444).

[18] The head of the LKN changed in July 2018

As depicted in the last two quotes, trust seems to have limits when the perspectives are too diverging or challenging and do not fit the original frame of reference anymore (*'this authority was conceptually more advanced'*). This results in the fact that even normally trusted people are disbelieved (*'in the end [head of LKN] was no longer trusted'*). However, being open and innovative is not only seen as something negative, but also stressed as a positive attribute, which is assessed in contrast to the attitude of some local politicians:

> *"I was surprised that our agency for…what is it called again? State agency for coastal protection [LKN]. They were much more open-minded, also about this project. […] So, they are maybe not as awfully conservative, as some politicians of the city and the district"*[liv] (IH#10, 123).

While the LKN is generally framed as a trustworthy authority, the mere possibility of leaving the existing path leads to a loss of trust of some people. Others, in turn, like the openness for new ideas (quote above) and are surprised about the open behaviour of the LKN. Looking at the aforementioned quotes, the question of whether an authority is trusted or not seems to depend on different factors such as the attribution of competence, trustworthy persons in charge and obviously the fact of being in accordance with one's own mind-set in regard to the topic at hand. In this case, the neutral role of the LKN and its head were doubted by a few interviewees, as they got the impression that there was a certain self-interest behind the assessment in regard to the safety of the two different dike locations.

The role of the WWF was the initiation of the whole process and the search for people who were willing to take part in the project group. For the moderation of the meetings, the WWF hired an external moderator. Nonetheless, some had the feeling that the influence of the WWF on the process was too high and the outcome therefore not to their liking:

> *„So. Then things developed in a direction, which was not welcomed by the committee [local politics], it developed in a different direction. Guided by the WWF, who acquired funding and therefore massively influenced the process in their direction. This led to the fact that we had the Husumer Hallig all of a sudden. And we thought, this is actually not what we wanted. We wanted a further development of the Dockkoog, a reasonable one, not a Husumer Hallig"*[lv] (IH#3, 241).

This quote conveys the impression that the WWF initiated the project in order to push their own interests through but neglects the fact that the project group consisted of many different people with different interests. However, the fact that the WWF initiated the process conveyed the feeling to a few interviewees, that the WWF did not have the same role within the process as every other member:

> *"Personally, I think one mistake was that the moderation of this process was given to the WWF. In my mind, a participation of the WWF would have been better, so they can table their opinion trenchantly and don't have to seek for compromise. In regard to their role, I think it would have been better to have a neutral moderation of the process"*[lvi] (IH#2, 360).

At this point it seems important to mention that the last two quotes do not stem from members of the project group but from people who were not directly involved in the work of the group. However, the last quote is in line with the impression of others that the WWF might have been too divisive to organise such a process, as some interview partners are prejudiced about the interests of the WWF.

> *"Because if I see [head of WWF Husum] and the like there, I don't necessarily need that"*[lvii] (IH#9, 486).

This quote clearly stresses the personal level which seems to be problematic (*'[head of WWF Husum] and the like'*), as does the following quote as well. In this case, the role of a specific person is equated with the organisation as a whole:

> *"I can never assess whether [head of WWF Husum] got on the wrong side of any of the politicians at some point and that's why they say 'nope, when the WWF runs such a project, it's stupid'"*[lviii] (IH#6, 260).

Prepossessions and prejudices about the perspectives of certain persons obviously influenced how the role of the WWF was perceived. In sum, the WWF was seen as biased and therefore some interviewees had the feeling that its role was of too much influence.

The impeachment of not being neutral was also mentioned related to other members of the project group (in association with the assessment process of the different options):

> *"And I did observe that other representatives had their favourites and deliberately and such patently graded down what didn't suit their favoured results. That really frustrated me at that moment. And it were, well, doesn't matter now, were especially the representatives of the IHK and the economy. Who really killed everything with their rating"*[lix] (IH#7, 269).

Every member of the project group had a certain background and interest, which obviously influenced the preferred option in regard to natural, economic, touristic or personal benefits. Moreover, as stated in the quote above, some members are suspected to have deliberately graded down the options they did not like, which distorted the outcome.

Additionally, it was also criticised that some politicians didn't really inform themselves about the topic before voting, but simply followed the opinion of dominant fellows:

> *"When a parliamentary group confers and contemplates, they have some people from the building sector or some from landscape protection and coastal protection in their group, both within SPD and CDU, and those give the recommendation: 'folks, all that talk is nonsense, we have to do it like this.' And I could imagine that one is resistant to advice, yes. That you don't want to hear it or you form an opinion, before you had all documents available"*[lx] (IH#12, 239).

This interviewee further criticises that the politicians, who voted about the options, were obviously not informed sufficiently beforehand and some did not even read the outcomes that were provided by the project group:

> *"Well, I can say it, one member of the CDU, who had also voted, asked: 'where do you get this document?' So, he really couldn't read it before"*[lxi] (IH#12, 224).

Accordingly, also power constellations were an issue which influenced the setting. This doesn't only hold true for internal constellations or decisions within a group, but also for political decisions, which will be addressed in the process analysis (sub-question four).

To sum up, which group or person fills which role within a process is of vital importance. The LKN was predominantly seen as neutral and competent, although some interviewees doubted the neutral role and alleged a hidden agenda. The role of the WWF whereas was observed as quite controversial and biased (although not by everyone). This was on the one hand due to the fact that they initiated the process and acquired funding, which led to the impression that they had too much influence on the outcome. On the other hand, it was to some degree the result of personal resentment to a key person of the WWF, being a polarising character and having a longstanding history of disputes in the region, who was equated with the regional organisation as a whole. This resulted in certain prejudices about the neutrality of the overall process as well. Even within the project group, problems emerged as individual behaviour did not match the expectation of an impartial assessment with the topic.

Within this whole setting, trust is a key factor which played an important role in the process. Not only in regard to official authorities who need to fulfil their tasks, but also for main actors in negotiation processes. If these are not seen neutral but are socially framed as being prejudiced, trust is likely to decrease, even more so if proposed changes don't match the own perspectives. Accordingly, the institutional setting, roles and ascribed responsibilities are to a large degree based on sociality.

4. How are local negotiation processes about climate change adaptation structured and which dynamics were/are they subject to?

One important fact needs to be stressed again at the beginning of this section: normally, the LKN – as the responsible authority for the main dike line – simply assesses the dike safety and, based on this

assessment, decides which dike will be strengthened in what way. Climate change adaptation in regard to coastal protection does therefore not belong to the common tasks of local politics in Husum.

As explained in more detail in the case description above (section 3.2.1), the process of the project group was initiated by the WWF in 2015 with the support of the city council, even though different opinions exist of who authorised the group to start its work. On the one hand, there is the understanding that the group received its mandate from the city council, while on the other hand it is time and again stressed by the interview partners that the group worked independently of any political or administrative assignment or mandate. For understanding the course the process took, these differing views are of vital interest, as they form the basis for subsequent perceptions and reactions. The following quotes illustrate how the initial situation was framed by opposing views:

> *"[…] actually all parties of the environmental committee approved the fact that the WWF was assigned to carry out a study with different interest groups"*[lxii] (IH#1, 306).

> *"You need to know, it is **not** a project group which was developed on behalf of the city, but which started its work with the goodwill of the committee"*[lxiii] (IH#8, 437).

The contradiction of these two quotes lies between 'assigned' and 'not […] on behalf of the city', framing the essentially different perception of the work of the project group. However, a more or less basic agreement existed, which consisted in the fact that something had to be done about the Dockkoog. But already at the very early stage, diverging perspectives emerged that differed with regard to a) the openness of the process and linked to this b) the kind of visions that should be developed, as well as c) the role of the group in terms of its commitment and political mandate. The following quotes clearly indicate that different opinions existed about the objective of the process. The aim of the project group consisted in developing ideas that merge as many interests as possible: a variety of possible options in an open process. Others, on the contrary, clearly state that it was never meant to be an open process. In addition to that and also in contrast to an open process, some thought that the project group would put emphasis on the touristic development of the area and had a clear idea of how the results should and should not look like. Especially with regard to the fact that the Dockkoog itself was and will never be questioned.

a) *"We did definitely understand it as an **open** task"*[lxiv] (IH#5, 169).

*"[…] it was **not an open** process. It was never meant to be like that. If it is not wanted, you shouldn't let things slide. I think we looked at it way too naive for quite some time"*[lxv] (IH#2, 378).

The view that it was not an open process is further amplified in the following quote, clearly stressing that the expectation on one side was to consider a touristic development only, while the project group wanted to discuss various options for the use in general:

b) *"[…] the aim was a touristic use of the Dockkoog. Not an ecological aim or something like that, but a **touristic use** of the Dockkoog.* (IH#2, 289) *[…] There was never the mandate to question the polder itself"*[lxvi] (IH#2, 300).

These diverging ideas concerning the initial situation or starting points are part of a mismatch, which also appears in how the roles of those involved in the process and the basic rules have been assessed. Based on the aforementioned framings, the project group aimed at developing a good overview of different options for local politics, laying grounds for making an informed decision while being aware that the final choice about the topic had to be made with the city council on a political basis.

c) *"It might well be that they [politics] had the feeling that their planning sovereignty would be taken away. But that was absolutely not the case. The decision was definitely down to them, it […] would have been a relief for local politics. Because it was really a lot of work"*[lxvii] (IH#11, 371).

"That some participants [of the project group] perhaps had the feeling or that they had the impression their suggestion will be the one that gets implemented, we couldn't solve this discrepancy"[lxviii] (IH#2, 296).

These two quotes clearly address the aspect of discretionary competence and within this the question of power. While on the one hand there was the impression that local politics was afraid to lose planning sovereignty, on the other hand there was the feeling that members of the project group thought the decision about the development at the Dockkoog was up to them. The question of responsibilities, decision making power and democratic legitimisation is at the very centre of this – with the latter one being absolutely essential for a meaningful process. The quote below underlines that the focus needs to be kept on this essential statutory structure:

> *"And of course we always need to take care that we don't create parallel structures next to our committees provided for by statute, that don't have democratic legitimisation"*[lxix] (IH#7, 402).

To make things even more complicated, the project group was not perceived as neutral, but as being influenced by the opinion of the WWF – as indicated in the following quote (this has already been mentioned in sub-question 3, but is also important for this part of the analysis):

> *"So. Then things developed in a direction, which was not welcomed by the committee [local politics], it developed in a different direction. Guided by the WWF, who acquired funding and therefore massively influenced the process in their direction. This led to the fact that we had the Husumer Hallig all of a sudden. And we thought, this is actually not what we wanted. We wanted a further development of the Dockkoog, a reasonable one, not a Husumer Hallig"*[lxx] (IH#3, 241).

The quote above clearly stresses again that the process was not seen as being open (*'it developed in a different direction'*), at least by some members of local politics. Moreover, there was the opinion that the position of the WWF dominated (*'massively influenced'*) the process and the options created by the project group, which led to the development of options that were not acceptable, according to the quote above. Another circumstance that contributed to widening the gap between local politics and the project group appeared to be the missing involvement of the political committee in the overall process:

> *"I underestimated […] that there was no serious connection, meeting each other impartially, respect each other, integrate this in the own decision-finding, between local politics and those who attended to that task"*[lxxi] (IH#5, 225).

As stressed in the quote above and resulting from the assessment and existing mismatch, communication appeared – as seen through different participants' eyes – to be the problematic key factor in the process (*'no serious connection'*). While most of them think that communication between the project group and local politics was transparent and good, some express the feeling that they were not informed about the work that was carried out in the group. One reason for this might have been, again, that there were quite diverging and unarticulated ideas about the overall framework of the project group's work:

> *"The stage of work was regularly reported, also in local politics, also in public. In this respect, I have to say, this is one of the outstanding examples of how a task like this, from basic considerations up to the recommendation of solutions, can be organised nowadays"*[lxxii] (IH#5, 144).

> *"It was negative that we didn't have enough transparency, it was missing the whole process that we were not informed in time. Or rather the commission [local politics] that initiated the whole thing"*[lxxiii] (IH#3, 408).

While the process is outlined as an 'outstanding example' in the first quote above, the second one deplores missing transparency and emphasises again that the process was initiated by local politics. The following quote depicts that there have been arrangements with local politics about the frame of the process:

> *"And we did agree on a schedule and a frame with politics, within which we discuss the topic"*[lxxiv] (IH#4, 204).

Obviously, this framing was not well communicated between local politics and the project group or has been assessed fundamentally different, as opinions about the process would otherwise not be such divergent. Finally, the decision of the city council to abandon the process was made before the project group finished its work and provided the final report. This led to confusion, misunderstandings and resentment among most people involved, not only within in the project group but also in local and regional politics:

> *"We had the results, we had the summary, we had the preference. And it didn't match our expectations"*[lxxv] (IH#2, 319).

> *"And all of a sudden there was an initiative of SPD and CDU […] Husumer Hallig, that's not what we want. –We [local politics] curtail the mandate given by the committee, we curtail this radically, and you [project group] should only work with the option that recommends the strengthening of the Dockkoog dike for the rest of the project time.- I think that was an outrageous procedure at this point, you can't do that. You can't treat people in this project group like that, they [project group] were really diversified"*[lxxvi] (IH#1, 326).

According to the first quote and as already elucidated above, some people in local politics had certain expectations with respect to the results of the project group. The second quote points out again that this the aim of the work was framed in a very contrasting way by other interviewees, which is why the

indignation (*'outrageous procedure', 'you can't do that'*) about the unexpected decision of the political committee is no surprise. This political behaviour is also assessed as problematic in the next quotes:

> *"The problem was that local politics in Husum basically issued a ban on thinking for one option, before these results were presented"*[lxxvii] (IH#6, 179).

Not only does this interviewee criticise the ban on thinking for unwanted options, the way local politics acted at this point of the process was further described as '*complete nonsense*':

> *"But as I said, complete nonsense to say 'we quasi initiate a project group and then we quasi forestall results or disallow results'"*[lxxviii] (IH#6, 249).

The main criticism in this respect touches upon perceptions that the work of the group was not appreciated, because it did not inform any decision-making on the Dockkoog matter (see also quote below). Questions were raised why local politics agreed on the process in the beginning, while the results of the project group were not considered as valuable for handling and developing the Dockkoog case in the end (quote above). Members of the project group estimated this procedure as inappropriate with regard to how the whole process was initially set up. Special concerns were raised about how public involvement was managed, as the decision to foreclose the process excluded the citizens of Husum to pass an opinion about the full range of possible options as developed by the project group:

> *"The core is the political decision that they didn't want a certain option, which was made ahead of schedule. They had a majority for that in local politics, but the work of the group was not influenced strongly, as we still finished the result. But especially for the communication with the public, with the citizens of Husum, a preselection was used. This is a great pity and doesn't fit the task, as the project group perceived it"*[lxxix] (IH#5, 172).

As explained in the quote above, the project group still finished its internal assessment process of possible options, although they were not used as a decision basis in the end. Due to the unexpected political decision to abandon the process and a missing explanation why this step was taken, there is a variety of assumptions and possible reasons why this happened:

> *"There was, as I said, there was no, until today there is no sound explanation, except for, as said, you don't abandon diked land"*[lxxx] (IH#6, 289).

Next to this quite general explanation of not giving land back to the sea, an important reason that was mentioned is the role of power, which an influential person in a key position used to stop the process:

> *"It's often male alpha leaders, who have to spout something at an unnecessary time* (IH#7, 294). […] *That was simply power tit for tat"*[lxxxi] (IH#7, 312).

In general, interviewees mentioned reasons that indeed back up the argumentation of preservers, as outlined in sub-question two already. These included, amongst others, the opinion of the citizens of Husum. Although there has never been an official survey or something comparable that reflected the public opinion, the presupposition that the majority of citizens wants the dike to stay where it is, was used as a legitimation for the decision. This argumentation is in line with the aspect of protection and felt safety that seems to be higher if the sea stays spatially further away from the city. Another argument is based on the fear due to personal experiences with storm surges and, closely connected to this aspect, the role of tradition of land reclamation in this area. Land that was once claimed from the sea was and has never to be given back to the sea due to its value as arable land, symbolic control and protection against storm surges. Additionally, aspects of power (quote above) were also mentioned as possible reasons, while responsibilities and financial burdens are matters that were alluded to as well.

Overall, a mismatch of expectations, communication with each other and political status becomes visible when looking at the Dockkoog process, which considerably contributed to making the overall process more difficult. However, the most important problem in the whole Dockkoog assessment seems to be a lack of mutual open- and willingness to develop a common understanding and – as a result – different interpretations of the framework conditions of the whole process:

> *"Exactly. In the end it is maybe the communication between the group and […] the political level […]… there was a lack of mutual understanding, I deemed. Or one couldn't really understand why or how it went like that"*[lxxxii] (IH#4, 319).

The following quote summarises the problem in a nutshell:

> *"If we could start again, the direct dialogue with local politics would have needed to be much closer to explore what is possible and what not. Instead of recognizing afterwards what was, in some peoples' eyes, not possible from the beginning on"*[lxxxiii] (IH#5, 232).

Apparently, a better communication with each other before the start of the process might have revealed some of the crucial divergences right at the beginning. This would have been important in order to develop an agreed goal with regard to what kind of outcome the process should have and to set binding conditions about roles and competencies.

Nevertheless, the whole process caused many people to reflect their position and opinion and might therefore be the start of future developments. Changers especially stressed the role of the process and the impulse it created:

> *"I do think that it had an impact on people, also on those who wanted to strengthen the dike in the conventional way. It definitely led to reflection of the situation"*[lxxxiv] (IH#1, 392).

This quote clearly exhibits that social flexibility is possible, although change is not easy. The process not only displayed the importance of binding working conditions, but also how crucial the general circumstances are: These include the societal acceptance of new ideas, which is often connected to a perceived sense of urgency. As long as people do not understand the necessity for changing established concepts, approval is harder to achieve. Especially, when the advantage is assessed as small compared to effort and uncertainty of the implementation of new measures or actions to be taken. Accordingly, ideas are more easily accepted, when there is a certain advantage for many people (e.g. socially, aesthetically), if there is a high sense of urgency and when there is understanding for the need to change something. Therefore, it is vital to discuss such options and provide the information needed. Nevertheless, courage is crucial in this regard. Change only takes place, if people in charge are open and make use of an emerging opportunity. This includes the ability to take criticism and handle negative feedback, but also to take responsibility for one's beliefs. If these conditions are available, win-win situations can be created, as one interviewee explained:

> *"I think such processes help to create acceptance and understanding for feasible or not feasible, or accepted and not accepted solutions. In this process we found out what is politically accepted, but we also explored things that would be conceptionally viable, which opportunities possibly exist and also … we somehow called it win-win … which opportunities exist to reach something together, coastal protection, tourism, the city of Husum, nature conservation, possible intersections. And then you have to embark on that, you need to have the guts to do that and of course you need to have public acceptance for it"*[lxxxv] (IH#4, 242).

At the core of this quote is the relevance of acceptance. It is not only stressed that mutual acceptance of different views is central, but also the importance of political acceptance, as this is where the discretionary competence is located. Nonetheless, it is also emphasised that the process helped to explore possible solutions beyond the existing strategy. Many interview participants perceived the work in the project group as an important step towards more openness to think about new ideas, but stressed the relevance of good communication with one another:

> *"There is no longer the taboo 'you're not allowed to talk about that', but we moved in a direction that you can talk about it. We only have to take care that we get into a reasonable conversation"*[lxxxvi] (IH#8, 195).

While it is an important first step to be able to talk about the position of the dike (*'there is no longer the taboo'*) at all, this needs to be done in a reasonable way as the dike represents so many functions (technical, emotional, cultural, historical etc.). Especially the interviewees who represent the mind-sets in the middle of the 'preserver-changer spectrum' mentioned clear rules of how to deal with each other in regard to new developments and change: First of all, it is necessary to encounter others openly, to respect them and their opinion and to take them seriously. It is also crucial that there is the willingness to learn and develop solutions together and that people are open to discuss various aspects. In that case, a process can reveal new options and might encourage to at least reflect these ideas. Most interviewees valued the work in the project group as open and constructive and emphasised the consensus most interest groups had:

> *"And we were all in agreement that this option would actually be a good option"*[lxxxvii] (IH#6, 237).

Nonetheless, there were discussions and disputes as well (*"It was not all homogenous"*[lxxxviii] (IH#8, 459)), as for example about the rating of the different options, mentioned above. However, particularly the openness of the LKN was stressed and is seen as central in order to reach common developments. Probably the most important factor, next to the ones just mentioned, is intensive intercommunication beforehand, to understand and pre-assess what is possible and what not. Without this kind of interaction, a good connection, which implies appreciation and trust, will hardly be reached. This entails a strong connection to decision makers, as good preparation and cooperation are important. Concerning this, also methodological limits were addressed, as it is not always possible to keep everyone on the same level of information and involvement all the time:

> *"Methodologically there are certain limits. Ideally, all people are up to date and included all the time, but sometimes this is not possible"*[lxxxix] (IH#8, 487).

Furthermore, not everyone in charge has the needed competencies (e.g. chairpersons), socially as well as methodologically:

> *"It is often a challenge in regard to social- and methodological competence, which not everyone at all is able to do"*[xc] (IH#7, 335).

Such a process needs a good handling of the instruments used, otherwise it will not be successful. Time and timing, and thus the temporality of the whole process, were additional points that were touched

upon in the interviews. Timing seems to be important in regard to the openness about a certain topic, in this case it was questioned whether people were simply fed up with the Dockkoog topic, especially in local politics:

> *„The topic of the hotel in Husum and at the dike is that heated, already was at that time. Was there even a chance to get into a new and different discussion? Was this possible at the time it was started […] that was already past after all"*[xci] (IH#8, 507). […] *"Do I still have any openness and willingness or am I such fed up with the topic in Husum that I do not want to have it anymore"*[xcii] (IH#8, 523).

Accordingly, the point of time at which the whole process was started might have simply been too late and thus resulted in a lack of open- and willingness to deal with the topic (*'such fed up'*). Time is essential when it comes to the process itself. Not only do some processes take time, as rethinking often needs sensitisation of the people involved, it is also necessary to consider worries of decision makers as well as citizens. Therefore, it is crucial to answer open questions in the process thoroughly to create binding basics to which all people can refer to and based on which a decision can be made in the end. All this is necessary in order to handle topics that are becoming more and more socially acceptable. Accordingly, (building) human relations are a key factor to reach a common solution. Without the openness for mutual understanding and the willingness to jointly develop future solutions, even the best process-setup might not work: it is sociality that counts, not pure or everlasting evidences. Based on this finding, especially the mind-sets that were found in the middle of the spectrum represent a good starting point, as they are aware of and take into account both contrasting ends. Mediators like these are crucial, if such conflicting views exist, but need to have key positions and be trusted by the people involved.

This process was the first one of its kind in regard to climate change adaptation in the region and definitely caused a lot of stir in the community, mostly resulting from the different interpretations and varying expectations in relation to process set-up and project aims. The process within the project group was shaped by diverging interests and disputes, but in the end there was an outcome and a recommendation for how to handle the situation at the Dockkoog. The process as a whole was stopped ahead of time due to a political decision, resulting in the fact that the results of the project group were not openly discussed with the community, as originally planned. Although the sudden political decision caused a lot of resentment, many interviewees stressed the importance of the process as the beginning of a change in thinking, which is inevitable for future negotiations about climate change adaptation.

5. In what way did the handling of or dealing with risks change against the background of climate change and how is this change expressed?

The answer to this question has to be seen on two different levels. On the one hand, the way authorities deal with changes, and on the other hand the individual level. The interviews have shown that the potential impacts of climate change are already included in the work of responsible authorities and that they are well aware of the need to look ahead when making decisions today:

> *"Yes, amongst experts certainly. Forward planning in water management as well as in coastal protection reach 50 or 100 years. Possible future scenarios are in this sense already included in present planning"*[xciii] (IH#5, 109).

Although the chosen strategy, the enhancement of dikes, is a path-dependent one, some see a certain flexibility. New insights might lead to the use of different strategies as a supplement in the future:

> *"…insights that are gained, which are also acquired by science, those will certainly be incorporated in coastal protection. It may well be that alternatives will be implemented some day. […] what is still closed today, could maybe, somehow […] that it is said: we have new insights, which lead to the decision to take away the pressure of the water there, so the dike will not collapse at another location*"[xciv] (IH#3, 355).

On the individual level, climate change discussions and the consequences that are already visible did not really change the way risks are dealt with. Different reasons where mentioned for why change on the individual level seems to be rather slow. First of all, coastal inhabitants feel safe behind the dikes, nothing has happened in a long time and a feeling of insouciance developed, as argued in the following quote:

> *"It's ages since a dike collapsed, that's how it feels. [I] don't want to say that a certain insouciance came to pass with this topic, but man did somehow work out a little advance. At least if feels like this"*[xcv] (IH#1, 189).

Another argument brought forward is probably something that is often underestimated: the power of repression. For those who deal with coastal protection, climate change and its diverse consequences every day, the urgency is of course obvious. However, the majority of people is simply busy dealing with their everyday life and related problems that need to be tackled, which is why their priorities lie elsewhere, as clearly stated in the quote below.

> *"But we have a huge share of the population, who […] honestly has other problems"*[xcvi] (IH#9, 549).

This attitude is certainly a consequence of the good work that is done by responsible authorities and the resistance of the dikes. Potential risks from the sea thus do not play a role in everyday life. Accordingly, part of the risk perception paradox as described by Wachinger et al. (2013) and

Raaijmakers et al. (2008) (see section 2.2.1) becomes visible here. Nonetheless, climate change and sea level rise are nothing which is completely ignored. The topic itself is discerned, but it does not result in an increased awareness or change in individual precaution:

> *"…climate change altogether and also sea-level rise is probably perceived by more people than it was the case 20 years ago. But I don't see that consequences are derived from that or that risk awareness in general increases among coastal inhabitants and everyone takes precautions"*[xcvii] (IH# 4,139).

This is in line with the perception of another interviewee, who sees the start of a rethinking in regard to general climate change topics on the community level, but so far not in the way individual people act on a daily basis. In order to change this, hope is relegated to the next generation:

> *"The handling of risks changes very slowly. On the one hand the communities, especially North Frisia, the islands as well, are already actively working with topics of climate change. One example are CO2-neutral communities: the district of North Frisia wants to be a forerunner in the field of climate protection measures, mindful of the threat especially this district is exposed to. For peoples' everyday behaviour, I cannot discern any major changes, a lot has still to happen, we have to rely on the next generation, that they become aware of this in an increased way"*[xcviii] (IH#5, 100).

To rely on the next generation in regard to climate change adaption emblematically depicts the view that individual action is not seen as an urgent topic which should be addressed now. Exactly this mode of thinking is one of the reasons why climate change adaptation is moving forward so slowly and stresses the importance of experience and the aspect of temporality in this context. Awareness is often only increased when an extreme event happens. In Husum, this has been a long time since the last major incident (bursting of the dike in 1962). Dikes and authorities are trusted by the inhabitants and due to the concept of the climate dike, which adapts while sticking to the existing path, changes to the landscape are only marginal. Thus, there is also no real material change visible, which would possibly draw peoples' attention towards the topic of climate change adaptation.

3.2.3 Summary: The power of the Frisian identity

How do climate change adaptation discourses influence local negotiation processes and how do they affect the local risk culture and the materiality of coastal areas in Husum?

New strategies are coming to the fore, although it is hard to fight the existing path dependent strategy of diking and the Frisian tradition. This is not only a physical/material phenomenon, but foremost a

socio-historically engrained one. Nonetheless, little dynamics are visible, as it is at least possible to discuss such a topic (opening a dike) in a more open way, although the missing involvement of local politics finally lead to an early stop of the process. However, this project was heavily discussed amongst citizens, in the local newspaper and in local politics. Climate change adaptation discourses therefore heavily influenced local negotiation processes, as a process like this had never materialised before. Additionally, there are quite some people who believe that the current situation requires a change. Their presentation of well-argued statements is likely to give the impulse for more sceptical people to at least think about the points that were made and reflect on possible alternatives. This process could be the start towards a stronger involvement of water in everyday life, which will latest be necessary, when dikes reach physical limits. So far, the effect of this process on the local risk culture is not visible for the majority on the individual level while there has already been a change of the attitude within some authorities and institutions. As diking is a very path dependent strategy and so deeply engrained in the cultural history of the region, the materiality of the area did not change substantially, albeit new shapes of the dikes need a bit more space than was needed before. Although no change of the overall picture has taken place yet[19], the concept of the climate dike already represents an approach towards incremental change. In sum, effects are visible on different levels and negotiation processes started that address the reconfiguration of social structures and the framing of risk against the frame of climate change.

3.3 Case II – Medmerry

The Medmerry Managed Realignment Scheme is located on the Manhood Peninsula in the South of England between Portsmouth and Brighton, in the West Sussex County. The Peninsula faces the Isle of Wight on the west side, the English Channel to the South, is bordered by Pagham Harbour in the East and the city of Chichester and the adjacent South Downs National Park to the North (see Fig. 20).The Manhood peninsula counts about 25.000 inhabitants , similar to Chichester, the county town of West Sussex (Cunningham and Cobbold 2015). Economic activities are mainly centred around tourism, agriculture and horticulture (Manhood Peninsula Partnership 2021; Cunningham and Cobbold 2015; Environment Agency 2007). The area has a longstanding history of settlements, starting in the Bronze Age (Thomas 1998) and was populated by the Saxons in the 6th century, who founded the kingdom of Sussex (Lambert 2021). In terms of coastal change, the peninsula used to be very dynamic, as Selsey

[19] Up until the completion of this work in 2022, nothing has changed at the Dockkoog. The dike has not been heightened and the ruin of the hotel that burnt down in 2018 is still standing next to it. The Coastal Protection Plan (Generalplan Küstenschutz) got updated in 2022, still including the stretch of the Dockkoog dike in the list of stretches that need to be strengthened.

was an island between the 14th and early 19th century (Salzmann 1953; Carless n.d.) and Selsey Bill (see Fig. 20, southernmost point of West Sussex) is said to have been about one mile (1,6 km) further to the south in the 7th century than it is today (Salzmann 1953). When looking at the map (Fig. 20), the area opposite of Medmerry is salient. Pagham Harbour was already used by the Romans as a seaport (Pagham Parish Council 2022), but silted up again in the 13th century (Salzmann 1953). At the end of the 19th century, an attempt was made to drain the whole area for agricultural use and an embankment was built across the inlet (Sidlesham Parish Council 2022). This shingle wall got destroyed by a storm in 1910 and was not reconstructed (Ibid.). Today, the area is a nature reserve of approximately 600 hectare, with half of the area being mudflats and intertidal saltmarsh (RSPB 2022).

Fig. 16: Selsey Bill. View towards the southernmost tip (own pictures, 2018)

Fig. 17: View from Selsey Bill to the eastern side of the peninsula (own pictures, 2018)

Fig. 18: Defence measures at Selsey West (own pictures, 2018)

Fig. 19: Beach in front of Bunn Leisure at Medmerry stretch (own picture, 2018)

3.3.1 Case description

Coastal protection on the Manhood Peninsula, and especially around Medmerry, already concerned people in 2001, as local residents were worried about various developments in the area, which were, among others, housing, infrastructure, sea defences and the environment. At this time, managed realignment was first proposed within the context of a workshop called 'Going Dutch on the Manhood Peninsula' (Going Dutch I), which was initiated by two worried residents (Cunningham and Cobbold 2015). Both residents (a Dutch spatial planner and a British risk management journalist) were worried about the lack of integrated and long-term planning for the Manhood Peninsula, as with their respective expertise they expected the situation to get worse with the effects of climate change (ibid.) They persuaded local people and authorities, as well as the Environment Agency of working together – resulting in the first Going Dutch[20] workshop (ibid.). Dutch and British experts in planning, environment, as well as for coastal and water management aimed to exchange their knowledge and to create a better understanding of how local problems on the Manhood could be tackled from a Dutch perspective. The various challenges on the peninsula were enumerated as follows:

> *"The Manhood Peninsula is a coastal area under threat of flooding from the sea, rising water tables, and inland water ways. It also shares many planning problems of the Dutch and faces*

[20] Eighteen Dutch experts visited the Manhood Peninsula for one week, bringing in their expertise in planning and coastal management. The title of the workshop (Going Dutch) is based on this exchange and the input of the Dutch perspective on the local problems.

many of the problems increasingly shared by other areas of the UK, particularly in the South East: rapid housing development plus inadequate infrastructure; increasing conflict between housing, industry, farming and the environment; conflicts between sea defence and the environment; poor drainage; increased difficulties of providing good quality fresh water; plus a divided planning and management responsibility resulting in a lack of integration, and in a short-term planning approach, causing lack of trust from local residents towards the responsible planning authorities" (Cobbold and Santema 2001, p. 8).

Although many problems are mentioned here, the focus of the workshop was on coastal protection and resulted in three scenarios, with all professionals agreeing *"to use soft defences and/or let the sea in to create saltmarsh and estuarine features"* (Cobbold and Santema 2001, p. 22) for the Medmerry stretch.

The next important step to mention in terms of coastal protection is the 'Pagham to East Head Coastal defence strategy 2007' (Environment Agency 2007). This document, published by the Environment Agency (EA), shows the preferred options for managing coastal defences for a time frame of 100 years, acknowledging that climate change, sea-level rise and an increase in storminess pose a great threat to existing coastal defences. The aim was not only to inform affected communities, but to get feedback on the available and preferred options via an enclosed questionnaire to help determine the final coastal defence strategy. Within this initial document, the preferred option for Selsey Bill (see Fig. 20) was 'no active intervention' and 'hold the line (maintain) for Selsey East and West (see Table 4). The indicative preferred option for Medmerry was 'managed realignment'.

Table 4: Preferred coastal defence strategies of the EA before (2007)/after (2008) consultation of the public

	2007		**2008**
Selsey	Selsey East	Hold the line - maintain	Seen as one single frontage Hold the line - sustain
	Selsey Bill	No active intervention	
	Selsey West	Hold the line - maintain	
Medmerry	Managed realignment		Managed realignment

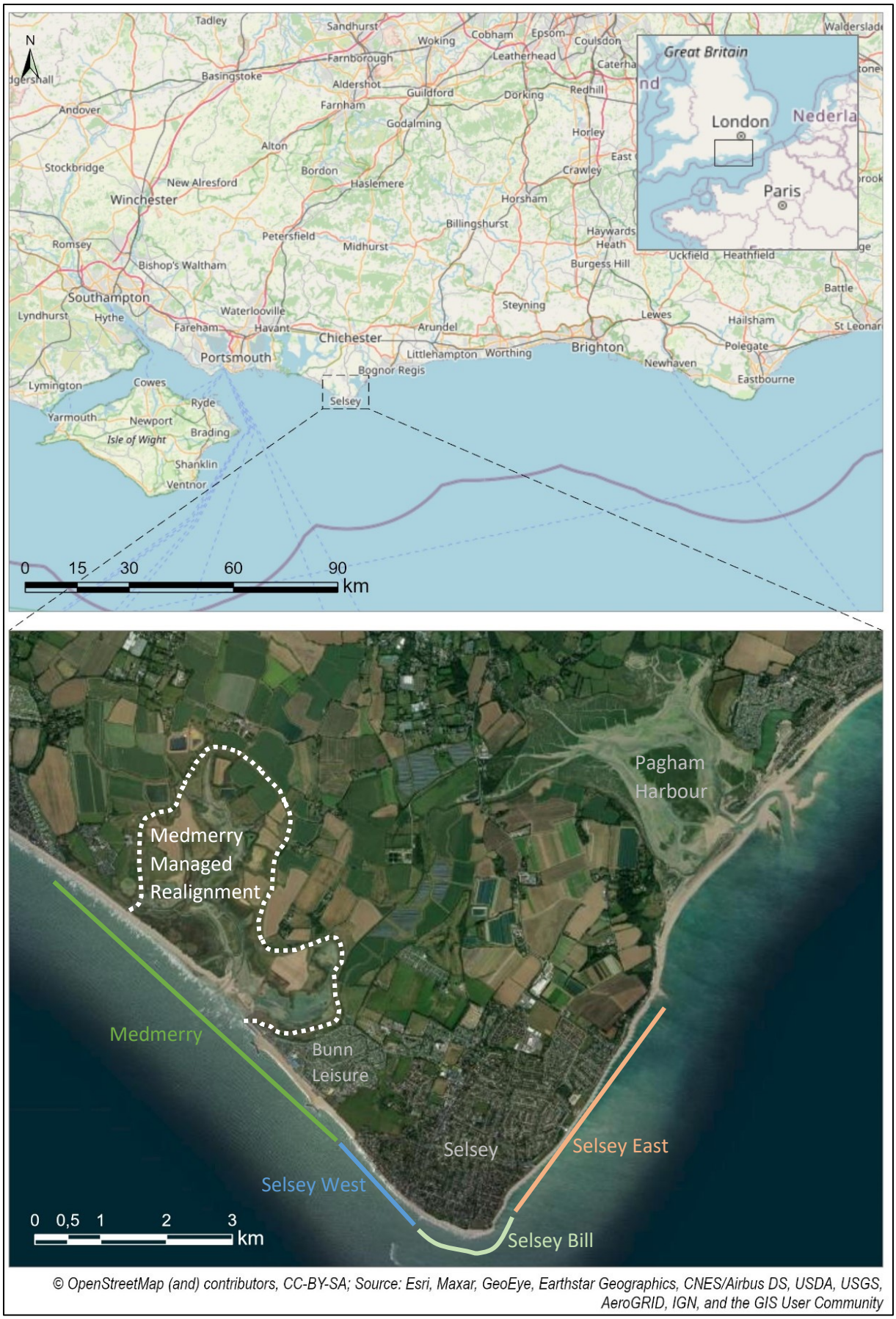

Fig. 20: Location of Medmerry Managed Realignment (based on map by Anja Boekenoogen)

These preferred options resulted in a huge amount of local opposition, as many inhabitants wanted hard defences not only to be maintained, but sustained or improved, and 'hold the line' for the whole of Selsey as well as for Medmerry. Protest was, among other things, organised in a grassroots organisation called 'Save Our Selsey' (SOS). As the figure below shows, SOS started a campaign to mobilise as many people as possible. This call for protest was printed in a local brochure, calling upon to display the page in a prominent place to support the protest (first sentence on top of the page). The slogan 'fight them on the beaches' has a strong historical meaning, as it refers to a speech of the British Prime Minister Winston Churchill on 4th of July 1940, during World War II. In the context of the German offensive against France, Churchill gave the speech to reinforce the British resistance against Germany. To use this slogan is thus not only fraught with meaning but allegorizes how threatened local people felt by the proposed options of the EA.

In May 2008, a new 'Pagham to East Head draft coastal defence strategy' was published, which resulted from the almost 2000 responses that were received from the former consultation (Environment Agency 2008). As shown in Table 4, the strategy for Selsey changed considerably from no active intervention and hold the line (maintain), respectively, to hold the line (sustain). Concerning flood risk, the difference for the community is significant. 'Maintain', as defined in the coastal defence strategies means *"defences are maintained at their current levels, but as sea levels rise flood risk increases over time"* (Environment Agency 2008, p. 8). Whereas 'sustain' is described as *"defences are raised and strengthened as sea levels rise, keeping the level of flood risk the same as it is now"* (Ibid.). This change in strategy complies with the public preference from the consultation process. For Medmerry, however, the preference from the consultation responses ('hold the line') did not change the recommended strategy for this stretch and stayed with 'managed realignment'. Reasons for this were the higher costs for the maintenance of a shingle bank combined with an increase of floodings, which is why holding the line at this stretch would not be an effective defence for the 100 years' timeframe of the strategy (Environment Agency 2008). Accordingly, one of the reasons for public protest was solved with changing to hold the existing defence line and sustain it for Selsey. The other major point, realignment at Medmerry still existed. At this point, the Manhood Peninsula Partnership[21] initiated a second workshop with Dutch experts: Going Dutch II took place in June 2008. The aim of this workshop was to *"assess the strategy* [proposed by the EA] *in an impartial way and also look into sea defence options put forward by the local community"* (Cobbold and Santema 2008, p. 7). In order to include the variety of opinions *"local community parish councils, community organisations, local businesses and landowners were invited to outline their main concerns regarding the strategy and suggest other*

[21] "The Manhood Peninsula Partnership is a resident-inspired partnership of local communities, local and national government agencies, and other bodies involved in the Manhood." (https://peninsulapartnership.org.uk/who-are-we/)

options for coastal management" (Ibid.). The strategy and concerns of the locals were addressed during the workshop, with a similar result as in Going Dutch I (Cunningham and Cobbold 2015).

Fig. 21: Call for protest against the proposed strategy of the EA in a brochure (this page was given to me by an interviewee)

The main statements were not so much about a right or wrong strategy, although soft defences were recommended, but rather about looking ahead and working together: *"Be positive; plan your future so that you work with its environment and special features to make it economically viable and socially sustainable; create sea defences and a coastline that will work for the area in the long term […]"* (Cobbold and Santema 2008, p. 3) and *"If local authorities and residents act together now, share a vision, plan holistically, and take a 'no regret' and flexible approach to coastal defence that complements those plans, the area will have a sustainable future […]"* (Ibid., p. 4). Technically, the Dutch experts concluded, hold the line would be feasible, but available funding, construction material and use of the protected land should be looked at in order to make a decision. Finally, the results were open for discussion during a public presentation.

Although many concerns remained, the Environment Agency purchased the land for the realignment in 2008 (Gray et al. 2016; Maplesden et al. 2016). Due to the former experience, the EA was aware of the need of local support and involvement to get the permits for construction, which is why the Medmerry Stakeholder Advisory Group (MStAG) was established in 2009 (Gray et al. 2016; Maplesden et al. 2016; Pearce et al. 2012). The EA hired specialist engagement consultants to focus on the following objectives*: "provide information about the multiple benefits offered, gain widespread support for the implementation of the scheme, community input into the design"* (Maplesden et al. 2016, p. 284). The members of MStAG were self-elected representatives of 20 local interest groups (Pearce et al. 2012), who advocated local views and reported back to the wider community (Cohen-Shacham et al. 2016).

When the planning application was submitted in July 2010, more than 100 supporting letters were received and planning permission was granted in November 2010 (Maplesden et al. 2016; Cunningham and Cobbold 2015). Construction works started in October 2011, the breach was excavated in September 2013 (Maplesden et al. 2016) and on 4th of November 2013, the Medmerry Managed Realignment Scheme was officially completed. The new build embankments extend over a length of 6,7 km (Pearce et al. 2012), creating a new nature reserve area of approximately 400ha (Maplesden et al. 2016). This short overview already gave an impression about the dimension and the explosive power, which the topic of coastal defence sparked on the Manhood Peninsula. Although the area has a dynamic history concerning the coastline, and maybe for this very reason, the wish for stable and known protection schemes guided the protest. However, the responsible authorities learned within the process and managed to turn the negotiations towards a successful implementation in the end.

Fig. 22: View towards the breach from the southern point (at Bunn Leisure) at low tide (upper picture) and incoming tide (bottom picture) (Own pictures, 2018)

3.3.2 The process of climate change adaptation in Medmerry

The following analysis of the empirical material follows the same structure as known from the analysis of Husum above.

1. What kind of climate change adaptation discourses/ -strategies exist in the case studies?

Coastal defence in England is organised for larger stretches, within which single sections are assigned different strategies: No active intervention, hold the line, managed realignment, advance the line. A description of each management option is given in the table below (Table 5).

Table 5: Management options for the English coastline (Environment Agency 2020, p. 55)

Management option	**Description**
No active intervention	"A decision not to invest in providing or maintaining defences. This requires engagement and adaptation where it affects communities."
Hold the line	"Maintaining or upgrading the level of protection provided by defences."
Managed realignment	"Moving or allowing the retreat of the shoreline and the creation of inter-tidal habitat where appropriate."
Advance the line	"Building new defences seaward of the existing defence line."

Within these strategies or management options, a variety of different defence structures are possible. Around the Manhood Peninsula they are ranging from solid concrete walls to shingle banks, as an interviewee expressed:

> *"So about 800 metres I think altogether, then it's just shingle defences with […] timber breastwork behind it and in some places there are […] metal cages […] full of stones. And then you go a bit further round and you're back on the hard concrete defences again and that goes, I don't know exactly how far it is, it's about 2km, 2/3k and then it goes back to the timber breastworks again. So, there are hard defences but what this is […], because the sea still wants to break through [……] we have to make sure there's a constant supply of shingle in front of it. So what we're doing at the moment is […] keep a close eye. We got a beach management plan which extends from Pagham Harbour in the east right round to east head at beginning of Chichester harbour in the west. And we maintain the shingle at an appropriate level"* (IM#1, 65).

At the core of this quote lies the variety of defence structures (*'shingle defences', 'timber breastwork', 'metal cages full of stones', 'hard concrete defences'*) that protect the peninsula, and emphasis is put here on the need of constant shingle supply. Although the coast is protected by these various structures in different combinations, all interviewees mentioned the fundamental fact that it is impossible to fight nature:

> *"[…] you can't fight mother nature, basically. And you can only try and control it"* (IM#12, 4).
> *"Nature will go its own way, whatever. […] at the end of the day, nature will win"* (IM#12, 10).

This quote illustrates coastal protection as an attempt to control the forces of the sea, although "mother nature" cannot really be defeated. It is the superiority of nature over humankind that is pictured here, which is also in the line of reasoning of the story of King Canute:

> *"But the point of the story was, King Canute said not even kings can stop the sea. […] within our thing, there's a wide acceptance that […] not even kings can stop the sea and that's kind of nowadays said, no government has the time or the resources the sea has power […]"* (IM#3, 16).

This statement clearly expresses the humility natural powers are regarded with, implying that there is no defence structure which can fight the power of the sea in any case and also adds a historical dimension to this cognition by referring to the story of King Canute. Albeit knowing that there is no infinite safety, the coastline does get protected:

> *"Safe, oh, that's a good word, isn't it? Depends what you mean by safe, doesn't it? Cause it'll only protect to a certain degree but I suppose you've given time"* (IM#4, 88).

Especially the last quote stresses again that coastal defence never holds a guarantee to be completely safe, while also highlighting that safety is a question of definition. The interviewee rather sees coastal protection as extension of the status quo (*'you've given time'*), which might not be kept up forever. This temporal aspect is also encapsulated in the quote below:

> *"[…] tide and time wait for no man"* (IM#11, 6).

Accordingly, natural processes (*'tide and time'*) have their own rhythm and temporality, which are superior to humankind. Constantly recurring and proceeding, there is no structure that would have the power to stop these forces. Thus, people on the Manhood are well aware of the power of the sea, as the struggle of fighting the sea has a long history:

> *"I think it…certainly in the past and certainly round the British coastline, really it's been the case of yes, defending the land really. […] But yeah, it was always the case of really hard defences basically, to stop the sea coming in"* (IM#5, 15).

As stated in the quote above, hard defences were mainly used to provide protection against the sea in the past. Nonetheless, and despite protective measures, there has always been a loss of land, as raised in the following quote, which is also seen as a problem in the future.

> *"I think if we're going right into the future, I think some of the housing on the front will be lost. […] how…it's happened for hundreds of years, it will continue to happen"* (IM#9, 290).

The potential loss of houses is not only seen as a current problem in the quote above, land loss and possible limits of current coastal protection over time were also mentioned by other interviewees, especially in regard to climate change:

> *"[…] the fact that the sea is natural and it will never be tamed. So, that's something that we always have to bear in mind and yes, there will be a rise in levels and places have to cope with it"* (IM#6, 5).

This quote points out the power of the sea again and indicates that sea-level rise will imply consequences for coastal areas (*'places have to cope'*). However, in the quote below the impact of climate change, as it is imagined, is portrayed as huge change to the coastline:

> *"Ohh, yeah. I mean, it…it's gonna change the whole format of the coastline. In some cases, you know, you're gonna lose houses, you're gonna lose businesses. It's changing the whole situation. […] It is impossible to hold the line. The sea is just so powerful"* (IM#11, 119).

Within this description of future change at the coast, it is highlighted that holding the line will not be possible in respect of the power of the sea. While the fact of future change is acknowledged here, a temporal estimate is missing. Estimates with respect to a possible timeframe of changes to the coast also remain rather vague in the following quotes. While one interviewee reckons that holding the existing coastline will be possible for about 100 years, another one even forecasts some hundred years:

> *"[…] the other threat is the long-term: sea-level rising. But that's 100 years+ maybe. I looked into it quite a bit. […] We're good for at least a hundred years"* (IM#8, 64).

As stated above, the main problem in the long-term will be sea-level rise. This is also seen as problematic in the quote below, although the timeframe within which the coastline can be kept where it is, is estimated as much longer (*'couple of hundred years'*):

> *"I can't see that anything is going to resolve the situation. Whether we can continue to hold the line at Selsey and round the Peninsula, probably another couple of hundred years, but I very much doubt that there is a long-term, say 500-year, future. I may be wrong, I hope I'm wrong, hope I'm wrong, but it won't be my problem"* (IM#1, 362).

The last section of this quote (*'but it won't be my problem'*) refers to the fact that the interviewee will simply not be alive anymore by the time holding the line becomes impossible. While the interviewee above was well aware of the need, the neglect of the urgency to act and adapt remains a common theme among interview participants. However, this attitude towards climate change is heavily criticised by another interviewee, who addresses this as problematic in regard to the worsening

situation. According to him, it is time to adapt now because otherwise it might be too late at a certain point.

> *"But we are being stupid, we think, oh, that's not our problem, it's our kids' problem but we won't be around to the time. So that's not good. So yes, it is and it's getting worse and worse and we'll come to a tipping moment, where it's like uuurghh, what do we do – no more"* (IM#8, 164).

This call to adapt now is in line with the consensus among all interviewees that existing defences either have to be considerably improved or even shifted towards other strategies to adapt to climate change:

> *"Ahm, well, the direct impact is, you have to either build things higher or you let things go more, isn't it, it's one or the other"* (IM#4, 73).

Therefore, one option is to enhance existing structures (*'build things higher'*) or retreat from constantly improving coastal protection (*'let things go more'*). The need for improvement (whatsoever) in the future is also stressed in the quote below, which is outlined as an aspect of scale (*'bigger and better'*):

> *"So, I would say that, on the whole, the actual standard of it is fine. Whether or not it's going to be good enough for the future is another question. I somehow doubt it. So, anything that happens in the future will have to look at doing something bigger and better"* (IM#2, 317).

Especially in front of densely populated areas, the aim is to hold the line, which is mainly done by building higher walls or replacing timber groynes with rock groynes. An interviewee describes this way of climate change adaptation and the consequences for the community in the following way:

> *"[…] and impact on what those assets are going to look like. Because beaches are quite well accepted as a management principle, there comes a point where you can't make beaches protect against all events, so then you start building concrete walls at the back and you're starting more. And the height and the depth and the scale of the structure becomes intimidatingly larger for a community. It stops being an asset that they can enjoy and becomes a more physical structure in their way of the sea"* (IM#3, 64).

Here, the change of scale of the structures that will be needed in the future is directly linked to the social consequences. While beaches are not perceived as built defence structures, but enjoyed, concrete walls will imply a change to the existing landscape, as the interviewee also stated in the further course of the interview (see quote below). The physical change to an area by increasing the scale of a defence structure thus has obvious spatial consequences. The latter, in turn, are likely to (negatively) affect the experience of the environment and the landscape, influence individual attachments to the area and are therefore likely to have a bearing on the sociality.

"Yes! And keep making it bigger. […] So that'll be a massive change to the landscape out there, to handle bigger flood events and climate change" (IM#3, 87).

Consequently, the change of scale and thus the change to the landscape that is needed to face sea-level rise and flooding will either mean to build higher walls and more massive structures or to change the way in which coasts are protected, towards a spatial approach for example. In this respect, some interviewees came up with the urgent plea to rethink how coastal protection is done against the background of climate change:

Interviewer: "How does climate change impact coastal protection?"
Interviewee: "It needs a complete rethink" (IM#8, 154).

"You know, something has to happen, but that's a long term thinking. Short term thinking: just put a bit more gravel down here and it'll be ok for another year" (IM#8, 174).

As stated in the two quotes above, a long-term perspective with a change of the strategy is needed for coastal protection, as the current strategy only fixes the problem for a short time (*'for another year'*). This change of thinking is also demanded in the quote below:

"What does it mean? It means we have to rethink how we do it. I do think we need to look at…we can't defend everything, and we don't need to. Britain, we don't need to. […] But there are still places where you can let the sea come in and definitely with Britain we can do more of that, but we haven't got there yet politically. I mean we've done it here…but there aren't many places in Britain where we have done it and….yah" (IM#7, 168).

This quote is basically a call for change, a call for living with the water in areas where it is possible. As stated here, such a shift needs political will. These last quotes prove that there seems to be a perceived sense of urgency amongst the interviewees that things have to change significantly in the future in order to be protected. This is the case although realigning the coastline for example is already part of official strategies (see quote below). Nonetheless, the interviewees above seem to have the feeling that the demanded change is not progressing fast enough.

"We have a rolling programme of more Medmerrys, not the scale of Medmerry but assets where they're coming to the end of their residual life or it's just not the right decision to hold a concrete wall here anymore. We're now looking at setting those defences back and creating more space, so […] already we're seeing more and more of our assets being looked at in the long term and looking to set them back and […] realigning them rather than just doing the status quo. So you will see more of the coast being realigned as we go forward. Because it just becomes untenable to hold the existing line" (IM#3, 271).

As emphasised here, creating more space for water and realigning the coastline is being done already, but is a process that takes time and will become more visible, as more defences are getting overhauled. Hence, it seems to be acknowledged that realigning can be the better option in some cases, compared to maintaining and improving existing defences. One important reason for this is the financial aspect, which was mentioned in the quote above and several other times, after being asked about the consequences of climate change for coastal protection:

> *"I think it's already under pressure. I think we're already under pressure, because of the cost of holding the line. There's already the pressure to try not hold the line […]"* (IM#9, 117).
>
> *"It's more expensive. Money, money […]"* (IM#3, 64).
>
> *"It needs a complete rethink. And a lot of money, it's money, money, money"* (IM#8, 154).

All these quotes focus solely on financial aspects *('cost', 'more expensive', 'money, money, money'*), which can easily be explained by the fact that coastal protection in England is undertaken based on cost-benefit calculations:

> *"Simply because when the EA look at whether something is worth supporting in terms of flood defences, they look at what's actually going on just behind the blue-green line. And, if…essentially, they attach a cost to it, they've been really criticised for that, but the cost is related to the number of people, who live there and the value of the businesses to present"* (IM#2, 13).

So how coastal defences look like, and whether they get maintained or improved, depends on monetary values behind that structure, which increase with the number of people potentially benefitting from it. The following quote gives a detailed description of how these values are assessed and how coastal protection projects are prioritised:

> *"The first thing you do is cost-benefit analysis and that tells you what your best option is. Best in inverted commas, the one that you can take forward because that gives you the highest benefit-cost-ratio. Once you've done that, you then do something called an incremental benefit-cost-ratio and this is based on treasury guidance and it says, let's say for example I can build a flood defence to 5 metres high and that gives me a 1% standard protection of 1 in 100. If I build it another half meter higher, I obviously protect people even further and I get more benefit, but I get more cost. What does that look like? Is that a better benefit-cost ratio than the one in, the 1%, can I go even higher? So, you do your benefit-cost-ratio on different types of options. Do I do a wall, do I do an embankment, do I set it back, do I do rock, etc., etc. Once you found the cheapest option, you then look to see how high you can build it and that gives*

you your best option for projects. In terms of prioritising that projects, we then use a bespoke equation for the Environment Agency, known as partnership funding. And that helps us prioritise which projects go forward, because we can't afford to build all projects in any given year. So, we prioritise based on partnership funding score, once a project's gotten through that benefit-cost-ratio process. […] It's all about money, yeah. And we then run a process called, so within partnership funding, I have an opportunity to say to a community, I can't afford to build your project or your project isn't a very high priority, do you want to contribute cash to make it an affordable project. And that changed in 2011. Before 2011 we never did that. Either you had a good project or you didn't. Now we have an opportunity to go to the people who benefit, not just residents but businesses or local authorities or anybody who has a benefit to that project. They can contribute towards our projects to make them stack up financially even more than they would have done. […] And it helps buy in…it gets buy in for local communities as well, when you have a financial stake in a project, it helps get a sort of support for something you might not usually get" (IM#3, 109).

As explained here, there needs to be a good benefit or financial contribution of the community in order to get projects realised. Thus, protection can somehow be bought. Additionally, this financial involvement of a community is seen as an advantage to get local support, even for projects in which this would not usually be the case (*'helps get a sort of support for something you might not usually get'*). This approach is also criticised, as already touched upon in the second last quote. Interviewees feel that less populated areas are disadvantaged and even wrong incentives are created in order to fulfil cost-benefit demands:

"But the Manhood Peninsula doesn't have the population here. And so, because of that, they wouldn't be able to pull of the same sort of coastal defences as perhaps people would like to see in some cases" (IM#2, 30).

People in less densely populated areas would also like to have proper coastal defence, which is why the cost-benefit approach of the EA is assessed to be unfair, as these areas are not the highest priority.

"[cost-benefit] which is an absurd thing for managing the coast, isn't it!? Because, you know, that makes, incentivises you to put more housing behind the coastline so that the cost-benefit goes up. […] so, you're making even more people vulnerable" (IM#7, 208).

Thus, people do not only feel dependent on the value estimated by the EA, in the worst case, some areas are perceived to get more vulnerable through the cost-benefit approach, instead of getting better protected (*'you're making even more people vulnerable'*). Climate change and the need to adapt is unequivocally recognised on the Manhood Peninsula, which makes it even harder to accept that

improved protection (paid for by the government) is often not possible within the cost-benefit system. Hence, the cost-benefit tool, as an inherent economic approach, is associated with a variety of social consequences. The opinion that 'hold the line' is not the best solution everywhere and that different strategies might be the better ones for the future, is shared by most interviewees. However, there is no 'one-solution-fits-all' strategy, but coastal protection and, accordingly, also climate change adaptation is divided into smaller stretches, which provides a high degree of flexibility. For each stretch the best strategy is chosen, mainly based on the rationale of cost-benefit calculations. In some cases, this includes that the scale of the defences increases. While this is a technical question at first glance, this change has social implications as well, as it alters the spatiality of the area and thus the environment the local community feels attached to. It was also common purport in all of the interviews that there is no infinite superiority of humankind to the forces of the sea. Therefore, also changes resulting from climate change are seen with a certain humility, as natural forces can never be fully controlled. Nonetheless, generational aspects were addressed and the need to rethink coastal protection was stressed with respect to the timeframe within which living on the Manhood will remain possible. It is therefore aspects of sociality, spatiality and temporality that are of vital importance with regard to climate change adaptation rather than technical questions.

2. Which structuring role do attachments to the dwelling place and spatial concepts have in regard to contested or agreed-upon negotiation processes?

In contrast to the case of the Dockkoog, Medmerry is not split between preserve and change, although both mind-sets also exist here and some people are more open towards different coastal protection strategies than others. In Medmerry, it is rather the sense of urgency and the wish to be protected which steers the negotiation. The focus in the following section is therefore on how people accommodate change in the environment they are attached to and whether that influences their view on that topic. People living on the Manhood Peninsula are strongly attached to the area, it's seen as their base and an intangible feeling of belonging (*'you really don't know why you love it'*) connects them to it:

> *"I look at myself as a Selsonian. S-E-L-S-O-N-I-A-N, yah, that's what we call ourselves down there, Selsonians. But always, if you love the place, you really don't know why you love it"* (IM#1, 122).

This interviewee pictures a social attachment, a connection to the community, which is described as being special and *"extremely friendly"* (IM#6, 41), as well as the identification with it. At the same time, the area embodies the roots of the life one is leading:

> *"Well, it's your base, your roots"* (IM#11, 23).

While the quotes above express feelings and identifications that cannot be put into words easily, the natural environment and the unique atmosphere that sea, sun and mist can create were amongst the more tangible explanations interviewees mentioned as reasons for their attachment:.

> *"it's just be able to walk by the sea, hear the sea, watch the sun on it, see the mist, see the changes, there's also changes you don't get in land. And value it, really. I think that's it: value, you can't put a price on that"* (IM#2, 175).

The experience of these natural attributes is seen as being of inestimable value (*'you can't put a price on that'*). Natural and social qualities create a unique character of the area, which was also mentioned as a reason for attachment by the interviewees, while raising the challenge of maintaining this character with more and more development taking place:

> *"But it would be a threat to the character of the place, I think that would be the issue, you know, it would lose its character. I think that's the hardest thing at the moment, trying to maintain its character with more people moving in, you know"* (IM#5, 83).

The special character of the place and the struggle to maintain this, which is mentioned in this quote, is also depicted in the quote below.

> *"[…] so it's little things like that you feel this, a lot of room for quirkiness and people come down here because they like that. And there again, it doesn't have a price to it and it's quite difficult to actually preserve it"* (IM#2, 216).

Thus, the special quality that the area and the community have for the interviewees above, create a certain value of the surroundings that cannot be put into economic figures (*'doesn't have a price'*), and which is hard to preserve with more development taking place. However, while people on the Manhood would like to sustain the character of the peninsula, the exact route of the coastline was not of major importance. Nonetheless, the mind-set of preserving was addressed in the interviews and definitely exists in the area:

> *"Ahh. I can't recall an expression, but I know when we first started looking at changing the coastline, a lot of the much older generation, particularly at the farming community said: 'We've been holding that coastline, i.e. controlling, forming, you know, creating that coastline for 300 years, you know, why should we now change it.' So, the sentiment was there if not the expression"* (IM#7, 7).

While the quote above mainly describes the older generation as having the mind-set of preserving the coastline, as it has been formed for centuries by humankind, the quote below rather regards a missing openness for change as a more general problem:

> *"The other thing that was interesting, was other peoples' reticence about change. And I think it happens everywhere. People…. if it's always been like this, why should we change it"* (IM#10, 190).

This effect of habituation (*'it's always been like this, why should we change it'*), is also referred to in the quote below and seen as a barrier (*'It'll take big sell'*) on the way towards different coastal protection structures other than walls, as most people are used to it being the common strategy:

> *"The attitude now, it depends who you talk to, because people of, I'd say of the last three generations are used to solid walls, they're not used to seeing anything else. It'll take quite a big sell to introduce some of the softer engineered options, which would be out there […]*" (IM#2, 335).

Therefore, people are familiar with the strategy of holding the line and the need of solid structures (*'they're not used to seeing anything else'*), which is why not everyone sees a necessity for change. The next quote adds on the historic component of this view, as the ingrained fear of the sea has always been there (*'in the old days'*) and was coped with by the use of solid walls:

> *"[…] there's a say in the old days, anybody who mentioned or would letting the seawall go, it was panic. And now you can see, well, no, it works, it's a good idea, you know. Can't do it everywhere, but where you can, it's a good system, you know"* (IM#12, 179).

While this fear and the habituation, combined with experiences of the older generation, is obviously one of the reasons why people are sceptical, it is also stated in the quote above that once people see that an alternative structure as the realignment works and does provide protection nowadays, mind-sets can shift. And for those, who did see realignment as an option from the beginning on, it creates a different feeling to see it working, as their opinion gets reinforced.

> *"But having seen it in action, you realise that it is an option, because it's been done, you know, the nature reserve is growing, it's great, I cycle out there, it's fantastic it's lovely, you know, absolutely marvellous, you know. So, it's … I don't think it's probably changed my view because I always thought that that must be an option to do it. But having seen, it's made me realise, I suppose that it's a very worthwhile option"* (IM#5, 382).

This interviewee is delighted with how great the realignment scheme turned out to be (*'great', 'fantastic', 'lovely', 'marvellous'*), as the opinion of it being a good idea has been proven. In addition, several of those people who were not in favour of the realignment from the beginning also changed their mind, having seen it in action and realising that it is quite a unique thing at the open coast. Almost

all interviewees were proud of what has been created and see it as a feature that makes the area even more attractive, not only in regard to wildlife but also for tourism.

> *"I think that's why Medmerry is actually very interesting, because that's exactly what people did - they made it a feature. Not everywhere that needs some sort of flood defence is going to have the space available to be able to do that"* (IM#2, 360).

As stated in this quote, local people started to see the benefits of the realignment scheme and the possibilities it could imply for the area (*'they made it a feature'*). Not only is the scheme valued for the new wildlife habitat it created, resulting in an increasing number of birds also in the surroundings and attracting visitors, but also for the fact that it combines all these advantages with being there to prevent flooding:

> *"Suddenly we were given this opportunity to create something, working with the RSPB and the Environment Agency, which would help the economy down here and create something really lovely of a wildlife park, which just happened to be flood defences. So now we got these beautiful birds […] nesting down here, the volume of birds is increasing, the number of birds that come in to my garden, you wouldn't normally see in a garden – like yellowhammers and things, coming to feed. And we created this something that protecting these homes but is also a beautiful place"* (IM#11, 322).

While the interviewee above personally enjoys the wildlife that is connected to the realignment and is proud to have been part of the process of change and the creation of the new habitat (*'we were given this opportunity to create', 'really lovely', 'beautiful place'*), also people who do not really care about the natural aspect see the advantages it could have for the town:

> *"So, but it's not somewhere that I go, but I could imagine cause I'm not actually a bird-watcher or a wildlife person or anything like that. But I would imagine it will eventually have a great pole for the birdwatchers and for the wildlife people. So. And again, in turn, if it does attract those people, providing we've got facilities to bring them further into the town and things like that, then it will help the economy as well"* (IM#6, 161).

In this quote, it is the potential economic benefit that is highlighted, as attracted visitors are likely to use the facilities provided in Selsey and the surrounding villages. Thus, the realignment has different features for different people. While some enjoy the wildlife and use the area personally, others are glad about the economic benefit that the scheme creates.

The process around the realignment also made the need for change visible for some people. The need to create more space for water is expressed in this regard, be it from inland or from the sea, which might be created by moving back the defence line:

> *"So if Medmerry proves, I mean it's not been there long enough to say it's proven but it seems to be doing the job. And if something like that happens then there's gonna be more space for water. At the end of it there has to be more space for water and we have to be ready to react. Ah, move back, we need to move back"* (IM#6, 80).

Surface water from the area is drained into the realignment scheme, as it provides enough space. Such space for water is not only demanded in the quote above, but also in the one below:

> *"I can see there […] being a more watery landscape, in other words: there's gonna have to be bigger areas to hold water at certain times. But not due to probably coastal flooding, more due to rainfall […]. I think it's a bit up for grabs how it changes, you know, in terms of climate I think there will have to be bigger areas to hold water […]"* (IM#5, 434).

It is clearly stated here that there needs to be a change towards the accommodation of more water within the landscape (*'more watery landscape'*), in order to handle increasing amounts of water from inland due to climate change and secure living in the area. With regard to floods and water in general, the ideas of the next interviewee go even further, as it is proposed to build houses on stilts in order to create a living with the water and embrace the change rather than fighting it by raising defence structures:

> *"So, if you're talking about simple things – put everything on stilts – If you're going to build it in that field, that everybody knows floods, build it on stilts, have your garage underneath and have your living up at the top. Then you've got a good view of all this floodwater around. You could throw in a boat as well, you know. It's that different mind-set, saying we do things differently"* (IM#2, 393).

Building on stilts and changing the mind-sets towards working with the nature is also pointed out as the likely way to go in the future in the interview extract below:

> *"In regard to coastal protection I think new strategies are… to me it's the difference between that well, ok we keep building up huge great seawall and we look at more innovative ways of sorts of, I mean maybe sort of building things on sorts of stilts and houses on stilts and things like that. I think it's more, to me the new strategy will be working with nature rather than against nature and then that's part of what I would believe anyway. But I think that's becoming*

more to…I think certainly, you know, people are beginning to realise that that is the way to go in lots of ways, you know, to work with nature rather than against it" (IM#5, 233).

Future coastal protection is specified in this quote as working with nature, a rethinking which is perceived to already have started (*'people are beginning to realise'*). Although there are visions of how to handle possible future change, which certainly have to come along with some form of innovation, the attachment to a certain place, the way it is valued, fears and habituation, are always likely to imply some sort of friction in view of change. The following quote puts this in a nutshell:

"Any problems that you have associated with the coastline are all human-made, simply because if humans weren't there, they wouldn't be worried about losing their gardens and everything else, just 'cause the sea is rising. And ah, it's very much the value that humans attach to land, and how they view the loss of that land and that resource […]" (IM#2, 137).

Nonetheless, exactly this attachment and the urge to protect the own house is one reason that drove people in Medmerry to get active and engage with the project, to get the benefit on their side:

"Because it's…when you're working for…In business and you work in an organisation and it's 100 people working there. You're just a cog, ok. Here we weren't working for anyone, we worked for ourselves. And it was like, let's – we are the business, we are gonna make it happen, this is how we are gonna do it" (IM#8, 447).

"Which was to protect our house, that's all we really wanted to" (IM#8, 563).

While taking action meant to protest in the first place, it also meant getting involved with something new as the realignment. The change to the area was accommodated after the protection of peoples' homes was ensured (*'to protect our house', 'all we really wanted to'*) and the process definitely benefitted from the fact that people felt as being part of the process and created their own advantage out of it (*'we worked for ourselves', 'we are gonna make it happen', 'this is how we are gonna do it'*). Although not everyone is fully convinced of the scheme, most people realise that it does the work, they made the scheme a feature of the area and are proud of it: *"I think people, local people are quite proud of it, really"* (IM#7, 504). Attachment in this case was therefore not rigidly bound to one or another way of protection, although historic aspects, fear and trust in solid structures are still in the back of especially the older generation's head. It rather shows that a major change to the landscape is possible, if fundamental individual and local values, as the protection of houses and the creation of benefits for the community, are respected and considered. Accordingly, large schemes as the Medmerry realignment are part of a change in how coastal defence is generally perceived:

> *"And yah, you do hear a lot, I know there's other projects like Medmerry, you know. Coastal realignment seems to be much more accepted than it was before. […] You know, whereas before I'm sure, you know, 30, 40 years ago, people would have wanted to build a hard defence. I think people are realising now you can't defend everywhere. And so in that way I think that's probably due to the fact that people accepting, well climate change is happening, sea-level rise is happening. It is going to happen, so we've got to look at other ways of doing things, you know, we can't keep building the seawalls higher"* (IM#5, 132).

Change is outlined as a process in this quote, which has a temporal aspect (*'30, 40 years ago'*) as well as a social and cognitive aspect (*'people are realising', 'much more accepted', 'climate change is happening', sea-level rise is happening'*). To accommodate change in places that people are attached to hence means to accept the need for it and the reasons for change. For that to happen, the historic component of attachment, especially within the older generation, needs to be incorporated in a negotiation process. However, in this case, the role of habituation and the resulting lack of openness towards change of many inhabitants was of greater importance than historic attachments. Although the general attachment to the area was the reason for protests in the beginning, it turned to be the driver for change, as people realised the possibility to make the realignment an important feature of the area. Additionally, acceptance and engagement are increased if benefits accompany the change to the personal environment, be it personal enjoyment of the landscape or economic gain for the community.

3. In what way do different contexts affect certain spatial visions and which role do actors fill?

As also described for the case of the Dockkoog, the respective (institutional) contexts did not play a major role in regard to spatial visions, but rather the different interests, which guided the process around Medmerry. In the following, relevant responsibilities and the role of key people will be explored.

First of all, the responsible authority, the Environment Agency, only has permissive powers. This means that they don't have a duty to defend every stretch of the coast:

> *"I don't know the situation in Germany, but what we have here is there is actually no duty of any government to maintain coast defences. They do. You have the EA that are trying to keep things as they should be and there's an outcry if people get flooded, but no local authority and no government actually has a duty to do it. So, it doesn't have to be done. And that's what most people in this country do not realise, you know"* (IM#6, 7).

In view of that, there is no guarantee that defences will be maintained or adapted to changing requirements connected e.g. to sea-level rise, although it is done (*'EA are trying to keep things as they*

should be'). Nonetheless, the main aim of defences provided by the EA is to protect people and houses, while environmental issues do not play a major role:

> *"There are different criteria that you get so many pence per pound grant from the central government basically and the majority of that is for houses protected. You do get some for general economic benefit and you do get some for environmental gain as well. So, we got some funding for Medmerry through, through that environmental gain as well. I can't remember the proportion but it's probably like 5 or 10% of the total value. So, it's mostly doing by houses protected. […] Which kind of makes sense because we're here to protect people and their houses first, that's why it's set up that way"* (IM#4, 113).

The last sentence of this quote clearly demonstrates the self-understanding of the EA (*'we're here to protect people and their houses first'*). However, this has to be seen in distinction to the nature conservation aspect and not as absolute responsibility to provide protection, as decisions are always based on cost-benefit calculations. The combination of no duty to defend and the cost-benefit approach results in various responsibilities, split between the state and private persons, which is also criticised within the interviews:

> *"Round Selsey […] they had to put up quite a fight to actually get flood defences approved there, I think, on time. But it does happen. But other than that, the big difference, as I said, with Portsmouth for instance you have an area densely populated, so the EA will build walls around it. In areas like Chichester harbour and on the Peninsula you don't necessarily, they do in places, they do in Selsey, up for point in the Witterings. In Chichester Harbour all the defences that you tend to see are private, they're at the end of people's gardens. And so, the Environment Agency has a book, and the individual people have. And they're responsible for the upkeep. And that's another major difference as well. Because people view coastal defence as important, but they also feel it should be to a national agenda and whether it is or isn't varies according to how high it is valued literally by the Environment Agency"* (IM#2, 142).

Therefore, getting protected is often the result of local commitment, people feel they have to fight for their defences and still remain dependent on calculations and decisions of the EA, if the EA feels responsible in the first place. As the statement below shows, whether at all and how a community is protected, is regarded as a matter of luck.

> *"[…] Chichester District Council is responsible for the defences, the hard defences that we've got 'round Selsey. Doesn't have a duty, but it does put money in and applies for grant from the EA obviously. Because that wall gets undermined, you know. And without it we would have*

more flooding in Selsey. I think we've been fairly lucky, especially the way that we do come out into the sea, like we do" (IM#6, 128).

On the one hand, it is appreciated in the quote above that the council takes care of the needed grant for the coastal defences and, on the other hand, the accessibility of the sea is highlighted, as the defences allow to use the beach and land the small fishing boats. Nonetheless, it is also stated that there is no duty to do so, while basically, there is trust in responsible authorities to take care of their defences, as explained by the interviewee below:

"I mean I'd lived on the coast and I'd seen things happening, and I knew that the coastline had eroded over the years, I mean it has probably gone back, the beach in front of the seawall where I live has probably gone back in places as much as 25-30m over that period, yeah. So I knew things were happening, but basically you put your trust in those responsible to look it after […]" (IM#1, 303).

While this quote clearly attributes the responsibility to the EA and puts trust in their work, others again rather criticise how decisions are made on different levels and mention a lack of competence, especially in comparison to how the Dutch handle water and flooding issues:

"It just takes so long. You can't help the feeling that the Dutch have it right in terms of the water boards and various things, because that's what they do, they manage water. […] And that people who understand the process, they understand water, they understand what needs to be done, why it needs to be done. They can sell it in the right way to the right people and you don't have, what you tend to have in this country, which is a load of people making decisions about something about which they know nothing. And that's what you tend to get at some government levels, so it's always a bit worrying, cause it might not necessarily the best people making decisions" (IM#2, 343).

While the criticism in this quote mainly focuses on unqualified decision makers, conflicting priorities were raised as problematic in the interviews as well. Particularly the conflicts between housing and coastal defence are observed to lead to an increase of vulnerability:

"And you have conflicting priorities in this country. Cause the big priority is, make sure people have got homes. Which means that homes are built in inappropriate places and then when they build and you've got a coastal defence issue, what does it mean? You know, those people don't get compensated. So, it's one of those things. I think the Dutch have got it right from that point of view that everything is together, whereas we haven't, we still have these conflicting priorities on things, without looking at the overall picture" (IM#6, 262).

The problem which is addressed in the quote above is a missing connection between building directives, coastal defence and also insurance issues. These points of criticism above are in line with other points regarding the political system. First of all, the climate change topic and coastal protection are seen as being subjected to manipulation and lobbying, as the following quotes point out:

> *"So, you know, when you start talking about climate change and mitigation, you've then got to deal with it in a big political system, which has its own dynamics if you know what I mean"* (IM#7,130).

While this quote rather refers to climate politics on the national or even international level, the next two quotes state a regional problem of political lobbying:

> *"A lot of political manipulation has gone on over the years"* (IM#11, 60).

> *"[…] political, political ah lobbying really, lots of lobbying"* (IM#9, 152).

In terms of new strategies of coastal defence, the problem is also seen in politics, as a sort of political resistance is observed and further responsibility delegation is feared:

> *"It'll take quite a big sell to introduce some of the softer engineered options, which would be out there but there still seems to be lack of will at a political level to pay for that sort of thing"* (IM#2, 336).

This quote addresses the political resistance towards different defence structures, which is perceived to have a monetary background. In line with this, the next quote assumes that a further fragmentation of coastal protection is likely:

> *"I fear that we may go down the road of making people more responsible for their own bit. Which to me is a disastrous policy for managing a whole coastline. Because the trouble is, you know, what you do on one bit of the coast, well you know this, is gonna impact what you do. So, you cannot, that would be the worst route to go. But I can see our government going down there, because we seem to be going down that in every other policy area"* (IM#7, 186).

Consequently, this is a plea for a coherent coastal defence strategy instead of fragmented responsibilities, which would mean different strategies and conditions for every piece, also influencing the surrounding coastal sections. The interviewee sums up the problem in the further course, by stating that the main problem in regard to climate change adaptation in coastal areas is a political and an economical one:

> *"So, that is the issue, it's the politics more than anything else. It's not the, it's not the engineering, that's all out there. It's the politics and the money"* (IM#7, 255).

In total, the political system is criticised for being susceptible to manipulation, not willing to change, possibly further delegating responsibilities, paying lip service and not thinking long-term (quotes below):

> *"But what annoys me is that nobody seems to be, well certainly the British government, you know, pays lip service to it certain times, but nobody's got a long-term plan […]"* (IM#5, 102).

What is addressed here, is a fundamental political problem of only planning for the next legislative period, spanning a few years and therefore acting quite short-term. This complaint is also raised in the next quote, as a life is longer than a political period, especially those of children:

> *"We're thinking of our kids, so everybody here was thinking long-term, while politicians just think about the next vote"* (IM#8, 340).

Accordingly, the local perception of the political system is characterised not only by scepticism but also by a lack of trust that important problems will be solved by the government based on a long-term plan. This especially holds true for a consistent concept of coastal defence, which is seen to be a political task.

Against this picture and for the case of the Medmerry realignment scheme, trust on the local level seems even more important. Within this project, EA and the Royal Society for the Protection of Birds (RSPB) managed to put the right people in charge to communicate locally and create a working process.

> *"There was a chap in charge of the project, who's now moved on […]. From the governance side, the Environmental Agency and he's really good. Well, there was a guy before him but he wasn't very good. So, they got rid of him and changed to this other guy, they promoted him above the original guy and he did crack on and make it happen. And he was good, he used to come in here and chat, we would talk about and he would be getting on board […]. And he was very organised and very efficient and got on well with people and got…so fundamental the right guy, they got the right guy in charge, basically"* (IM#8, 431).

In this case, there was sympathy and appreciation for the person in authority of the EA. The interviewee trusted his opinion and thus also supported his work, based on a personal level that was created (*'used to come in here and chat', 'got on well with people'*). Within this case study, the RSPB is also seen as trustworthy and its involvement as beneficial for a successful process.

> *"But also I suppose having the RSPB on board, I think that's […] generally people have a positive view of the RSPB. So, if they're supporting it, then, […]. Well, that's probably a good thing, you know"* (IM#5, 333).

Next to this general perception of the RSPB as a good organisation, the personal level played a major role as well:

> *"He is very dynamic. A good communicator […]. He put together some really good, excellent power point presentation, yeah presentations. That were slick, well prepared. He felt at questions very well, if they were a bit awkward. I think he contributed a huge amount. And there was another man that used to come with him to meetings. The Environment Agency, typically a government-run organisation, we very often never got the same person. Maybe he was too busy, but they were good with their maps and their talking about money. But those two I thought were very good"* (IM#10, 282).

While the presentation skills are commended in this quote, it is also the interpersonal level that is highlighted here (*'he felt at questions very well'*), which created a feeling of reliability and trust. So, within the project, the people in charge managed to create a safe and comfortable atmosphere and were trusted.

Next to the authorities in charge, there were some local key people who played an important role, as they were very influential and able to carry people along their view. In order to keep the project going, it was important to keep close contact to them:

> *"[…] there were some key people, definitely. There was one particular resident who lived in Ham, who was very, very influential. So I made sure that I kept very close to him and get him updated. That was my mantra really, it was just as long as people know what's going on, it might not always be good, but as long as people know, they come to you to ask for stuff and then you get back quickly and it seemed to work. People really liked that"* (IM#4, 177).

What is delineated here, is the way trust was created with local people (*'kept very close to him', get him updated', 'people know what's going on'*), which is stated as having been substantial for a successful project. Dedicated local people like this are the ones that are needed to move projects forward, according to the quote below:

> *"Because it's like, this is gonna happen and actually I always think with things like this. If you want to make things happen, you have to give everybody else the ownership. Because if they take the ownership, then it's gonna happen. Do you know what I mean? It would never happen if it was just two people saying, you know, especially two people who weren't high up in an organisation saying it. So, you have to, you have to make other people then want it to happen and drive it forward. And, actually, you then, I think, best stepping away, because then it's their project"* (IM#7, 351).

The main point here is the ownership that needs to be created locally, to involve people and let them create their own way towards a solution. A project that is perceived to be driven forward by local or so-called inside purposes is much more likely to be successful than one that is felt to be enforced from the outside. Nonetheless and, first of all, somebody needs to start the initiative, be it from the authority side or from a local initiative:

> *"Well, it would have taken very brave people initially, which obviously it did. And now that they've got several of these schemes, it's obviously it's a no-brainer now where they can do it, it's the way to go. Yeah, it's expensive, but it's not expensive when you consider the cost if people get flooded, you know"* (IM#12, 195).

In this regard, Carolyn Cobbold played an important role, as she was one of two initiators of the first Going Dutch workshop that was held on the peninsula, resulting in the recommendation to realign the Medmerry area. On the more general level, the Peninsula Partnership and the Peninsula Forum are not only platforms for exchange, but also to join forces and commonly develop the Manhood Peninsula sustainably.

> *"So, Carolyn's played a sort a big role in this, and she sits on the Peninsula Partnership. The other thing that we've got down here is what we call the Peninsula Forum, where all the Parishes meet once a quarter and we have a speaker"* (IM#11, 391).

Another important player regarding the realignment scheme is John Bunn, owner of Bunn Leisure, one of the biggest caravan holiday parks in Europe. As his site would have been left without protection within the strategy of the EA or possibly even lost completely, he built the largest private sea defence in the UK:

> *"Well, you also had alongside the Medmerry, you had Bunn Leisure did their own sea defences. And that's something that I think, well, certainly from my point of view, Bunn Leisure paid something like 18 million themselves as a private business to do those defences with no help from government at all. And it actually helps Selsey. I think that sea defence with the Medmerry thing actually combined helps Selsey, but they had no financial help from government"* (IM#6, 223).

His defence works were coordinated with the ones built by the EA, creating one consistent defence scheme. Although this is important to mention, it is another, different process, which will not be taken into account in this work.

This section clearly illustrates the importance of trust in the responsible authorities and stresses the vital role that the personal level of intercommunication plays in this respect. Trust in local persons in

charge is of higher relevance than the overall picture one might have of an authority. This becomes obvious, as the EA is in part heavily criticised for its cost-benefit approach while, at the same time, those responsible for the local project are trusted. Additionally, it is the local key people who play an important role in processes of change. Whether or not those with influence are in favour of a project can be the most crucial factor determining its success.

4. How are local negotiation processes and practices about climate change adaptation structured and which dynamics were/are they subject to?

Although the Medmerry Managed Realignment Scheme is retrospectively mostly seen as huge success by the interviewees, massive protests have been part of the negotiation about coastal defence on the Manhood as well. Concessions, commitment and communication from and between all people involved have been crucial in order to make it the success it is perceived as now.

In the following section, the process of the realignment project will be tracked from that point of time when the plans to realign were published. As mentioned in the quote below, the inhabitants of the Manhood Peninsula first got to know about it from the newspaper:

> *"That was when in […], pretty sure it was October, a friend said: read the paper […], you gonna read that. And it was about the realignment and they're suggesting that. No consultation, we didn't know any about it, they just said: right, this is an idea. And so we said 'oh my god'"* (IM#8, 35).

This statement gives a first impression about how people were taken by surprise by these plans. With the publication of the 'Pagham to East Head coastal defence strategy 2007' the local opposition forged ahead. This was partly driven by the fear of not being protected for future conditions:

> *"I know when they published the plans originally, Selsey was…basically leave it as it is and see what happens. […] the defence plans as they came up with them is a thing that really kicked off all the angst with people locally. And that's where we were all arguing against it […]"* (IM#6, 243).

Next to this worry of being left with defences that would need enhancement, the feeling of not having been asked about such an important topic, but rather been confronted with facts of how things will be done is quoted as a reason for the emerging resistance:

> *"I think the Environment Agency was used to just saying 'we'll do this – end of story'. And they found they came up against the brick wall when they tried that […]"* (IM#6, 175).

As a consequence to this behaviour of the EA and its draft strategy, proposing the realignment at Medmerry and ceasing all improvement activities at Selsey Bill, 'Save our Selsey' (SOS) was founded as a group to fight for the protection of Selsey, as well as the Manhood.

> *"It [SOS] was a grassroots organisation that sprang up the moment they said: this is what we're going to do. Not what we want to do, this is what we're going to do. […] You don't say things like that in Selsey, I tell you. […] They [the community] said: if you gonna do anything, we want hard defences"* (IM#1, 416).

Thus, the original aim of SOS was to achieve the enhancement of existing defences and the creation of hard defences at Medmerry, a topic which was of importance for many residents:

> *"But the amount of opposition that was engendered by the SOS-group was huge, it was huge, public meetings in Selsey, terrific amount of opposition, and not just Selsey, all over the peninsula"* (IM#1, 391).

Together with other, smaller, groups, a strong alliance emerged, mobilising hundreds of people across the peninsula to engage with the topic of coastal defence and protest against the indicative preferred options of the draft strategy. Based on replies on the first draft strategy from 2007, the 'Pagham to East Head draft coastal defence strategy' was published in 2008. In this strategy, Selsey Bill was no longer listed as 'no active intervention', but as 'hold the line' including to sustain the defences at the same flood risk level with sea levels rising (see above). This increased level of protection in Selsey soothed the protest and also started to create a different mind-set in regard to the realignment at Medmerry:

> *"That changed to hold the line with the alignment. And I think that's what swung a lot of people"* (IM#6,244).

The fact that defences in Selsey would be kept up in the future changed the view on the realignment scheme for the Medmerry stretch (*'swung a lot of people'*) and led to more acceptance, as explained in the quote below:

> *"I do know with Medmerry, there was a lot of conflict. It was not happily … Medmerry scheme itself was accepted, but that was after some other things had been put in place or been suggested that everybody was totally against. And it would potentially have meant the loss of this area all together"* (IM#6, 16).

Initially, the protest was also directed against the realignment scheme, as people were afraid of being at greater risk and concerned about drainage issues as well as possible flooding of holiday sites. Besides the change in the protection of Selsey in the updated strategy, which calmed the situation, there were

some influential residents, who felt that it was not smart to fight the realignment, but rather try and get the best out of it:

> *"So, we had lots of meetings with all the locals, with lawyers…No! We decided no, sorry, and I said this is a wrong thing in the meeting, 'cause […] whatever you do, never get involved with the law, 'cause it's very expensive and you never win. The bloody lawyers win. […] But, so we had, we had a meeting over there with 600 people, ok. And that was quite a big one. And we came up with a plan. By time we talked everything, we put together the plan. We then communicated the plan with the politicians and I remember specifically in Selsey we had a meeting and there was about 10 of us and the local MP [Member of Parliament] sat down and he said: right, how are we gonna stop them realigning the south coast?! And I said: excuse me […], we got a plan, and we think it's a good idea to realign the coast. And he went: oh, so do I, I think it's great. So immediately changes too, when he […] that 600 people are all for it, we already had a plan. He didn't really understand it. So I was engaging with the politicians to get them on our side. And the plan was to work with them and to realign it. Do not fight them a) you're gonna lose b) you can't afford it and it will create a lot of bad feeling and so all we did was we attended all the meetings. […] everything's going ok, yah, they're gonna spend 25million pounds. Saving our houses, great"* (IM#8, 294).

Not only did a few influential people manage to convince a large group of people (*'meeting over there with 600 people'*), they also gained political influence (*'10 of us and the local MP', 'I was engaging with the politicians to get them on our side'*). To stress how dedicated those residents were, it is important to mention that they even managed to get elected as district councillors to gain influence on the realignment topic and help to push the project forward, after they had been completely against it shortly before:

> *"In fact, we managed to persuade the two main protagonists of Save Our Selsey […] they were the main leaders. There was a committee of about 8 or 9 of them, really rabidly against the whole project. By the time we got that done, they were coming round to our way of thinking, in fact I even persuade….going to politics….They got elected to the district council as Save Our Selsey district councillors rather than party political district councillors, an independent group called Save Our Selsey, they got elected [...] they actually worked, helped, get this […]"* (IM#1, 433).

Thus, those in favour of the realignment put a lot of effort into persuading those against it, as they managed to change the view of those leading the SOS group and even convinced them to stand for election. As mentioned above, this election helped to move the project forward (*'they actually worked, helped'*) as they got listened more as district councillors (see quote below):

"[…] that was a pretty good group and a couple of good guys there, so we thought: right, just to cover our backs, let's, let's get elected. So two of them got elected [...]. We tried to get elected and, two of them did, yah, as independents. So they, which is really good. But ah, what happened then? Yah, so as independents […] so we got listened to more" (IM#8, 370).

But not only local people were heavily involved in negotiating the topic. The EA also realised that there was an urgent need to involve people locally in the negotiation process in order to calm the whole situation:

"And most of Selsey was up in arms about that which is when the EA suddenly decided that they needed to talk to local people. Because they got a lot of flag. But […] they learned fairly quickly and they took people with them. Ahm, with the Medmerry scheme there were an awful lot of us thinking….mhmhm don't know if this will work or not but it's worth a try" (IM#6, 145).

The massive protests on the Manhood (*'most of Selsey was up in arms', 'they got a lot of flag'*) lead to a change of strategy within the EA in regard to engagement, as their usual approach did not work:

"Absolutely. Cause I think initially we tried the previous methods of engagement and didn't work very well and there's lots of opposition and there was like a practice group formed and also it was clear that we needed to do something different" (IM#4, 158).

One explanation for the amount of opposition mentioned in this quote is seen to be the substantial change in the way the coast would be defended in the future, which needs to result in a different engagement approach:

"We brought in lots of expertise around engagement, because it was such a significant change for the community and we were facing such resistance that something had to change […]" (IM#3, 183).

Obviously, the EA was very keen on realising the realignment (*'we brought in lots of expertise', 'something had to change'*). The reason for this was the fact that the area would also be used as replacement habitat for construction works elsewhere, as described below:

"The Environment Agency took on board, you know, we've got to work with the community. We've got to understand the issues. You know. And the fact that they worked out they need someone to run this, because this was, apart from flood relief, was compensatory habitat from work going on on the Solent. So it was designated, it has to be a nature type reserve to replace that habitat being lost" (IM#11,424).

The replacement habitat is needed to compensate for an effect called coastal squeeze (explained in section 3.1.2) that results from holding the line, as well as for compensation of building in certain areas:

"So, when we hold the line, we cause something called coastal squeeze, jip, and most of our coast, particularly the Solents, so more Chichester, Portsmouth, Southampton way, that's all designated Special Protection Areas, Special Areas of Conservation, Ramsar[22]. Those sites have a legal obligation to be compensated for, so the damage we cause by holding our line in some instances means coastal squeeze damages those designations so we have to find other areas. So, part of Medmerry wasn't just flood defence, it was also creating space for nature to let those designated areas realign landwards where they want to go and create space for them to be" (IM#3, 264).

Next to a general compensation for holding the line in some areas, as explained in the quote above, specific harbour developments at the south coast needed to provide compensatory habitat in order to be built, and therefore adding an economic background interest to the realignment scheme:

"Huge amount of opposition, but of course, the problem was getting the funding for it, and that only came about because the harbour authority, down in, what was it, Southampton I think, wanted to do something down there, create a big new terminus. But the area they wanted to use was a major Wildlife habitat area, and if we were able to do that under European rules, we had to provide compensatory habitat – Ohhh, look we got an area […] here in Medmerry that we could use – that's literally how it happened […]" (IM#1, 370).

In sum, there was a need of replacement habitat, which is why an undeveloped area such as Medmerry was as high on the agenda of the EA. The implementation of the scheme was also mainly financed by the compensation that needed to be paid for the redevelopment of container ports (*'create a big new terminus'*). Accordingly, there was more money available than in case of a project that did not include compensatory habitat and farmers were compensated for losing their land. This is seen as advantageous for a successful implementation of the project:

"The thing that helps it was potentially good wetland and the EU was very keen on…it had good protection policies for wetlands and that helped financially, because they put some money in so that the farmers, who farmed it were compensated a bit….I don't think they were compensated very much. So that helped, because money talks" (IM#10, 148).

"So, the incentive was to gain wetland areas in this area. And that's how they really got the money. Not so much per sea defence" (IM#12, 101).

Regarding the different interests in the area of Medmerry, the need to create replacement habitat while also providing flood defence for the area, created a certain pressure to succeed with the

[22] Convention on Wetlands, adopted in the Iranian city of Ramsar in 1971.

realignment project. As one interviewee explained, success depends on planning permission which is granted by a committee:

> *"But the biggest thing for me and what I was really keen on, my colleague […] had done all the groundwork on this, was the engagement […]. ´Cause that was the bit that was most important, that would either make or break it. Particularly for planning application. […] cause that was the key, that was the key thing to make it happen, the planning application obviously. Cause if that hadn't been granted or there'd been lots of opposition then it would never happened. […] Well, it's a democratic process […]. You put the planning application in, anyone, anywhere is free to comment on it. People have different influence over that, but anyone, anywhere can comment on that planning application and then it goes in front of the planning committee and then they ultimately vote whether to decide whether to do it or not"* (IM#4, 130).

As everyone is allowed to comment on the planning application, too much opposition could have potentially hampered the permission. Getting the people on board for the realignment project was thus seen as ultimately important to get the permission (*'would either make it or break it'),* but is described as challenge, given the huge amount of opposition the EA faced in the beginning:

> *"So, it's really, really important we got that influence, you know of that, the people on the committee, or the people that influence that committee. So that was the big challenge, really to do that"* (IM#4, 152).

For this point in the process, the importance of the Going Dutch workshops was stressed by many interviewees as very helpful to create an understanding for what realigning means and what benefits it could create for the area. The first workshop already took place in 2001, but is felt to have provided an important basis, which was still in the back of people's heads.

> *"But in this area, there was a project which was before the Medmerry realignment, which was called, you probably know, Going Dutch on the Manhood Peninsula. And so there was sort of, you know, in the background this sort of feeling that, you know, we could create this sort of wetland environment, you know. You know, across the Manhood, you know. And that could be a positive thing, you know. And there were lots of positive things to do with that, and we realised it's a very low-lying landscape you can't keep. […] So I think possibly there was that underneath, which had already sort of sown the seed in some people's minds, you know what I mean about it"* (IM#5, 359).

As outlined in the last quote, the first Going Dutch Workshop was quite some time ago, which is why the effects and the positive image of it (*'could be a positive thing'*) are rather hidden (*'background',*

'sort of feeling', 'underneath', 'sown the seed in some people's minds') and not really present anymore. At the time when planning permission was needed, a second Going Dutch workshop was held. This was perceived as an important step to convince local people of the realignment scheme:

> *"Do you know the thing that helped with getting the community on board – that was that idea we had, or the Peninsula Partnership had, playing an active part for the Peninsula Partnership at that time, of holding an event called Going Dutch II"* (IM#1, 528).

The workshop was meant to show what external (Dutch) experts think about the realignment and inform about consequences of different defence structures:

> *"So that happened [Going Dutch I] and then when, I think when the Environment Agency next did their review of the coastline, that's when they thought mhmhm, maybe we can use this as a test case. So they then came up with the Medmerry realignment scheme and of course… I think they probably thought the people having, us having […] think we all go 'yeaaah', so of course they still didn't go all 'yeeees'. And so there was a lot, again a lot of resistance, so […] we went to the Environment Agency and said: well, look, what about if we bring the Dutch back again and they stress tested your scheme and then showed…and we have the public come in to the next Going Dutch Workshop all the time, so they can see what the Dutch think about your scheme. And then you can also tell them, if you didn't have that scheme, what would happen and if you build hard great big walls what would happen sort of thing. So that's when we had Going Dutch II. And then after that, the Environment Agency set up their own group"* (IM#7, 335).

Many things happened at the same time in this part of the process. The EA was in need to handle the resistance that came up with the publication of their plans, while mind-sets started to shift after further protection of Selsey was granted. Nonetheless, there was a lot of doubt about the realignment, which is when a Going Dutch II was carried out on the initiative of the Peninsula Partnership, convincing a lot of people. At the same time, SOS changed their view in favour of the realignment and powerful locals decided to push the realignment forward. In hindsight, this second Going Dutch workshop and the opinion of externals were seen as highly relevant to making the project a success, showing that alternative ways of coastal protection do work elsewhere and are seen as a good option for Medmerry by external and independent experts.

> *"Yaah, I think a big bit was bringing in the external experts, the Going Dutch II process that helped a lot, just bringing in somebody completely independent of the project. Widely regarded as experts and having them draw the same conclusion helped a lot"* (IM#3, 196).

Going Dutch II was not only seen as an important factor within the negotiation process because the experts were independent of the local project, as stressed in the quote above, but also opened up the view on alternative defence strategies, which are already used in other places:

> *"Yes, yeah, I'd say most definitely. I think what's helped in that respect for me personally, yes definitely, because I think along with everybody else, you think the only way is what we've got, ´cause nobody ever showed you alternatives. But as soon as you start looking, certainly at what the Dutch have done in the past, then you think, wow, yes, there are lots of options they're much nicer than these walls that fall apart. Why don't we try some of that, yah, hopefully that will be the general consensus, yes it's opened people's eyes and […] for more possibilities"* (IM#2, 507).

The workshop did not only provide an overview of possibilities ('there are lots of options'), but also created room to talk about the different options and understand each other's point of view, as illustrated in the next quote:

> *"So that you've got people from different areas all together talking about how they see it, which allows people to understand the constraints involved, peoples' point of view. And maybe that, and actually I know that would never have happened, had we not done the Going Dutch thing […]"* (IM#7, 379).

After the second Going Dutch workshop took place, the Environment Agency worked on setting up an advisory group of local people for the realignment project, the Medmerry Stakeholder Advisory Group (MStAG), which consisted of representatives from local interest groups. There was such a need to succeed with this project that a different approach was required to involve local people. Thus, the EA hired an external company to set up MStAG, spending an enormous amount of money to engage people:

> *"Ahh, the way we engage changed dramatically. When we started Medmerry, it was very much […] this is what we're doing and we're telling you what we're doing and by time we finished, we had a community group called MStAG […]. And so that would meet once a month for a couple of months and we would not only giving them updates on how Medmerry was going, but we would proactively ask them for views on design issues to get their thoughts on what they would like to see. Footpaths how much, loads of, hundreds of different things, so that fundamentally changed from telling to asking"* (IM#3, 173).

The changed approach of the EA included constant information about what was going on (*'giving them updates'*) but particularly also the involvement in the design process (*'ask them for views on design*

issues', 'get their thoughts'). The interviewee below elucidates the importance of involving locals in the development process of Medmerry by creating MStAG:

> *"And it was around the time when there was a lot of guidance coming out around engaging with communities better and building trust and how we do that. So, it was a good time for Medmerry to sort of jump onto that. But the key thing was probably getting […] external facilitators in, to help us do that. I think that was the key decision point really in what probably ultimately made the difference. It all rode from that really. […] 'Cause it was kind of that independence and they set up the group in a certain way, they made it a bit autonomous in terms of the engagement. So, you know, people felt like they were really engaged and they did and explored it. So that was the thing really"* (IM#4, 160).

Next to the importance of a changed involvement of the local community, the quote above stresses the significance of an independent setup of the advisory group (*'key thing', 'external facilitators', 'ultimately made the difference'*), being detached from the EA. MStAG acted as turning point for the way such projects were set up and how communication between communities and authorities looks like, as explained in the following quote:

> *"[…] bringing in experts, […] it's a better way of engaging communities so we took that advice on board and then changed the way we started working with them. And that was kind of an iterative process that I developed and let them float […]. And that now generally forms the starting point for most projects. Before you go and build something, you now, I certainly do say 'what is it you want to see?' There are some things you can't change, and that's ok and as long as you're fairly open and honest about what you can't change, it helps focus the minds on things they can change, and as long as there is good reasons why you can't change something, I think most people understand that"* (IM#3, 185).

The fundamental change of the involvement approach that is highlighted in this quote includes the openness about things that can and cannot be changed. This important point of being honest about the project aims, the nature of potential problems and the scope of possible and impossible changes was raised repeatedly in the interviews:

> *"Well, I think that's the big thing for changing anything is to get people on board to actually listen to their views and …. Not just say, well, this is the way we're doing it. Explain why something won't work. People are normally quite open if they know the information. So, it's very much information and I think, I mean they were quite open in the start, saying: 'well, we've never done this before, you know. But his is what we believe will happen'"* (IM#6, 211).

This form of engagement includes communication on eye level, acknowledging and respecting existing worries of the local community (*'listen to their views', 'explain why'*) and providing the information required to understand what is going on. This is even more important, if the topic is controversial:

> *"Even if you've got an unpalatable issue it's more about taking people with you, explain it…It's something that some of the organisations could learn"* (IM#6, 186).

Basically, the EA tried to change their approach from telling to asking, explaining things, involving people and creating room for discussion and exchange. According to the people involved, they succeeded with this, some say more, some say less. But the fact that they changed their approach after all the protest going on was regarded highly by all interviewees. And although some had the feeling that they could not change anything, they felt better being involved and informed instead of being presented a new strategy they did not know anything about:

> *"And so, I was involved in all those meetings with the progress etc. I mean I don't think we actually changed anything, but we got to understand what was going on and why it was going on and a lot of the fears that we had and the local people had, were unfounded in the end, you know. And it wasn't something to be panic, but I mean, before they did the consultations, there was massive reaction against, 'cause that had gone on for years when it was first suggested"* (IM#12, 117).

This quote emphasises how important the MStAG group was for creating an understanding for the situation and the planned realignment ('*we got to understand what was going on*') and to hush the fears that existed within the community. The impression that the EA did a good job in their change of how they were engaging with the community is also underlined in the next quote:

> *"First time, first time riot, I don't know what happened, but things didn't go terribly well. When they came back and started to redo and take on board the people wanted to a) talk and b) be heard, it went brilliantly. And lots of people said well done, you know, good, that was really well done, good job and were very impressed by them"* (IM#2, 441).

The EA was praised for their work by many interviewees who stressed that they liked the process (*'went brilliantly', 'well done', 'very impressed'*) and the way involvement took place (*'explaining', reassurance', 'they took us with [them]'*), as pointed out in the quote below:

> *"So and that process, you know, was the Environment Agency explaining….you know, how things needed to be done, why we couldn't do this, giving people reassurance – still a lot of doubters, you know, well off against here it's gonna go there. But they took us with [them] and*

together, you know, I think we've developed something really very exceptional. At a leading thing" (IM#11, 327).

The way this involvement was implemented let people take ownership of the process (*'we've developed'*) and created the feeling of being part of what was achieved in the end by contributing to the development:

"But no, no, I mean it was, yah, you did feel, yah it was nice to be sort of asked to contribute things, you know" (IM#5, 298).

Important for many participants was also to try and provide input into the process in a way that the community benefits from the new scheme:

"And I was very concerned about the blue light[23], the police, fire etc. And it was one of the things that I pushed for on the Medmerry scheme that they had a blue light track that could come from the other side rather than down from Chichester. And they've put that in place, so. It's an added benefit for what was a shortcoming anyway" (IM#6, 151).

In this case, the need for an additional blue light track was brought up, which was implemented and therefore created better access to the peninsula. While this benefit is about a very elementary aspect of supply, the next quote addresses rather general benefits for the community:

"So, what I felt my role was to input into those plans really. Not ah you know […] standards and technical aspects and things like that. But it was input to see, I suppose the, that the community got something out of it" (IM#5, 247).

In sum, local people felt involved and agreed that this project denoted a change not only in how such projects are realised, but also for the way coastal protection and possible options are thought about. People feel proud of having been part of this process:

"And there has been a marked change in the way the Environment Agency at least and a number of other organisations have gone about their business since then. It really got through to people I think. Yeah. It was a game changer! […] Not only did it change peoples' perception on the ground in the locality, but it changed the perception of those who only […] it was a win-win, huge win-win. But I have to say, I've done a number of different things and have been involved in a number of different matters in my […] years in cabinet at the council. […] It is one thing I walk away from here, feeling incredibly proud of being part of that. It really got, it does, it gets me. Yeah. I feel quite emotional about it, because it's just been so good" (IM#1, 398).

[23] Blue light organisations are the police, fire brigade as well as emergency medical services.

This quote portrays the process around Medmerry as a win-win situation for the EA as it led to a rethinking (*'game changer'*), as well as for the community (*'change peoples' perception'*). It is furthermore described as outstanding experience (*'incredibly proud', 'I feel quite emotional', 'It's just been so good'*). The next quote highlights the huge success, as which the project is seen as:

> *"But yes, a major achievement by everybody concerned. That's not just from the guys who built it, but the guys who designed it to the guys who live here, to the local government getting involved and politicians. So, I think it's a big tick and a success story. I think they even won an award"* (IM#8, 655).

As stated here, the project could only be realised successfully (*'major achievement', 'big tick and a success story'*), because there was cooperation between all people involved (*'who built it', 'who designed it', 'who live here', 'local government', 'politicians'*). In hindsight, what remains is a positive feeling about the project, although there was so much protest against it in the beginning and people joined forces first to fight the project. All interviewees gave the impression of a well-managed process that involved all those who wanted to be heard, after mind-sets had changed, and which changed the way in which such projects are approached nowadays:

> *"For us here, Medmerry was the first and still only realignment project we built. So, the idea of doing something different, fundamentally different has, yeah, it suddenly becomes normal. And the size…on cost it's not that expensive compared to some of the other projects, but it's effectively a landscape scale change and those don't come around all that often. And because it was so big in terms of length of time and catchment and impact you approach projects, you approach that project differently and it took us a while to get […] thinking this is different, this isn't just a one million pound doing a year-away we go project. And its legacy became more and more important and it still is important, we still spend a lot of time working on Medmerry´s legacy. And you take some of those away with you, even on the smaller jobs, which I think is better, those jobs are better because you have that wider, larger view on things rather than just in and out. You want all in your project to have this, some of those really good principles that you embedded through such a once-in-a-lifetime kind of project. So yeah, it definitely did"* (IM#3, 231).

The experience with this project is considered as extremely decisive (*'legacy', 'once-in-a-lifetime kind of project'*) for the work that is done by the EA, because its impact has been so huge. Part of this impact was the enormous change to the landscape (*'landscape scale change'*), which is also referred to in the quote below.

> *"They presented us with a […] company and we made the best of it and it's worked. And I think it, you know, it's a huge success. And I'm really glad. I mean, I actually shed a tear, I was really surprised when we were all taken down to this grand opening. […] and taken to the breach and to see the water coming in. It really, quite unexpectedly brought tears to my eyes – that we had changed the landscape forever"* (IM#10, 254).

This process around Medmerry and the way it changed the scenery (*'we had changed the landscape forever'*) seems to have been moving (*'brought tears to my eyes'*) for many people involved. Not only having changed the landscape in such a way, but also the feeling of having been part of such a once-in-a-lifetime project leaves most of them with pride and a positive feeling of the process.

Retrospectively, all people and parties involved seem to have benefitted from the process and describe the whole project as a success story. Certainly, the urgent need to realise the project to create replacement habitat, mobilised efforts in the form of funding for a proper engagement process and dedication of the responsible authorities. The turn that was made by the EA from telling to asking the community for their views was definitely one of the key success factors of the project. It became clear from the interviews that the nature of involvement requested by the community was not about competencies, but about the wish to be heard – to have voice, to be respected and involved in all stages of the process. It is also undisputed that influential key people play an important role when it comes to mobilising protest or support for a project. The course of the process would certainly have looked different without those people changing their mind towards collaborating with the EA to create benefits for the community. So, it is basically the local setting and mind-sets that crucially influence whether a process is successful or not. However, a successful process not only needs the willingness for concessions on all sides, but also commitment of those involved to create a fruitful negotiation and results that have majority appeal.

5. In what way did the handling of or the dealing with risks change against the background of climate change and how is this change expressed?

Changes in dealing with risk did take place in this case, but rather within the responsible authorities. Awareness among the wider public is rather separated, as in most communities. The project itself made people realise the presence of climate change and the risks that can result from it, but it is not a topic that guides daily life. One thing that changed, is the way risks are talked about by authorities. Probabilities give the chance of flooding in every year and no longer create the feeling to be safe after a '1 in 200' event. This way of framing the probability of getting flooded is able to better demonstrate that there is always a certain risk, even directly after an event took place:

"Yaah, definitely. A big change for us is the way we talk about events, so it used to be a 1 in 200 year flood event and people would flood and then they'd say, it's fine I'm safe for another 200 years. No, 199 years. We're now talking around probabilities, so 1 in 200 is 0,5 percent chance of flooding in any given year. That is a big cultural change for us and it's only been happening over the last couple of years. So that changes the way we talk about risk. Probability isn't an easy concept, for people who are, who aren't strongly maths to understand, so it takes a bit of extra effort to try and explain what that means. But that is the biggest change for me in the way we talk about risk, is the fact that you can flood today and tomorrow and next year and the year after. And yah, that's been a big change for us" (IM#3, 96).

In addition to this change in the way the risk of flooding is communicated, the increasing risk associated with a proceeding climate change is also realised:

"[…] climate change you said…the percentage of it being a problem is getting worse. So, it's not 1 in a 10.000 it's now 1 in a 100, you know, say, and soon it'll be 1 in 10, every 10 years. Might not happen for 20 years, but might happen twice in 2 years, so yah. It's…it's getting worse" (IM#8, 193).

As the quote above shows, some people are aware of an increasing risk but, in general, it seems to be like everywhere else, people only worry after something has happened and they got affected:

"I'm not sure that generally people worry about risk. They wait for something to happen and then react to it. I don't think there's any – in most people, I mean some will be different, but in most people it's the case of 'well, I'm fine'. You know. The times that it hits people is when you've had a big storm and some things occurred and areas got flooded, people have had to be evacuated and that, although it has happened here, it's been the campsite that had to be evacuated the last time we….I think, when was that…2000 and something there was a big storm over that site, before Medmerry. And the campsite had to be evacuated. It was out of season, so it wasn't a major, major problem. But I don't think people worry about risk until it's literally about to happen. In general" (IM#6, 93).

As explained above, in most cases on the individual level, it is rather a reaction to an event happening than a proactive behaviour, as risks are not worried about. And even after such events (e.g. flooding of the campsite as explained in the quote above), the memory of the experience tends to fade rather quickly, depending on the severity of the damage:

"I still think people, I think people have very short memories. You know, I think you have a big flood event and if you weren't affected, then within a year or two, you've forgotten about the

risk. If you were affected, it might take a bit longer but then …. So, I don't think people are really aware" (IM#7, 194).

The fading awareness addressed in this quote can be explained by the simple fact that there is not much room to worry about something that is rather unlikely to happen. Other problems prevail for most people, so possible flooding and climate change in general are not seen as priority:

"And also, you know, we deal with loads of risk in our life, that's the thing. So, it's a balance, isn't it? […] I mean keeping your job is a pretty high one, cause then you can't pay your mortgage and then you've lost your house anyway, do you know what I mean. So I suspect most people are too busy working and paying their mortgages to worry about things that probably won't happen" (IM#7, 198).

This interviewee describes one type of the risk perception paradox as explained by Wachinger et al. (2013) and Raaijmakers et al. (2008) (see section 2.2.1). Other problems and risks are simply perceived as more important or more likely than getting flooded. This behaviour is also delineated in the quote below in regard to climate change in general:

"Oh, I say it's [climate change] a very relevant topic, I mean really, I would say in some ways, some would say it's the biggest threat to the planet, it's the biggest issue, you know what I mean. But it gets pushed back because of course, you don't, it crops up in the news once in a while, you know. But I suppose human issues, directly human issues take over, don't they, do you know what I mean. So, it seems such a long-term thing, people don't feel they have to think about it. And I don't think it on a day to day basis, you know what I mean" (IM#5, 107).

Although this interviewee is aware of the threat of climate change, it is nothing which is worried about regularly, as other, daily problems prevail (*'it gets pushed back', 'directly human issues take over'*). One reason given here, is the long-term character of climate change (*'it seems such a long-term thing'*), which makes it harder to grasp and thus creates the feeling of being a future rather than a current problem to be tackled (*'people don't feel they have to think about it'*). Hence, the visibility and tangibility of a risk seem to be important to create a certain worry, as also highlighted in the following quote:

"As far as people's concerned, I think the response is very much the same in as much that you have people who are very interested, but then you have those who, when they're two streets away from the front, don't think they're affected by anything to do with the sea. So that's an ongoing, it's a bit of an ongoing issue just trying to get response, trying to get support and you still have people who don't really feel there's anything to do with them, which is a bit difficult. Really" (IM#2, 40).

While this quote criticises how the threat from the sea is disregarded, as soon as it is out of direct sight (*'two streets away from the front'*), the next one addresses a different problem. In both cases, there is a lack of preparedness for possible flooding:

> *"And it's […] always be worse, if you've got a community who are protected, because they're not ready for that. If you know you're at flood risk, you can plan for flood risk. If you have a big defence, you don't expect to flood. Down here the beaches are very high standard protection and there would be a very rare event if they were overtopped. We haven't seen any massive flooding from the coast in the 11 years I've been here. In terms of our ability to manage that, there's a lot of work going on to get us better. That's probably the best way to say that"* (IM#3, 79).

Basically, people feel protected and trust those schemes to work, so they do not expect to be flooded. On the one hand, this represents again part of the risk perception paradox (referred to above), as the responsibility for protection is seen to be in the hands of those responsible for the defence structure. On the other hand, also the control paradox (described by Wiering and Immink 2006, see section 3.1.2) can be seen here, as individual responsibility decreases with high trust in defence structures.

However, the realignment project changed some people's perception about flood risks and the potential consequences of climate change, although it is questionable whether this will be a long-term change:

> *"I think there is a greater awareness among the public. Certainly, in my area and that was as a result of the work we did for the realignment. […] It certainly concentrated people's minds in the area and made them realise exactly why it was being done and what was being done"* (IM#1, 256).

While this quote stresses the increased awareness and the realisation of the need of improved coastal protection on the Manhood peninsula as a result of the Medmerry project, the next one even emphasises that coastal protection did not play any role for some people before the start of the project:

> *"I'm not sure I even thought of coastal protection before that whole thing kicked off, you know, like everybody else it's one of a reaction rather than proactively thinking about it. I'm not one of those people that did think about, to be fair"* (IM#6, 257).

As pointed out here, the need of proactive behaviour became obvious with the project, as also accentuated below:

> *"So, they need a lot of protection down there. But I mean it's an ongoing thing now, people got to accept it, it's got to happen. You can't just sort of hope for best, cause the sea is rising, you know. That is definite, that can be seen and proved, you know. And, of course, you start getting onshore winds at high tide, you're at risk, you know. So, we have to be much more aware now"* (IM#12, 230).

The need to actively deal with an improved coastal protection is strongly underlined in this quote (*'you can't just sort of hope for the best'*), as well as the need of acceptance for changing conditions (*'you're at risk', 'we have to be much more aware now'*).

Another important factor that increased awareness locally, beside defence projects, was the publication of flood zone maps. Having a house in a flood zone influences the possibility to get an insurance and accordingly the saleability of that house gets much harder. So again, as soon as people are affected personally and even financially, the willingness to act increases enormously:

> *"I think in West Wittering particularly what impacted, we had some…not major flooding, but we had minor flooding of some properties. And suddenly people could see the risk and the publication of a flood map, one whole estate and the housing around it, in the middle of West Wittering about 59 houses at risk of flooding. And that was publicised and also the fact that, because we had the flood risk map, insurance was an issue for them. And that's why we got the flood wall. So, the floodbank, which has worked. So, I think suddenly, when it begins to affect the saleability of their home and the insurance of their home, it concentrates their mind. And it took that really to make them do something. Or to make them think about it, don't put their hands in their pocket"* (IM#9, 132).

Even if there is no direct experience, reports in the news about different incidents also create a certain awareness:

> *"Because there's been so many places which have flooded, which were…there's no watercourse there or anything. It's just water, because there's so many hard surfaces. And I think people are more aware of that now. Cause flooding's been more in the news"* (IM#5, 194).

As people notice an increase in news about flooding, it might increase their awareness of the relevance of the topic and might help to keep this at a certain level.

Processes like this one in Medmerry are definitely an important component in creating more awareness about the possible consequences and increased risk that results from climate change. The project certainly led to a change of thinking of many people on the peninsula. Nonetheless, personal experience is likely to fade, whereas willingness to act increases as soon as one's own house is under

threat, be it physically or in a financial way. The question remains, whether the Medmerry project will have a long-term effect on the individual preparedness, although it increased the awareness locally, or if the risk perception paradox and the control paradox will gain the upper hand again. With the authorities responsible, dealing with risks changed, on the one hand, in the way risks are talked about (probabilities), but also in the way coastal protection measures are implemented. 'New' strategies as realignment are part of the official adaptation strategies, which represents a remarkable change in how potential future risks are handled. That this is not necessarily easy to deal with in local communities has been shown in the last sections. The findings therefore highlight the urgent need to conceive climate change adaptation as a social task, which is not likely to be fulfilled without the appropriate involvement of communities.

3.3.3 Summary: From protest to pride

How do climate change adaptation discourses influence local negotiation processes and how do they affect the local risk culture and the materiality of coastal areas?

Climate change adaptation discourses and discussions stirred up the whole peninsula massively and therefore strongly influenced the local negotiation process, although managed realignment was already part of the official strategy and was nothing completely new in general. In regard to the future of coastal defence, temporal aspects are traversed by uncertainty, as possible changes of climate change are hard to anticipate for many. Nonetheless, the forces of the sea are encountered with humility in the area, which is why there is a strong plea for an integrated long-time strategy for all the stretches of the coastline.

The negotiation process around Medmerry revealed a lot of criticism on how coastal protection measures are generally implemented, of which the cost-benefit analysis was one of the most important points. This economic approach has a strong social impact, as some areas are assessed to have a higher value than others, which results in different levels of protection for different people. The perceived protection in turn plays an important role for the attachment of the local community to their environment, to their home. It is exactly this attachment, the wish for protection of the own living environment, which was the starting point for the massive protests against the realignment project. The community teamed up against the plans of the EA and appealed to the public to resist, being driven by the fear that the new way of protection would not be sufficient to protect their homes, and by the dissatisfaction with the fact that decisions were made over their heads.

At the same time, these unexpected massive local protests opened the eyes of the EA, as they became aware that the project would not be implementable without local involvement and approval. This was

the start of a proper process set-up, which considered local concerns, provided the opportunity to participate actively in the course of the development (MStAG) and accordingly created the possibility for the community to negotiate and co-create the adaptation socially, emotionally, culturally, institutionally and of course also politically. The chance to be part of the project, understand the whole situation and to create local and individual benefits, created a substantial stability and support. As a result, the community is proud to have been part of the project, proud of what has been created. They embraced the change to their living environment. It is very likely that the success of this project had an impact on the local risk culture, although it can hardly be said whether this change will have long-term effects. First of all, the known path of 'we've always done it like this' has been left, which meant a break to the habituation and thus also impacted the existing informal institutions.

This also applies for the approach of the EA and therefore the formal institutional way of how such a project is handled, as there would have been no official need to involve the community this comprehensively. Being part of the process and the development of change also created the opportunity for people to adjust their own identification with the place and hence keep the attachment to the area. The engagement with the potential consequences of climate change also focused the awareness of the potential vulnerability of the area, which did definitely influence the way risks are perceived (at least for the short-term). Whether this also had an impact on the (individual) risk preparedness can possibly be answered after more time has gone by. However, the 'new' strategy of realigning seems to be more accepted after the participatory process and people now see that it provides protection. It is acknowledged that this way of defending the coast can come along with added benefits for the community, which certainly increases the acceptance, as it proves that change can also be positive. This change, the climate change adaptation, included a heavy modification of the spatial materiality of the area, as 7km of new inland embankments were built. At the same time, the aesthetic landscape experience did not change that much (except for the area around the breach), as the green embankments merge with the surrounding environment and most of the fields within them are still used for grazing. Thus, the spatial, aesthetic and natural attributes the area was valued for before the realignment, are still given and even though the area has an added protective function now, it is still an environment that is enjoyed by the community[24].

[24] As the project was already completed for a few years when the fieldwork was done in 2018, no new developments around the realignment took place until this study was finished in 2022.

3.4 Comparison: Path dependencies, ownership and the power of key people

The analysis of the case studies was structured by the five sub-questions, which will also be used as frame for the comparison of these findings below.

1. What kind of climate change adaptation discourses/ -strategies exist in the case studies?

The climate change adaptation strategies performed in Husum and Medmerry are very different, but the local reaction towards and engagement with (potential) change of known measures are quite similar. While the responsible authorities in Northern Germany stick to the rationale of maintaining the existing dike line in an advanced and preparatory way using the concept of climate dikes, the approaches in England depend on various local circumstances and include strategies such as hold the line, managed realignment, no active intervention and advance the line. However, within both case studies the general idea of managed realignment (the controlled opening of the first defence line) was subject of negotiation processes. While this topic was part of a thought experiment in Husum, managed realignment was the chosen strategy executed in Medmerry.

The temporal dimension incorporated in the concept of holding the line appeared to be of importance in both cases while future impacts of climate change were framed as being quite uncertain which is expressed in the majority of interviews: Here, key changes are conceived to not take place within the next 50 to 100 years while ideas about how climate change will affect both areas after this timespan remain rather vague. The ambiguous and abstract character of climate change and its consequences was particularly emphasised in Husum, as the perception of the slow and long-term developments is rather difficult to be assessed. A fact which is not surprising, as the existing dike line provides a visible, rigid, long-established and well working defence, which has so far kept the local population safe from current changes and impacts that take place seaward of the dikes. Thus, slow impacts of climate change, as a few centimetres of sea-level rise for instance, remain almost indiscernible in everyday life and are not conceived as a critical factor in order to change the current rationale of coastal protection.

However, the need to adapt timely and appropriately with regard to the uncertain timeframe of climate change effects is acknowledged as relevant in both cases and follows an institutionally established rationale: to increase the scale of the structures needed to make them more protective and thus extend human control over nature. The answer to the question of how local climate change adaptation should look like divides people in Husum into two groups: those who want to continue to exclusively fight the sea with rigid structures as the dike (‘preservers’) and those who promote to start living with the water, embrace change, and partly let the sea back in (‘changers’). Although this view also exists in Medmerry, the overall mind-set here is characterised by a stronger humility towards the forces of the sea (story of King Canute, *‘tide and time wait for no men’*), which seems to be likely

because inhabitants of the peninsula actually experienced flooding and land losses due to erosion in the last decades and are thus used to a more dynamic coastline. In Husum, by contrast, the last breach in the dike happened in 1962, which is why coastal dynamics where not visible for the community in the past six decades.

In regard to the spatial aspect of climate change effects, an inevitable change to the region as a whole, including islands and holms, is estimated and stressed by the interviewees in Husum. In Medmerry, the situation is a bit different as changes to the coastline have also become part of future visions, but here, emphasis is put on the scale of defence structures as an incisive change to the overall landscape. Bigger defence structures might result in a coastal landscape no longer being as aesthetically and practically enjoyable as it has been so far, which is regarded as a socio-geographic consequence of climate change adaptation. Furthermore, many interviewees were worried about how long it might be possible to continue to live in the area in both cases. While this fundamental concern was expressed with the initiation of the SOS group in Medmerry and accordingly addressed the 'here and now', concerns about this impact focused on the generational view in Husum: will future generations be able to grow up in the same unique environment of the area and build a home there? Connected to this aspect, economic reflections were of importance in Husum, addressing the question whether it will be affordable to provide the same level of protection for the whole coastline in the future. Here again, the question is raised in what kind of environment following generations will or might be living. In Medmerry, the cost-benefit approach is politically and institutionally established as a standard for all coastal protection measures and is thus also applied on climate change adaptation measures. Accordingly, people on the Manhood are used to not having the same standard of protection everywhere, while this approach was nevertheless criticised in the interviews. Hence, the discourse about climate change adaptation is shaped by concerns of liveability in the areas now and for future generations, as well as connected economic considerations and potential implications.

Overall, the biggest difference in regard to the official climate change adaptation strategy between the two cases is path dependency. While the well-established rationale of the dike line in Husum conceptually and structurally predetermines the process of adaptation to a large degree, the mix of approaches and strategies in Medmerry appears to be rather flexible and context-driven, as the existing defence measures do not provide a physical and materialised predetermination everywhere. Hence, past experiences with coastal protection measures and established approaches highly influence the nature of the discourse and resulting strategies. Regardless of the measures taken, in both cases the urgency of the need to start adapting now is highly acknowledged by all interview partners but, as this study has shown, dealt with differently.

2. Which structuring role do attachments to the dwelling place and spatial concepts have in regard to contested or agreed-upon negotiation processes?

Inhabitants of both case studies feel strongly attached to their region and the places they live in. The people living in the areas and the emotional experience of the sea and the landscape create a sense of home. Although the degree of place attachment appeared not to be decisive for the negotiation processes in Husum and Medmerry, the arguments brought forward were nevertheless based on the attachments to the places and the values they represent for the coastal dwellers. While mind-sets in Husum were separated between preserve and change, these viewpoints were also found in Medmerry, but played a more marginal role than in Husum. The preserving mind-set found in Husum is characterised by a strong historic component of place attachment. The long history of fighting and containing the sea with the help of dikes is deeply engrained in people's minds and framed as a Frisian tradition, closely connected to the wish for stability and safety, thus also characterising the regional identity. Against this background, arguments were brought up in the negotiation process about the Dockkoog, why coastal protection should stay with the tradition of the existing dike line. Next to the general view of many interviewees that once reclaimed land by diking should not be given back to the sea, economic issues were raised, as well as the argument of spatial protection. This last spatial argument is backed up by the aspect that safety of their home is higher if the main dike line stays spatially further away from the city (and thus addresses the fear of the power of the sea). Interwoven with this line of reasoning is a generational aspect, as a change to the landscape in terms of the Dockkoog project would also affect future generations. This entails the responsibility to be aware of the long-term consequences of decisions for the place made today, e.g. a change of the coastal protection strategy is likely to have an impact on the area, the people and their wellbeing for many decades or even centuries. Closely connected to this aspect is also the habituation to the dike and the stability and predictability it entails, holding a fundamental identity-establishing role for the inhabitants of the area – next to its protecting function. The path dependence that is connected to the dike is therefore not only physical but holds a considerable socio-cultural dimension.

This habituation or mentality of holding the line is also present in Medmerry, as many people living there want to preserve the historically established protection of solid walls (as it was the original aim of SOS). In Medmerry, this is mostly driven by the fear that other defence structures than the established ones would not provide sufficient protection, being reasoned slightly different than in Husum, where cultural aspects play a more important role. Thus, preserving and the wish for safety is of importance in both cases though driven by varying rationales, while it is also highly acknowledged that climate change adaptation needs to take place now. This aspect is also stressed by the changers in Husum, although their reasoning is structured quite differently. The spatial aspect for instance is

used by changers as well, who promote the idea of living with the water instead of keep constantly fighting against it. According to their mind-set, the space behind the first dike line should be used to let the water back in to adapt incrementally, which means to make use of sedimentation (so that the land can grow with rising sea-levels) and to start changing the rationale of holding the line in time to be prepared for the point when dikes will no longer provide sufficient protection against climate-induced changes. In Medmerry, the initial situation looked a bit different as the existing shingle defences were no longer assessed as strong enough. Although the realignment faced serious opposition in the beginning, the strong attachment and the wish to be able to stay in the area finally worked as a driver – contrarily to Husum – to embrace the change from holding the line towards the idea of living with the water. These findings are in line with existing research on place attachment (see section 2.1.2) – place attachment can be, but not necessarily is a driver. The possibility to engage in the process and create individual and communal benefits led to a turnaround of the overall sentiment in Medmerry. People created ownership of the process, felt as part of it, built trust with those responsible and finally accepted the huge change to the landscape that the realignment implicated. This was a difficult process within the community and between all parties involved, even though managed realignment was already part of official strategies before. Although this concept was not completely new to the local population, there was enormous resistance initially, which could only be solved by serious consideration and active involvement of local concerns. However, also in Medmerry some people were much more advanced in their views and proposed to build houses on stilts in areas that would regularly be flooded and accordingly use boats instead of cars. Whether or not a preserving or a changing mind-set prevails in the areas, both cases show the enormous importance to consider local attachments to the place, since it depends on experience and habituation (e.g. dike) if, how and which strategy is conceived as acceptable. Historically grown values and traditions permeate and shape individual place attachment and hence provide stability for identity and the identification with the place. It is therefore crucial to take socio-cultural aspects into account within negotiations about climate change adaptation and to be mindful of existing local concerns and the historic background in order to jointly negotiate and collaboratively meet the respective challenges of climate change in participatory processes.

3. In what way do different contexts affect certain spatial visions and which role do actors fill?

In both cases the professional or institutional background appeared not to be decisive for the negotiation processes. Instead, the individual and collective trust or distrust responsible persons were met with and how different roles were filled, was a key point within the local negotiations. In this context, the general impression of the responsible authorities as a whole was not necessarily in line with how local representatives were framed, which strongly emphasises the importance of the

individual relation that either already existed or was created during the process of participation with members of the community.

In Husum the LKN, as authority in charge of the main dike line in Schleswig-Holstein, is generally trusted by the community. Their role as organisation with the task to fulfil costal protection is thus a formal institution that is working and confided in by the community. On the individual and personal level this holds mainly true as well, although doubts about the impartial role of the organisation and the responsible person emerged within the process against the background of the need of compensation areas and the possibility of cost-reduction aims on the side of the LKN. In this case, trust of individuals in formal institutions seems to have certain limits when proposed changes are too divergent from the individual point of view. For Medmerry, the responsible authority was the EA, the executive entity of DEFRA, which was heavily criticised in the interviews. However, the criticism mainly focused on the political/governmental system in structural terms at large, for having fragmented responsibilities, wrong people making decisions, not thinking long-term and in a coherent way, delegating responsibilities and not being open for change. Additionally, the fact that there is no official duty of the EA to defend the coastline and the use of the cost-benefit approach were deplored. Although some interviewees also stated that the EA is doing a good job, there is definitely a lack of trust in governmental organisations. However, this general perspective differed substantially on the local level. The work of the persons in charge for the EA was appreciated, they were respected and trusted and their view was supported as they managed to create a personal and empathetic level of communication with the community and valued all sorts of local concerns. Consequently, the individual level of trust and intercommunication was more relevant than the view on an organisation or authority as a whole, although the greater picture can probably never be fully masked out. Accordingly, this confirms the important role of trust in general, already mentioned in existing research (section 2.2.1), but extends this by stressing the enormous relevance of trust between involved individuals.

Moreover, environmental organisations were involved in both cases, albeit fulfilling completely different roles. The RSPB was simply involved in the Medmerry project, locally perceived as doing a good job and generally trusted. After the scheme was finished, they took over the management of the area as a nature reserve. In Husum, however, the role of the WWF was quite controversial. Not only did the WWF initiate the whole process and was therefore seen to hold a different role than all the other participants, prejudices about the head of the local branch also considerably shaped how the role of the WWF was assessed. Husum is a small city, and the head of the local WWF already has a long history of disputes around nature conservation and the Wadden Sea in the region. For many locals, his contended view is equated with the local WWF as a whole and results in a lack of trust in the

organisation. Again, this underlines the relevance of interpersonal aspects as being a determining element in how a process develops. The importance of this became apparent by looking at the role of local key people in Medmerry. They were trusted and thus had the enormous power to change the whole atmosphere and the view towards the realignment project in Medmerry. The social dedication, flexibility and leading role of those people motivated many others to get involved and create ownership of the process. Thus, it is not so much the certain background of an organisation, authority or individual that is of major importance within a negotiation process, but much more the individual level of appreciation, trust and communication with each other in a place that exerts an influence.

4. How are local negotiation processes and practices about climate change adaptation structured and which dynamics were/are they subject to?

The negotiation processes in Husum and Medmerry were structurally set up quite differently right from the beginning, as the realignment in Medmerry was the chosen strategy of the EA, while it was only part of a thought experiment in Husum. Nonetheless, the discussions in each case appeared to be pretty heated and albeit in different ways, both negotiation processes had a turning point. The process in Husum is characterised by opposing interpretations of the process framework and the overall aim of it, resulting in a mismatch of expectations on the work of the project group. Local politics made a decision about the Dockkoog before the project group had finished its work, which stopped further discussions about the topic and foreclosed an open dialog with the community. This decision was heavily criticised and framed as a ban on thinking. While the whole process of negotiation was stopped in Husum by the political decision, a proper process of communication with each other only started in Medmerry after the EA had updated their proposed coastal defence strategy and changed their approach from simply informing people to asking for their opinion and including them in the process. At the same time, key people convinced the community about the possible benefits of the realignment. Thus, the turning point was brought about on different levels (formal and informal institutions), but would probably not have taken place without the changed mind-sets of the community. However, the improved way of involving people locally was also needed for a successful process. The realisation of this project was therefore only possible because there was a fundamental rethinking within the formal institutions (an extensive engagement process like this was not mandatory), as well as the openness within the community, and accordingly the informal institution, to leave the pre-established path of coastal protection. This last aspect is also strongly connected to aspects of individual identity, habituation to known defence measures, and also the attachment to the area. Although the motivation for this turn towards mutual open- and willingness in Medmerry was not the same for all people involved (EA needed to get planning permission, community wanted protection for their homes), the process is said to have constituted a change in how the regional EA approaches its projects and also

for the people locally. By collaborating with all people involved, a realignment scheme was created that left most of the community being proud of what has been created and of having been part of the project. At the same time a landscape-scale change was accomplished, representing a remarkable modification in how coastal protection is approached, and also in how it can be embraced by a community, as soon as people feel listened to and get involved in the project.

Involvement, more precisely the missing involvement of local politics, represents a key aspect in determining the outcome of the process in Husum. Although local politics got informed about the work of the project group in certain intervals, a stronger and perhaps more continuous involvement of this committee with the decisive power about the topic might have prevented such a sudden stop of the process. While coastal protection measures are normally a task of the LKN, as it is that of the EA in Medmerry, in this special case local politics of Husum had the decisional power about the question whether the location of the first dike line should be changed or not. Accordingly, the political acceptance for the process was a prerequisite for a successful assessment of all the possible options. While this seemed to have been there in the beginning, more and more mismatches in interests between the project group and local politics emerged in the course of the process, revealing that certain options for the Dockkoog were way beyond of what local politics wanted to see in the area and even more beyond what was compatible with their view of the Frisian tradition and the mind-set of preserving. This line of thinking was to a large degree based on the argument that land is not given back to the sea, as this has never been done, and prevailed although the assessment of the LKN guaranteed the same level of safety for all proposed options. It is thus historic aspects that played a vital role, as these still have an influence on identity establishing elements, as well as the habituation on the presence of dikes and accordingly also the attachment to the area. Strongly bound to this identification with the place is the informal institutional framing of ‘that’s how we’ve always done it’, which represents, in combination with the physical presence of the dike, a strong social path dependency. Nonetheless, there have also been the arguments of the changers, who were much more open to leave the path and try to find alternative ways. In the end, this impetus for openness towards change got choked by the missing willingness of the political committee to dare undertaking this thought experiment. This clearly demonstrates the power of formal institutions, as the final say is – at least in Husum – down to them. Nonetheless, the Medmerry case has proven that formal institutions can be forced to change if the local protest and thus the combined power of the people is sufficiently strong to avert planned projects of authorities. Looking at both cases, the enormous power of key people also becomes obvious, provided that they have the right position and hold the competences to wield their influence. While in Medmerry local key people managed to turn the mind-set of almost a whole community, in Husum key political positions ensured the sudden end of the negotiation process. Although the initial situation was quite different in the cases, the respective processes denoted a

change of how climate change adaptation is handled locally. While the whole process is seen as a game changer in Medmerry and appreciated as a huge success, the supposedly unsuccessful process in Husum also provided a stimulus to think about different options and even created the possibility to talk about potentially opening a small part of the dike. Since there were no precedents of similar negotiation processes in either location, the local communities were forced to not only focus on the urgency of climate change adaptation, but to negotiate how this topic is dealt with on the local (societal) level and think about ways of how climate change could be dealt with collaboratively. This negotiation was likely (as has been shown) to imply much potential for conflict and thus constitute and enormous challenge for (coastal) communities, as it is not only a discussion about the coastline or a dike, but much more a renegotiation of deeply engrained societal values, individual (place) identity aspects and historically grown traditions.

5. In what way did the handling of or the dealing with risks change against the background of climate change and how is this change expressed?

How risks of climate change are managed has to be considered at different levels of competence. On the side of authorities, changes are clearly visible. In Medmerry, not only coastal defence strategies got adapted, also the way risks are communicated changed from framing a flooding event as a 'x in 100 years' towards giving probabilities. Using probabilities stresses that there is always a certain risk of flooding, e.g. 0,5% in any year, instead of conveying the impression that a certain area is safe for the next 99 years after a 1 in 100 years flood event. The responsible authorities in Husum also took climate change into account by improving the dike profiles with the concept of the climate dike. Although a dike is a very path dependent structure, this concept provides a certain flexibility to further heighten the dike in the future without the need to completely rebuild it.

On the individual level, the cases showed similar results as well. The interviewees stressed that individual behaviour is rather reactive than proactive and that while people might have a certain awareness, daily problems prevail in their importance. Furthermore, responsible authorities are generally trusted to take care of coastal defence, which is why the responsibility is seen to be on their side. These two aspects are in line with what Wachinger et al. (2013) and Raaijmakers et al. (2008) described in regard to the risk perception paradox. Additionally, coastal defence structures are generally trusted in both cases, potentially resulting in a decrease of individual responsibility, as described in the control paradox by Wiering and Immink (2006). While individual action is not perceived as urgent in Husum and some even mentioned one should rely on the next generation with this topic, the realignment project in Medmerry certainly increased peoples' awareness and stressed that climate change should be encountered in the here and now with proactive behaviour. However, in both cases the need to act is acknowledged, but rather seen as a responsibility of the authorities.

Accordingly, the negotiation process and implementation of the realignment scheme in Medmerry changed some peoples' perception in regard to the risk of climate change, but it is questionable how long this effect will last and whether at all this also implied a change of individual risk preparedness. In contrast to Medmerry, the negotiation process in Husum led to a prevention of physical change to the area, so that the physical visibility of climate change impacts here is currently limited. While the negotiation process certainly had an influence on some people's risk perception locally, there is no change visible for the individual risk preparedness, as coastal protection was and is still seen as being the responsibility of the coastal authority. Nevertheless, the two cases showed that the aspect of visibility and tangibility of climate change play an important role to create a certain concern within in the community and the case of Medmerry proved that action is taken in the community (SOS), when the pressure to act is felt as being high enough. The area around Medmerry had suffered from recent flooding, while the dike in Husum has provided sufficient protection in the last 60 years. How risks are perceived and classified is thus also dependent on the individual experience, being in line with findings of existing research (e.g. Wachinger et al. 2013, section 2.2.1), but highlighting the aspect of temporality,. The case of Medmerry showed that the dynamics of climate change can be embraced quite fast, not only in regard to the landscape, but first and foremost socially. Nonetheless, how potential future risks of climate change are handled, is still a matter of negotiation and both case studies clearly indicate that climate change adaptation is largely a social task that needs to consider individual experience, as well as temporal aspects and spatial attachments.

4 Discussion and conclusion

Climate change, its potential impact and the different discourses and strategies revolving around adaptation to it, heavily stir up – as we have seen – local negotiation processes. This thesis has stressed the importance of understanding climate change adaptation foremost as a local and regional social challenge. Hence, there is not only a need to adapt the coastline to climate change or to reconsider certain types of administratively driven adaptation standards, but to explicitly consider the sociocultural dimensions and values characterising an existing risk culture in a region or place. New or different forms of adapting to climate change induce modifications to local risk cultures and in many cases challenge culturally embedded ways of dealing with risk by also reconfiguring societal, institutional and political forms of interconnectedness and relations. To deal with environmental change in terms of climate change can thus not exclusively be conceived as a rational, evidence-based decision, it must rather be reframed as a basic social process that implies the renegotiation of societal coexistence in itself and with the natural environment. Accordingly, the criticism of the existing

homogenous/static understandings of risk cultures, mentioned in Chapter 2, got confirmed within this work. Moreover, in line with Kienitz and Herlyn (2018) and Fischer (2016), this work has demonstrated that risk cultures are an interconnected and processual web of social interaction and thus provided further evidence of the heterogeneous and dynamic nature of risk cultures.

In response to the need for a more nuanced understanding of how to overcome the multiple social barriers of adaptation, a more comprehensive concept of risk cultures was developed in Chapter 2 and tested as part of this study. This concept conceives culture as inherently dynamic and acknowledges the interconnectedness of its constituting dimensions and thus improves the understanding of the underlying mechanisms of how risks are socially framed. Based on the empirical findings, the concept was further extended with the aspects of temporality, spatiality and sociality (see Fig. 23 below). The two case studies have shown how these aspects and the dimensions of risk cultures (formal and informal institutions, (historic) identification with place, risk perception and –preparedness) play a fundamental role in shaping local responses to climate change risks. Although of comparable importance in both cases, the ways in which these factors influenced the local negotiation process varied substantially, resulting in very different climate change adaptation responses in the two case studies. These findings are summarised in the next section.

4.1 Lessons learnt: Temporality, spatiality and sociality as conceptual and empirical foundation of risk cultures

The analysis and comparative aspects elaborated on in the previous chapters aimed to contribute to the answer of the overall research question:

How do climate change adaptation discourses influence local negotiation processes and how do they affect the local risk cultures and the materiality of coastal areas?

This was done by analysing the two case studies of Husum and Medmerry with the help of the five sub-questions, which have been elaborated on in the empirical analysis above. The five sub-questions were explicitly chosen to get a conceptually closer and empirically more detailed insight into the three dimensions of risk cultures (formal and informal institutions, (historic) identification with place, risk perception and –preparedness), which have been identified in the beginning. The resulting findings were presented in section 3.4.

The intention behind the analytical concept, based on the three dimensions of risk cultures, was to gain a better understanding about how risks are framed individually/collectively, negotiated locally and about the role of the local context. To do so and to try and better understand influencing factors

of risk perception and preparedness, it was crucial to acknowledge the interconnectedness of the three dimensions of risk cultures. Furthermore, the aim consisted in improving the current understandings and concepts of risk culture and to re-conceptualise it as a dynamic social construct.

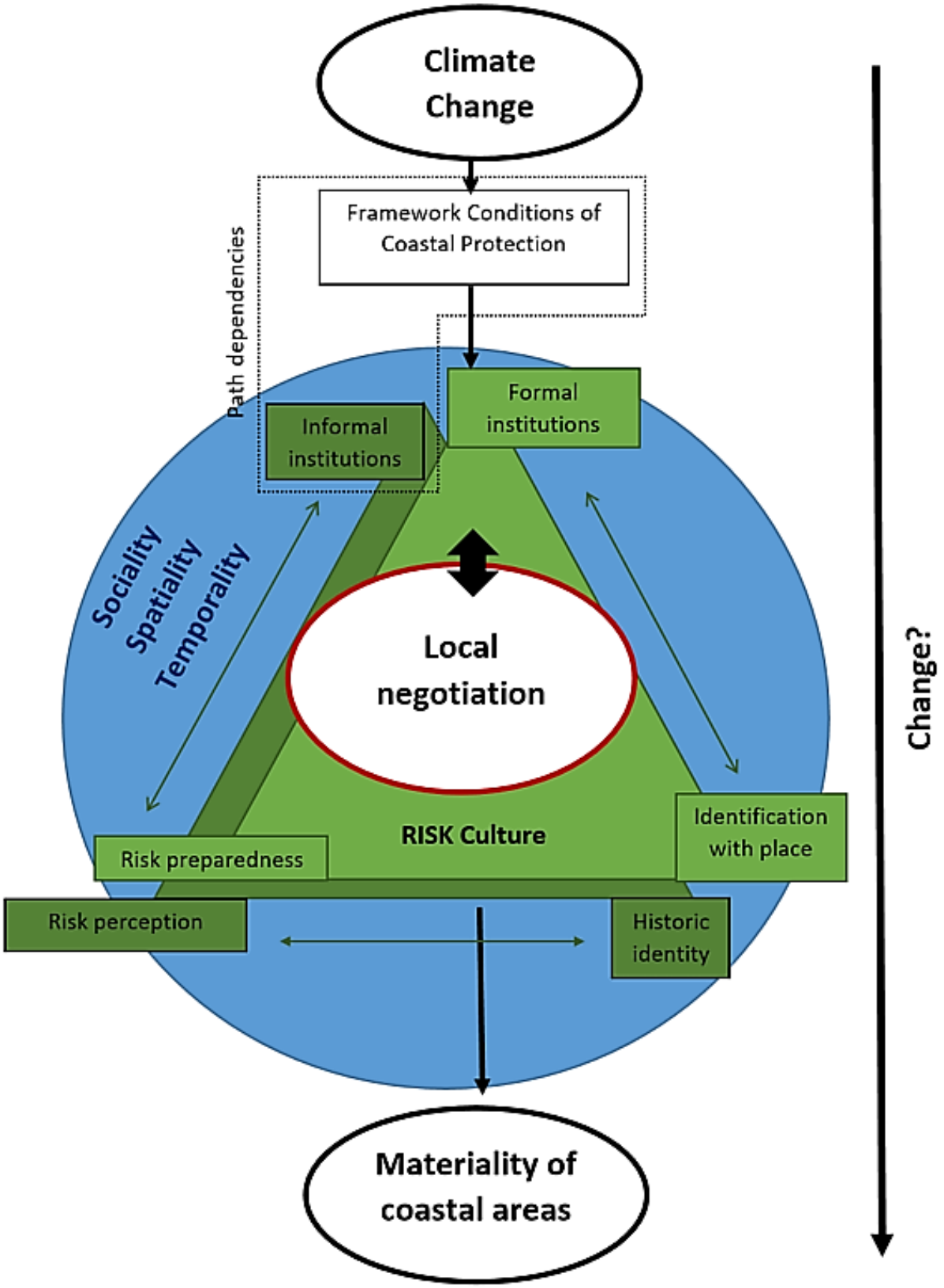

Fig. 23: Analytical concept of risk cultures extended with the foundation of temporality, spatiality and sociality

This was done by mapping contradictions and changes to disclose the internal heterogeneity of (risk) cultures and to reveal their dynamics. In sum, it was important to understand not only the ways in which risks (of climate change) are perceived, but much more how they are framed and dealt with and to recognise the interconnectedness and mutual influence of the different dimensions of risk culture on the local scale. Against this background, the two case studies have empirically shown that risk cultures are not only inherently dynamic, but contested, dispersed and always negotiated in the context of personal, institutional, political and local frames of reference. Moreover, all three dimensions of risk cultures are permeated by the mutually influencing aspects of temporality, spatiality and sociality see Fig. 23. How the findings in regard to the dimensions of formal and informal institutions, (historic) identification with place and risk perception and –preparedness are interwoven with these three aspects will be elaborated on below.

Temporality

First of all, the empirical findings show that there is a large uncertainty connected to temporal aspects of climate change and its local impacts. This basically concerns the nature of these potential impacts, at which point in time they will arrive, which limits will be reached with regard to the individual lifetime of defence structures, and the extent to which and how living conditions at the coast will change. This is not only a matter of societal perception, but a challenge for the authorities in charge which consequently connects the social and institutional dimensions of a risk culture. Within this context, it is acknowledged that coastal protection measures can extend the timeframe for living safely in coastal areas, but that this time needs to be used to constantly learn from experience gathered now and in the past to improve current and future adaptation. Besides these temporalities, adaptation to climate change is limited and has an anticipatory character in coastal areas because measures need to be implemented and built before defence structures get washed over or collapse. Here, the challenging aspect lies in the fact that the need of certain measures is often not fully comprehensible at the point in time it needs to get realised, as the experience of the expected future risk is not there yet. This presupposed need of imagination easily creates challenges within the negotiation process about adaptation measures and is also likely to provide a barrier in regard to individual risk preparedness, as preparing for something as abstract and intangible as climate change is difficult. Furthermore, the change of a coastal protection strategy towards a different approach is always confronted with existing path dependencies in a risk culture, be it the simple physical lifetime of a structure or the fact that institutional structures need time to realise and implement a required change. Change, in general, is an inherently temporal process. Additionally, the different temporalities in the area vary considerably depending on the entity or specific aspect looked at, which can likely result in diverging timetables for adaptation measures, but also a mismatch of speed of climate change and those of social adaptation.

While defence structures and individuals have a long lifespan of a few decades, the timeframe of local politics is often rather limited to legislative temporalities, and climate change has another distinct physical temporality, which spans that of many generations. How the risk of climate change and its local implications are perceived, framed and reacted to, is thus essentially shaped by aspects of temporality, which are rather heterogeneous and ramified within one risk culture. The temporal aspect is also of vital importance for the identification with place, which is a lifelong ongoing process, and the historic dimension of this, being constitutive for the nature of the local risk culture today. This holds also true for informal institutions which have been shaped over time, passed on and provided a societal basis for how risks are currently framed and handled. Accordingly, the different aspects of temporality and the challenges that come along with them are crucial to be acknowledged within negotiation processes about climate change risks.

Spatiality

The spatiality of an area is, among others things, also influenced by the uncertain temporality of local climate change impacts. The temporal uncertainty is, for example, used as an argument for spatial adaptation, albeit in contrary ways. While changers – as in Husum – argue to let the water back into the land to create the possibility of living with the water, preservers use the spatial argument in regard to safety aspects and rather frame the landscape as a buffer zone between the sea and their living environment. Although both groups belong to one risk culture, their views on spatiality could hardly be more contradictory, demonstrating that risk cultures possess an internal heterogeneity, an individual variety, and generalisations are beyond local realities. The defence measure itself, be it a wall or a dike, is also of spatial importance, as its spatial scope influences the landscape experience which connects to the dimension of identification with a place. Locals value the landscape for aesthetic reasons, as it provides well-being but at the same time also holds a protective function, which again includes the temporal aspect of the lifetime of the structure, as well as technical or physical limits of enhancement. Furthermore, the unique character of a place constitutes a spatial entity that forms the basis of Heimat and place attachment. In Husum, the dike is taken for granted through the process of habituation, it creates social stability and forms part of the identity of many locals and can thus be seen as spatial contingency. However, if the scale of a defence structure is changed (increased) as it gets adapted to climate change, it is likely to affect the landscape experience, which influences the individual spatial experience and consequently has a bearing on the identification with the place in one way or the other. Nonetheless, technical or physical limits will presumably be reached at a certain point in time, which is why holding the existing coastline everywhere and forever is likely to be impossible. Although land loss is also part of the North Frisian tradition, this spatial topic was more prominent in Medmerry, where it got verbalised as being part of the history and future of that place

instead of using the metaphor of 'fighting' (as in Husum). Accordingly, the dynamics of natural processes are much more incorporated into the spatiality of the area on the Manhood, as large parts of the peninsula have only been protected by flexible shingle beaches, who regularly get washed away. This aspect got highlighted with the story of King Canute (who was king of England at the beginning of the 11th century), which is still used today to stress that basically no government has the time, the resources or the power that the sea has (also implying aspects of sociality). Contrary to this, North Frisia is most widely protected by comparably rigid dikes, who have not moved in the last decades. Consequently, the aspect of spatiality is of major importance in regard to (natural) dynamics, as they become visible with a (potentially) changing landscape. However, spatial aspects also have a high relevance for the sense of safety. This is important for how a potential risk is perceived and framed and also for the way locals identify with their place and are socially tied to it. At the same time, it is connected to the informal institutions of a society (e.g. through habituation), as well as to the formal institutions, as the authorities in charge of coastal protection deal with climate change in the same places that people are attached to.

Sociality

The last aspect that permeates all three dimensions of risk cultures is that of sociality. Although climate change impacts do become visible spatially, and temporal uncertainties also get verbalised, climate change is an intangible and abstract phenomenon. To sense the slow and long-acting developments, to perceive the (continual) change, is a cognitive process and the starting point for processes of sense-making. This in turn takes place against historically established frames of sociality and important cultural values. The rationale of fighting the sea and the identification with the Frisian tradition of diking, which enabled a livelihood and provided stable living conditions, is still of major importance, as the fact that land is not given back to the sea is a prominent cultural value (in Husum). This is not only embedded socially, as dikes have an identity-establishing role, but also spatially and of course historically. A change to the entity of the dike is seen as an attack to existing cultural values by some and thus to the individual identity and that of the whole region. Accordingly, path dependence is far off from being a physical phenomenon only, it is much more a socially and culturally embedded one. Although dikes and the identification with it did not play a role in Medmerry, locals also preferred hard defences (as walls and dikes) for the area at the beginning of the climate change adaptation process. This connects to the informal institution and its path-dependency of 'that's how we always did it' and a perceived higher safety behind solid structures. Resulting from that was the lack of openness and willingness to change the existing approach of coastal defence locally, as it was the case in Husum. Although the mind-set of changing already partly existed in both case studies, realising the need for change is not only a cognitive, but foremost a social challenge which also implies the acceptance of

changing risks and adaptation measures and thus to deal differently with emerging risks. While this development did not get the chance to unfold in Husum (due to political decisions), it was approached as a challenge in Medmerry and solved in a joint negotiation process. The aspects of sociality permeate all three dimensions of local risk cultures, but are of major importance for how approaches to managing risks are negotiated. As this study has shown, basic factors for this are personal experience, fear, place attachment, longstanding tradition of proven strategies and resulting from that mistrust in new options of coastal protection, thus a combination of temporality, experience, spatiality and sociality. One of the most important findings in regard to the negotiation process and for the framing of risk is the significant role of the social element of trust. Relevant here is especially the local level, trust in those responsible, the attribution of competence, appreciation and reliability, thus sympathy and empathy that have a major influence. Nonetheless, trust seems to have limits when views of those in charge are not in accordance with the own mind-sets and perspectives are too diverging, respectively. This stresses the need to respect, consider and include basic individual and local values, as the nature of involvement requested by the community is not about competencies, but the wish to be heard, respected and involved in the process. Additionally, economic interests are important for the negotiation process of how to frame and deal with a particular risk. While the cost-benefit approach is the basic prerequisite for every coastal defence measure in England, the whole coastal area in North Frisia (still) has the same standard of protection. Here, it is questionable how long this same level of protection will and can be financially feasible. Although cost-benefit is a functional approach that can be quite easily justified, it implies not only temporal and spatial aspects, but much likely the question of social equity, as soon as decisions have to be made about which areas will get protected further. Moreover, the role and power of key people needs to be addressed here too. As mentioned above, trust in certain people can create the attribution of competence and thus the power to (collaboratively) create change along certain lines. Next to this, political power does not necessarily need approval for every project and can therefore be used (or misused) to steer processes in a favoured direction or completely stop unwanted developments, as has been shown in the case of Husum. Of the three aspects temporality, spatiality and sociality, social aspects were by far the most frequently mentioned reasons determining the nature and outcomes of the negotiation processes in Husum and Medmerry, stressing again the inherently social character and its relevance for climate change adaptation.

4.2 The importance of participatory approaches to increase preparedness and reduce the resistance to change

The results of this work underline the relevance of qualitative work, disclosing how a community frames certain types of risks and more importantly, how and why it is dealt with in a specific and situated way. These aspects are currently lacking in risk research as the focus of many studies is still mainly on quantitatively driven research, which can provide generalizable answers based on the majority of certain views, but fails to provide a comprehensive and detailed understanding of the interconnectedness of local and individual views and perceptions in terms of spatialities, temporalities and social aspects. Thus, the insights gained in the present qualitative work contribute to a better understanding of the local context, the different dimensions of its risk cultures and how important it is to consider these in local negotiation processes. However, the results do not represent a generalizable blueprint for further research in different places. This can clearly be seen in the two case-studies analysed here: there are convergences between them, but each and every case has its own peculiarities, individual contexts, specific social relations and historicity that need to be revealed and considered in order to understand how risks are framed, how risks are socially engrained and how it is dealt with locally or regionally.

A further aim of this work was to improve the understanding of the link between risk perception and preparedness, which remains not functionally determinable. However, the empirical findings provide possible solutions or at least starting points to challenge justifications for a lack of preparedness (risk perception paradox) as outlined by Wachinger et al. (2013) and Raaijmakers et al. (2008) (see Table 6 below). The active involvement in negotiation processes about local risks increases awareness about the topic and could potentially lead to a higher level of worry (at least temporarily) if possible results of further inaction get visualised and the urgency of the topic is kept up. Interview partners of both cases referred to this effect, as some of them had not even thought about coastal protection before the start of the projects and were quite concerned about the topic during the process and at least for a certain time afterwards. The second problematic type as described in the table below are those who are aware and worried, but see the responsibility somewhere else. Especially the case of Medmerry exhibited how the inhabitants created ownership of the process which contributed to the successful implementation of the measure once they were adequately included and heard in the process. They appropriated the topic and developed the individual aim to make the project a success, illustrating the individual responsibility to engage with climate change adaptation and therefore having the possibility to shape the own environment and become part of the change.

Table 6: Solution approach to increase individual risk preparedness

Wachinger et al. 2013	**Raaijmakers et al. 2008**		**Stumbitz 2022**
"Risk-perception-paradox"	*Awareness and worry*	*Type*	*Solution approach*
Other problems perceived to be more important	Aware but not worried	Safety	Active negotiation processes about local risks can increase awareness and thus potentially the level of worry (at least temporarily)
Responsibility seen somewhere else	Aware and worried (Responsibility for risk reduction seen somewhere else)	Risk reduction	Creation of 'ownership' of adaptation measures through active involvement in adaptation processes elucidates individual responsibility and possibility to shape environment
Lack of ability, ignorance	Not aware, not worried	Ignorance	/

However, this does not directly lead towards a higher individual preparedness, but can rather be seen as a starting point of an incremental process to be extended and followed. To overcome the barriers towards individual preparedness is subject of many influencing factors. However, the investigation of these and other dimensions of risk cultures of the present work already revealed important aspects in this regard, although the link between risk perception and preparedness requires further investigation.

Furthermore, the results of my empirical analysis clearly show that there is not only a structural, formal or political need for participative processes and involvement of the local community; there is, as the case studies have shown, a social need to take part in negotiation processes about climate change and potential local adaptation measures. People want to be included if their home and environment will be altered and want to have a share in the outcome materialising in their places. The relevance to be mindful of the different temporalities, spatialities and social aspects, and to deal with them in a sensible way within one region, has clearly come to the fore. To take these aspects into account is an important prerequisite for a successful interaction and communication with each other and thus for a fruitful negotiation about local climate change adaptation. Especially since the need for adaptation is a non-negotiable fact, the way it is done should be approached together. To negotiate and renegotiate existing societal norms and values has to be seen as an on-going and life-long process, which will only result in socially accepted decisions if social, emotional, cultural, institutional and political levels are addressed and involved in the cooperative process of change. These aspects can also be found in Nightingale et al. (2022) and their reflections on affective adaptation to climate change. Scientific

evidence about climate change, they argue, does not seem to have sufficient motivational power to lead to the action needed on the societal and political level. Hence, they raise the aspect that effective and socially embedded transformative change can only take place when uncertainty and unpredictability, as well as "*experiential and embodied ways of knowing*" (p. 1) become an integral part of this process. For them, "*affects […] help elucidate how emotions translate into actions*" (p. 7), stressing the significant need to acknowledge these emotional aspects (fear, uncertainty, etc.) and their relational dimensions in trying to understand negotiations about climate change. This entails that climate change adaptation requires much more than knowledge and information, as has also been shown in the empirical analysis above. Bogner (2021) even warns against the increasingly predominant role of (scientific) knowledge in terms of an 'epistemologicisation'[25] as the ultimate rationale for political and societal decisions. The focus on knowledge, he states, supersedes the actual ways of solving political problems and societal conflicts, which are made up of and structured by diverging values, interests and world views, by negotiating conflicts and by finding viable compromises. Hence, it is not all about the scientific evidence, but about the best way to broker and draw these aspects together. The problems addressed by Nightingale et al. (2022) and Bogner (2021) were also found in the two case studies of this work, all highlighting that solutions are not solely based on scientific knowledge, but are part of institutional, social, temporal, spatial, affective and emotional contexts. Climate change adaptation is thus not on gaining more detailed information and knowledge for better forecasts as general evidence is already there, but it is about the negotiation of emplaced, temporally structured and societal values that are locally relevant. Accordingly, and as the two case studies have demonstrated, competence needs to be built on these aspects to enable socially informed, participatory negotiation processes about climate change, connected risks and ways to adapt to it. Climate Change is evident and if responsible authorities/bodies do not acknowledge the need to face the dynamics of it, which are likely to stir up societal structures and local risk cultures, and learn to deal with local and individual concerns, attachments, interweaving and emotions seriously, heavy protests and local conflicts are most probable.

4.3 Outlook: What does the future hold?

Practical implications of these results and at the same time challenges for the future consist in finding methods for how to manage these negotiation processes in an efficient way with an increasing need to adapt to climate change. Both case studies have revealed that it is fundamental to determine the goal and fix the boundaries of what is conceived to be possible and what is not. These processes not

[25] He uses the German term ‚Epistemisierung'

only take time, but key people are required who are trusted locally, and have the social and emotional competences to fulfil a mediating and integrative role if needed – requirements that will definitely not be met in every place that has to deal with climate change adaptation. At the same time, societal acceptance of adaptation measures is often linked to a perceived sense of urgency, which in turn is based on the individual social and spatial context with its temporality. Verlie (2022) argues in this regard that there is a crucial need to learn to live with climate change and understand the interconnectedness of human lives and climate. In order to *"reinvent ourselves and regenerate our worlds"*, she argues, it is necessary to experiment *"with new ways of identifying with each other and climate"* (p. 122). Thus, her view is a plea to comprehend climate change and the adaptation to it as a social process, as it requires to reassemble societal structures against the background of changing and often not determinable (environmental) conditions. This view strongly converges with my own understanding of risk cultures as dynamic social constructs, a perspective that obviously counteracts the exclusive rationalisation and 'epistemologicisation' of risks. Risk cultures and climate change adaptation processes are highly dynamic and thus likely to be changing over time, which makes the whole setting even harder to capture. The core consists of a social perspective on climate change with its relational and emotional dimensions which are not easy to identify, map, let alone generalise and apply in a functional way. Nonetheless, they form an essential part of how the risks of climate change are framed and dealt with and should not be neglected.

How then, will it be manageable to cope with natural dynamics of climate change that are difficult to calculate? How shall one deal with social consequences and implied restructurings resulting from this (potential) changing environment, while acknowledging the mutual influence of both? How can this processual character be taken into account, while also finding solutions for a locally accepted climate change adaptation strategy? Unfortunately, there is no universally valid answer or way to solve this questions. However, this thesis contributes to an advanced understanding of the social/cultural dimension within risk research, revealed important influencing dimensions for the local framing of risk and extended understanding on culture as a dynamic concept. This provides a solid starting point to conceive the various dimensions permeating a local context.

The group work in Husum was perceived as important step towards more openness, and provided the start to find new social, spatial and temporal constellations against the frame of a changing environment. As has been shown with the case of Medmerry, (building) human relations and shared routines/practices are a key factor to reach a common solution. However, the majority of people is still busy handling everyday life, priorities lie on solving daily problems, not on coastal defence or potential climate change impacts in the future. Accordingly, individual action is not perceived as urgent topic and is partly relied on to be solved by the next generation. This mode of thinking is one of the reasons

why climate change adaptation is moving forward so slowly, as social processes are generally rather slow. The key challenge arising from this is to make climate change more visible and tangible in everyday life and to manage and stress the importance of adapting timely. As has been revealed in the empirical sections above, this will only be possible if people feel heard and taken on board in negotiation processes about climate change, about the risks resulting from it, as well as about the ways of adaptation. In order to understand the local context for such processes and be able to overcome the social barriers of adaptation, it is crucial to acknowledge the institutional setting (formal and informal), be sensible of identifications with and attachments to the place (including historic components) and be aware of the factors that influence risk perception locally and thus how it is framed in a certain area. The empirical analysis of this work has stressed that a local risk culture can be quite heterogeneous and the aspects of temporality, spatiality and sociality differ for different entities (people, politics, natural processes, built structures). As climate change and its dynamics are negotiated against this variety of local correlations, social interweaving and spatial meaning, it is ultimately necessary to take all these into account for a successful and collective negotiation process about climate change. It is only then that locals can use the chance to jointly adapt socially to changing circumstances and accordingly adaptation measures are likely to be accepted much more and even appreciated, being the result of a common process.

Change, whatsoever, often needs time, which is why negotiation processes should be started timely and granted time. By doing so, the community has the chance to reassemble and adapt, build trust on various levels, carefully handle the change they are confronted with and might learn how to live with rather than against climate change.

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[i] „[…] eine Sinneinheit von habitualisierten Formen des Handelns und der sozialen Interaktion, deren Sinn und Rechtfertigung der jeweiligen Kultur entstammen und deren dauerhafte Beachtung die umgebende Gesellschaft sichert.“ (Gukenbiehl 2016, p. 174)

[ii] „[…] alle (sozialen und rechtlichen) von Menschen bewusst geschaffenen Einrichtungen, deren Existenz exogen durch staatliche Autorität garantiert wird.“ (Gruševaja 2005, p. 4)

[iii] „Der Unterschied besteht darin, dass formelle Regeln im Prinzip durch Beschluss verändert werden können, während informelle Institutionen sich bewussten Änderungen entziehen.“ (Gruševaja 2005, p. 4)

[iv] „Identität ist ein *Akt sozialer Konstruktion*: Die eigene Person oder eine andere Person wird in einem Bedeutungsnetz erfaßt. Die Frage nach der Identität hat eine universelle und eine kulturell-spezifische Dimensionierung. Es geht immer um die Herstellung einer Passung zwischen dem subjektiven "Innen" und dem gesellschaftlichen "Außen", also um die Produktion einer *individuellen sozialen Verortung*. Die Notwendigkeit zur individuellen Identitätskonstruktion verweist auf das menschliche Grundbedürfnis nach *Anerkennung* und *Zugehörigkeit*.“ (Keupp 2000. p. 1)

[v] „Heimat ist ein Ort, an dem man gern ist; Heimat ist ein Gefühl, das an das Innerste rührt; Heimat sind die Menschen, die einem wichtig sind.” (Ratter et al. 2009, p. 11)

[vi] „Die Bindung eines Menschen an einen bestimmten Ort dient seiner Identitätssicherung. Über das Zugehörigkeitsgefühl zu einem Ort kann auch die Bindung an eine Gruppe erfolgen: Beides dient der Bildung der persönlichen Identität – ein Prozess, der das ganze Leben anhält.“ (Ratter et al. 2009, p. 12)

[vii] „möglicher negativer Ausgang bei einer Unternehmung […]” (https://www.duden.de/rechtschreibung/Risiko)

[viii] „[…] Risikokultur als dynamisches Geflecht aus relevanten Praktiken und Deutungen […] in dem und mit dem sich die beteiligten Akteure positionieren.“ (Kienitz and Herlyn 2018, p. 6)

[ix] “sozialen (z.B. kulturellen oder historischen) Konventionalisierungen, die Wahrnehmung und Wissen im Alltag beeinflussen.” (Flick 2000, p. 151)

[x] „Also im Moment ist ja sozusagen die Haltung und auch die Politik des Landes Schleswig-Holstein, das sozusagen ja auch verantwortlich ist für den Bau der Deiche, das sozusagen grundsätzlich die Deiche an der Stelle erhöht und verstärkt werden, wo sie auch heute sind.“ (IH#4, 97)

[xi] „Wir sind sicher, dass wir die erste Deichlinie, so wie sie heute existiert, noch für die nächsten 100 Jahre sichern können. Das heißt das Konzept des sogenannten Klimadeiches, was wir heute verwirklichen, von dem glauben wir sicher, dass es die Risiken, die insbesondere der Meeresspiegelanstieg für die Belastung mit sich bringt, wird sicher kehren können.“ (IH#5, 91)

[xii] “Es wird ja reagiert, wir bauen ja jetzt schon Klimadeiche. Jetzt auf über 8m und dann mit ner noch flacheren Böschung und so, dass die Haube oben drauf gesetzt werden kann. Das ist sehr gut nach vorne gedacht, ne, und das wird ja sicherlich auch 2100 oder 2150 halten, das muss man dann sehen. Wobei Extremsituationen können immer auftreten, wo das auch nicht reicht, das ist eben so.“ (IH#9, 279)

[xiii] „Also es wird sich definitiv verändern, ich glaube da führt kein Weg dran vorbei. Ich hoffe, dass es nicht ganz so erschreckend wird, wie einige Prognosen voraussagen, weil dann haben wir wirklich hier ein Problem. In 50 Jahren oder in 100 Jahren wird es nämlich dann diese Region so wie wir sie jetzt kennen gar nicht mehr geben. Dann gibt es keine Halligen mehr, dann gibt’s auch keine Inseln mehr, also insofern, das Marschland wird’s dann auch nicht mehr in der Form geben.“ (IH#6, 337)

[xiv] “Also in 100 Jahren wird es bestimmt anders aussehen und das Wattenmeer wird sich verändert haben und auch die Küste wird sich möglicherweise verändern. Und vieles wird davon abhängen auch, was wir heute für Entscheidungen treffen, glaube ich so. Wenn man so einen Deich, wenn man den so verstärkt oder verändert, dann hat das sozusagen Folgen für 50 Jahre oder 60, 70 Jahre, so eine Lebensdauer von so einem Bauwerk und das ist natürlich lange. Genau. Aber ja so ein bisschen allgemein, aber ich glaube auf jeden Fall, dass die Region sich verändern wird und wenn sozusagen der Klimawandel sich so auswirkt, wie wir es heute annehmen, dann werden wir auch in den nächsten 50 bis 100 Jahren um einige Erfahrungen reicher sein, was sozusagen Sturmfluten angeht und auch die Auswirkungen des Klimawandels zu spüren bekommen.“ (IH#4, 332)

[xv] „Und ich glaube unser Problem mit dem Klimawandel ist einfach unsere Wahrnehmung, die nicht darauf geeicht ist, so langfristig wirkende Entwicklungen zu merken, zu spüren, und darauf zu reagieren.“ (IH#2, 32)

[xvi] “Und das mit diesem Meeresspiegelanstieg das ist natürlich sehr abstrakt so und das ist natürlich auch dann ein Zeithorizont der ja Generationen überschreitet sozusagen und da wird es ja schwierig für den Einzelnen, also man guckt natürlich auch so wie lange habe ich hier noch, wie schnell wird das wirklich so bedrohlich, dass sich hier wirklich was ändert. Also das meinetwegen die Deiche auch nicht mehr erhöht werden können wie man das braucht.“ (IH#1, 109)

[xvii] „Die unendliche Deichung in die Höhe funktioniert ja nicht. […] Also das hat ja auch einfach technische und physikalische Gründe, dass das also irgendwo nicht mehr geht.“ (IH#8, 154)

[xviii] "Die Frage ist halt wirklich, keiner kann natürlich sagen, ob diese Modelle, die man jetzt mal gerechnet hat, mit dem Meeresspiegelanstieg, so auch zutreffend sind. […] Aber diese selbstverstärkenden Prozesse, die natürlich dann auch irgendwo stattfinden, die kann man im Grunde genommen nicht berechnen. […] Aber es ist natürlich die Frage, wie lange kann man das dann auch machen, wie lange ist das wirtschaftlich." (IH#6, 102)
[xix] "Aber ich denke schon, dass jetzt auch unter dem beschleunigten Meeresspiegelanstieg die Diskussionen dann anders laufen werden auch und die Gesellschaft wird auch fragen denke ich mal, vor allen Dingen dann, wenn es nicht mehr ganz so gut läuft in Deutschland: Was bringen uns die Deiche? Also diese Kosten-Nutzen-Analyse, die wird hier auch noch stärker in den Vordergrund treten, da bin ich mir ziemlich sicher." (IH#1, 465)
[xx] „Und wenn man sich rechtzeitig ein bisschen anpasst und vielleicht auch wieder auf Warften dann mehr baut in solchen Kögen, wo dann Wasser auch mal eingelassen wird, würde man vielleicht auf die Jahrhunderte gesehen sicherer fahren, um diesen Lebensraum auch weiter besiedeln zu können." (IH#1, 275)
[xxi] "Der Kampf gegen die Nordsee, das ist ja hier tief verwurzelt. Und das habe ich auch gleich am Anfang so mitgekriegt, als ich hier hochkam." (IH#1, 2)
[xxii] „Ich selber kann mit der Philosophie wenig anfangen, dem Meer Land zu geben, was bisher nicht zum Meer gehört, so." (IH#2, 55)
[xxiii] „Die Weite, das Meer, die Menschen." (IH#10, 16)
[xxiv] „Also ich denke, dass also die Landschaft schon für mich, also so ein Wohlgefühl entfaltet, also ich mag diese Weite und diese Größe und diese, diese Unbeengtheit […]." (IH#8, 80)
[xxv] "Mit den Gründen ist das so eine Sache, also ganz platt: Heimatgefühl. Und das ist was Emotionales im Wesentlichen." (IH#7, 56)
[xxvi] »Ja, das ist, das gerade Nordfriesland eine sehr wechselvolle Geschichte in Bezug auf die Nordsee hinter sich hat. Also es hat ja immer ein Auf und Ab der Landbildung und des Einbruchs der Nordsee in das von Menschen bewirtschaftete Land gegeben. Diese Geschichte ist gute 1000 Jahre alt. So und von daher hat der Mensch nach wie vor tief eingeprägt das Gefühl, er führt einen Kampf mit dem Meer. « (IH#5, 3)
[xxvii] »Aber der Anspruch eben dieses Land [...] statisch werden zu lassen und für […] kalkulierbare Lebensverhältnisse zu sorgen, [das ist] ein menschliches Anliegen. Also man soll sich darauf verlassen können, dass das unmittelbare Lebensumfeld immer so ist, wie man es sich vorstellt und dass [dort] keine Überraschungen passieren.« (IH#1, 31)
[xxviii] „das Meer hat ja eine unglaubliche Kraft, das fragt nicht danach, ob wir das gerne möchten." (IH#10, 92)
[xxix] „Und natürlich dann auch die Sicherheit vor der Nordsee. Wenn jemand die Nordsee kennt, ich bin jemand der sehr gerne an und in der Nordsee ist und das kennt, aber wenn man die Nordsee auch anders kennt, mit Sturm und mit den Gefahren, die da hinter stehen, dann sieht man auch, dass das auch für die, die dahinter wohnen eine Gefahr ist. Und deswegen ist der Deich irgendwo auch dann Synonym für Sicherheit und für Schutz." (IH#3, 14)
[xxx] „Das ist ja immer noch im Hinterkopf und wer hier groß geworden ist, der sieht das wahrscheinlich auch so. Oder wer das Meer mal gesehen hat bei richtiger Sturmflut, der kann sich da schon denken dabei, dass da auch Ängste sind, klar. Und die dann gesagt haben, nö, das ist was Neues und das hat's noch nie gegeben, also machen wir das nicht." (IH#10, 152)
[xxxi] „Das wird ja auch künftig dann mit der Deicherhöhung am Dockkoog auch so sein, dass da entsprechend dann so gebaut werden wird, dass man noch wieder aufstocken kann. Also der Deich wird ja erstmal so weit gebaut, wie er jetzt für notwendig erachtet wird und dann wird ja aber noch immer noch ein Puffer gelassen für oben, wo man auch sagen kann, wir können oben noch drauf satteln, wir können ihn noch höher machen entsprechend als Schutz. Und das halte ich für sinnvoll und auch für gut." (IH#3, 118)
[xxxii] „weil ich hab gemerkt bei den, schon bei den Diskussionen um den Dockkoog, da wurde gesagt: eingedeichtes Land wird nicht preisgegeben. Als ob das ein, also sozusagen Gesetz. Das macht man nicht." (IH#11, 193)
[xxxiii] "Ich sehe das so, dass das hier eine, auch teilweise, eine kulturpessimistische Haltung ist, die sich da so artikuliert. Wo man so Gegengewichte schaffen möchte zu der etablierten Kultur." (IH#2, 248)
[xxxiv] „Und ich weiß, dass wir mit dem Blanken Hans und dem Deichbau leben müssen. Das ist für mich schon so seit Kindheit und irgendwie ist das auch verinnerlicht. Nun bin ich dann nach Husum gezogen und hier ist eben das Leben an der Küste genauso, ist ja nicht anders als in Dithmarschen. Also für mich ist das eine ganze gewohnte Geschichte, dass dort draußen Meer ist, dass zwischen uns ein Deich sein muss, damit wir geschützt sind." (IH#12, 4)
[xxxv] „Das wollte man nicht. Damals wollte man da keine Ferienhaussiedlung. Jetzt war denn das Ferien-Resort in der Planung, wollte man auch nicht. Also der Husumer will im Grunde seinen Dockkoog so behalten, wie er ist." (IH#12, 323)

[xxxvi] „Aber es gibt eben einen Teil der Bevölkerung, die lieben diese Situation, die ich gerade beschrieben habe, die lieben diese Situation. Und die lieben den Zugang zur Nordsee den Husum hat und da geht man hin und spürt Frische und Wind und keine baulichen Anlagen und sonstiges, sondern ja?, und vielleicht noch einen Strandkorb und man zieht seinen Pullover aus und springt ins Wasser, so. Und die Weiter der Marsch vor der Tür, also wir haben ja hier gerade vier Landschaftsschutzgebiete, die begründen wir fast ausschließlich über Horizont und Weite, das muss man erstmal machen. Ja? Und somit haben also die Schafe und die Fennen und der Porrenkoog und was dazu gehört und ja, ich hab das gesagt, der frische Wind, das Erleben von Landschaft, das Erleben von Elementen, das hat, das lieben diese, das liebt dieser Teil“ (IH#8, 351)

[xxxvii] „Von da sehen, aber es ist eben auch so, dass wir gesagt haben, ne, wir wollen halt die Fläche, die wir da haben, auch als Schutz-Element nutzen und das halte ich auch für wichtig nach wie vor, weil man eben nicht weiß, wie sich das Ganze entwickeln wird.“ (IH#3, 429)

[xxxviii] „Aber es war eben so, dass auch der Bürgerwille mehrheitlich gesagt hat, die Idee ist zwar nett, aber ist nicht durchführbar, weil Sicherheit, ja. Der Aspekt war beim Bürger auch ganz stark, dass sie gesagt haben, ne das kann so nicht sein, wir wollen entsprechend dann hier auch den Schutz haben.“ (IH#3, 417)

[xxxix] „Frage Wirtschaftlichkeit habe ich mit Totalschaden beantwortet, weil ich denke wir hätten die 2. Deichlinie oder die Deichlinie übernehmen müssen, die bleibt. Wir hätten irgendwie den Verkehr dahin ertüchtigen müssen.“ (IH#7, 264)

[xl] „Und letztlich waren denn die Bedenken, was die jährlichen Betriebskosten angeht, weil das wird ja hier überflutet, und das wäre dann auch überflute worden und läge in Zuständigkeit der Stadt. Und das hät, da hätten wir unseren Kindern etwas ins Buch geschrieben, weil das ist wirklich, wenn man das erst jetzt einmal aufgemacht hätte, dann wäre es passiert, dann ist die Deichlinie wäre hier gewesen und man hätte dann mit diesen Folgekosten eben auch unsere Kinder belasten müssen“ (IH#12,67)

[xli] „Genau und von daher wird das eher, dieser Gradient wird größer und wenn jetzt irgendwann die Deiche nicht mehr zu erhöhen sind oder auch versagen sollten, dann ist natürlich die Katastrophe umso größer. Und diese Ideen, die gibt es ja schon länger, Karsten Reise ist ja sozusagen der prominenteste Verfechter dessen, dass man das Meer, zumindest kontrolliert, dann in die Köge auch wieder reinlässt um einfach eine Sedimentation da wieder hinzukriegen. Und dass man nicht weiter auf dieser starren Deichlinie sich bewegt, sondern so eine etwas angepasstere Form des Miteinanderlebens sage ich mal, so zwischen Nordsee und Mensch versucht hinzukriegen. Diesen Ansatz finde ich eigentlich auch verfolgenswert an dieser Stelle, also denn wenn es nachher Knall auf Fall kommt, das kann noch ein paar hundert Jahre dauern, dann kann es aber dann auch passieren, dass der Mensch gleich die ganze Marsch hier verliert und sich dann auf die Geest sofort zurückziehen muss. Weil ja, dann kommt mit einem Mal das Wattenmeer reingeschwappt in sehr tiefliegende Bereiche, die dann erstmal unter Wasser stehen werden und dann geht erstmal nichts mehr hier. Dann ist die ganze Infrastruktur weg. Und wenn man sich rechtzeitig ein bisschen anpasst und vielleicht auch wieder auf Warften dann mehr baut in solchen Kögen, wo dann Wasser auch mal eingelassen wird, würde man vielleicht auf die Jahrhunderte gesehen sicherer fahren, um diesen Lebensraum auch hier weiter besiedeln zu können.“ (IH#1, 263)

[xlii] „Der Saal war voll und da wurde eben auch zum Ausdruck gebracht, dass das eine verpasste Chance ist, auch von Leuten, die die ja zum Beispiel, jemand, ein sehr engagierter Mann aus Uelvesbüll, der sagte: meine Güte, wir müssen uns doch überlegen, wir können nicht immer höhere Deiche bauen, wir müssen vielleicht auch eingedeichtes Land opfern, wir müssen uns überlegen, ob wir Köge preisgeben. Und sowas sagte der und das fand ich höchste interessant und dachte, meine Güte, schade, dass man die Stimme von so jemandem nicht vorher gehört hat.“ (IH#11, 6)

[xliii] „Trotzdem ist natürlich gerade der Dockkoog eigentlich als unbewohnter Koog, sieht man mal von den touristischen Nutzungen dort ab, wäre er ja prädestinierter als viele andere Köge hier an der Küste, wo eben Besiedlung ist. Also von daher hätte es sich da angeboten, weil man es hätte neu bauen können, eine Warft dort errichten mit dem Hotel drauf zum Beispiel und dem Campingplatz aber auch daneben eventuell noch. Ja, also von daher ist es für mich auch eine verpasste Chance irgendwo. Also sowohl für den Tourismus, als auch eben für das Aufzeigen von anderen Möglichkeiten im Küstenschutz.“ (IH#1, 427)

[xliv] “Ja, wie geht die Gesellschaft damit um, dass Neue was so da ist, weil immer traditionell das anders war. Auch der Gedanke, dass es mal anders wiederum sein könnte, nie im Raum gestanden hat.“ (IH#8, 1)

[xlv] “Wär für [group] eine Option gewesen, aber ich muss ehrlicherweise sagen, innerhalb der [group] nicht durchgängig. […] Und einfach aus dieser Unsicherheit heraus ist das in der [group] auch denn letztlich nicht mehrheitsfähig gewesen. Ich persönlich hatte das auch als eine Möglichkeit angesehen – Husumer Hallig“ (IH#12, 72)

[xlvi] „Einzelne sind sicherlich, wären sicherlich dafür gewesen, aber denn stimmt so eine Fraktion ab und nach außen hin waren die sich dann einig.“ (IH#12, 280)
[xlvii] „Wir haben volles Vertrauen in unser LKN. Die machen das gut.” (IH#12,134)
[xlviii] “Ich meine jetzt letztlich die Sicherheit, ob es sicher ist oder nicht, das muss der LKN entscheiden, weil die haben die Kompetenz dazu.“ (IH#10, 273)
[xlix] „Aber ich sage mal diejenigen, die entscheiden, das sind auch diejenigen die denn auch die Antenne dafür haben, was künftig passieren wird. Die vorausschauend auch agieren dann und das ist wichtig.” (IH#3, 141)
[l] „[…] als ich hier hochkam, hab ich immer gehört, dass was Küstenschutzbehörde sagt, ist Gesetz.“ (IH#1, 444)
[li] „L: Glauben Sie, das wir momentan gut geschützt sind? – I: Ja, also das hat immer der Chef des LKN gesagt und ich glaube ihm.“ (IH#6, 100)
[lii] L:„Zumal ja auch seitens des LKN gesagt worden ist: naja, also ob wir den nun da verstärken oder da, tut der Sicherheit keinen Abbruch“ - I: „ja und spart uns 7 Millionen“ - L: „[…] weil es ein kürzerer Deich ist […]“ - I: „ja, genau. Da muss man dann wieder sagen, so, ja. Also bestimmte Handlungen kann man immer erst verstehen, wenn man alle möglichen Motive kennt und in Zusammenhang bringt. Nun will ich dem LKN nicht unterstellen, dass hier er das wegen des Geldes wollte oder für möglich hält, sondern es gibt noch andere Dinge. Also der LKN brauchte Ausgleichsflächen für eine Deichverstärkung im Norden, wo man dem Nationalpark etwas weggenommen hat.“ (IH#2, 392)
[liii] „Und hier hatte ich das erste Mal das Gefühl, was Küstenschutzbehörde auch sagt, ist kein Gesetz mehr. Also dass die Küstenschutzbehörde vielleicht schon gedanklich weiter war, als in der Politik oder auch in der Bevölkerung. So in der, zumindest in der veröffentlichten Hauptmeinung sozusagen. Den Eindruck habe ich gehabt. Also man glaubte letztendlich dann [LKN-Chef] auch nicht mehr das, was er eben zur Deichsicherheit sagt dann bei der Husumer Hallig. Das stelle man dann doch in Abrede […].“ (IH#1, 444)
[liv] „Und das hat mich dann aber auch gewundert, dass hier unser Amt für, wie heißt das noch? Landesbetrieb für Küstenschutz. Die da dem aber auch viel offener und aufgeschlossener gegenüberstanden – auch diesem Projekt. […] Also die sind jetzt gar nicht so fürchterlich konservativ vielleicht, wie einige Politiker hier in Stadt und Kreis.“ (IH#10, 123)
[lv] „So. Und dann nahm das Ganze aber eine Richtung, wo wir gesagt haben, eigentlich war das nicht so der Wunsch des Ausschusses, sondern das ging in eine andere Richtung. Gesteuert vom WWF, die eben dann auch noch Gelder akquiriert haben und haben natürlich dann auch massiv dann eingewirkt, dass es in ihre Richtung geht. Und das führte dazu, dass letztendlich dann die Husumer Hallig plötzlich da war. Wo wir uns gedacht haben, das war eigentlich gar nicht das Ansinnen. Wir wollten eine Weiterentwicklung des Dockkooges haben, ne vernünftige, und keine Husumer Hallig.“ (IH#3, 241)
[lvi] “Und ein Fehler, glaube ich, war, dass man die Moderation in diesem Prozess an den WWF gegeben hat. Besser wäre meines Erachtens eine Beteiligung des WWF gewesen, dann kann er auch seine Auffassung pointiert einbringen uns muss sich da nicht irgendwie um Kompromisse bemühen. Von der Rolle her glaube ich wäre es besser gewesen, wenn die Moderation des Prozesses neutral angelegt gewesen wäre.“ (IH#2, 360)
[lvii] “Weil wenn ich da die [Leitung WWF Husum] und Konsorten dort sehe, das muss ich nicht unbedingt haben.“ (IH#9, 486)
[lviii] „Ich kann nie beurteilen, hat jetzt [Leitung WWF Husum] irgendwann mal irgendeinem der Politiker auf die Füße getreten und die sagen deshalb schon nee, wenn der WWF so ein Projekt macht, ist das doof.“ (IH#6, 260)
[lix] “Und ich habe halt wahrgenommen, dass andere Vertreterinnen und Vertreter ihre Favoriten hatten und also sowas von offenkundig absichtlich schlecht benotet haben, dass was ihnen nicht in den Kram passte vom Ergebnis her. Dass ich da ein bisschen gefrustet war an der Stelle. Und es waren, na gut, ist jetzt auch egal, waren vor allem die Vertreter von der IHK und der Wirtschaft. Also die alles wirklich totgepunktet haben.“ (IH#7, 269)
[lx] „Wenn eine Fraktion sich berät und sich Gedanken macht und sie haben in ihrer Fraktion zum Teil ja auch Leute aus dem Baubereich oder die sich hier in der, im Landschaftsschutz oder auch im Küstenschutz bewegen. Bei SPD und bei CDU, bei beiden gibt es solche. Und die geben die Empfehlung: Leute, was da alles geredet wird ist Unsinn, wir müssen das so machen. Dann könnt ich mir vorstellen, dass man beratungsresistent ist, ja. Dass man das gar nicht hören will oder man hat eine Meinung gefasst, bevor man diese Sachen alle zur Verfügung hatte.“ (IH#12, 239)
[lxi] „Und ich kanns ja sagen, also einer von der CDU, der mitabgestimmt hatte, fragte: Wo kriegt man denn dieses Papier? Der hat das also wirklich nicht lesen können.“ (IH#12, 224)
[lxii] „[…]und das wurde eigentlich von allen Fraktionen/Parteien da im Umweltausschuss für gut geheißen, dass man eben den WWF da beauftragt hat eine Studie zu erstellen mit verschiedenen Interessengruppen.“ (IH#1, 306)

[lxiii] „Da muss man jetzt zu verstehen, das ist ja nicht ne Projektgruppe die im Auftrag der Stadt also sich entwickelt hat, sondern die mit dem Wohlwollen des Ausschusses ihren Weg gegangen ist.“ (IH#8, 437)
[lxiv] „Wir haben es in jedem Fall aufgenommen als offenen Arbeitsauftrag.“ (IH#5, 169)
[lxv] „Oder hier, ich sag mal, das war kein ergebnisoffener Prozess. Der war nicht so angelegt. Also wenn das nicht gewollt ist, dann soll man auch nicht das so laufen lassen. Also, das haben wir auch denke ich eine Zeit lang zu naiv begleitet.“ (IH#2, 378)
[lxvi] „[…] also Ziel war eine touristische Nutzung des Dockkoog. Nicht ein ökologisches Ziel oder so, sondern eine touristische Nutzung des Dockkoogs. (IH#2, 289) […] Es gab zu keiner Zeit einen Auftrag, den Koog an sich in Frage zu stellen.“ (IH#2, 300)
[lxvii] „Es ist sehr gut möglich, dass im, dass sie, dass Ihnen, das sie das Gefühl hatten Ihnen würde die Planungshoheit weggenommen. Wobei das absolut nicht so war, nech. Denn die Entscheidung lag ganz eindeutig bei Ihnen, es war, wäre für die Politiker ne Entlastung gewesen. Denn das ist wirklich viel Arbeit gewesen“ (IH#11, 371)
[lxviii] “Dass einige der Akteure möglicherweise das Gefühl hatten, oder dass der Eindruck bei Ihnen da war, dass ihr Vorschlag auch der ist, der gemacht wird, diese Diskrepanz konnten wir nicht auflösen.“ (IH#2, 296)
[lxix] „Und wir müssen natürlich auch immer aufpassen, dass wir neben unseren gesetzlich vorgesehenen Gremien keine Parallelstrukturen schaffen, die keine demokratische Legitimation haben.“ (IH#7, 402)
[lxx] „So. Und dann nahm das Ganze aber eine Richtung, wo wir gesagt haben, eigentlich war das nicht so der Wunsch des Ausschusses, sondern das ging in eine andere Richtung. Gesteuert vom WWF, die eben dann auch noch Gelder akquiriert haben und haben natürlich dann auch massiv dann eingewirkt, dass es in ihre Richtung geht. Und das führte dazu, dass letztendlich dann die Husumer Hallig plötzlich da war. Wo wir uns gedacht haben, das war eigentlich gar nicht das Ansinnen. Wir wollten eine Weiterentwicklung des Dockkooges haben, ne vernünftige, und keine Husumer Hallig.“ (IH#3, 241)
[lxxi] „Was ich unterschätzt habe ist, die….ja, dass es keine ernsthafte Verbindung in dieser Form, also dieses sich unvoreingenommen angucken, sich respektieren, das in seine eigenen Entscheidungsfindung einbauen, zwischen der Politik und zwischen denen, die sich dieser Aufgabe gewidmet haben, gegeben hat.“ (IH#5, 225)
[lxxii] „Und es wurde regelmäßig über den Stand der Arbeiten, auch in der Politik, auch in der Öffentlichkeit, berichtet. Und insofern, bis hin zum Ergebnis muss ich sagen, eines der herausragenden Beispiele, wie man heute eine solche, von den Grundüberlegungen hin bis zu der Empfehlung von Lösungen, eine solche Aufgabe gestaltet werden kann.“ (IH#5, 144)
[lxxiii] „Negativ eben dann, dass wir nicht genügend Transparenz gehabt haben, das fehlte einfach bei der ganzen Sache, das wir rechtzeitig entsprechend informiert worden sind. Auch der Ausschuss vielmehr ja, der das Ganze initiiert hat.“ (IH#3, 408)
[lxxiv] „Und wir haben auch vereinbart mit der Politik sozusagen auch einen Zeitplan und einen Rahmen vereinbart, in dem wir uns damit auseinandersetzen.“ (IH#4, 204)
[lxxv] „Also wir hatten die Ergebnisse, wir hatten die Zusammenfassung, wir hatten die Präferenz. Und sie deckte sich nicht mit unseren Erwartungen, so.“ (IH#2, 319)
[lxxvi] “Und dann plötzlich gab es eine Initiative von SPD und CDU, die beiden großen Fraktionen, und die haben gesagt wir schmeißen jetzt mal diese zwei Varianten raus oder die eine Hauptvariante, wo es darum geht, den Dockkoog auszudeichen, die Husumer Hallig, das wollen wir nicht. Wir beschneiden sozusagen, den eigentlich ja vom Umweltausschuss gegebenen Auftrag, den beschneiden wir jetzt mal radikal, und ihr sollt euch für den Rest eurer Arbeitszeit, Arbeitsdauer dann nur noch mit der Variante befassen, wo der Dockkoog-Deich verstärkt wird. Und das fand ich ein ungeheuerliches Vorgehen an dieser Stelle, also so kann man auch nicht umgehen. So kann man auch nicht mit den Leuten umgehen, die in dieser Arbeitsgruppe waren, das war ja nun wirklich breit gefächert“ (IH#1, 326)
[lxxvii] „Das Problem war nur, dass die Stadtpolitik hier in Husum dann schon bevor diese Ergebnisse präsentiert wurden, im Grunde genommen ein Denkverbot für ne Variante erteilt hat […]“(IH#6,179)
[lxxviii] “Aber wie gesagt, völliger Unsinn zu sagen, wir initiieren quasi eine Projektgruppe und dann greifen wir quasi Ergebnisse vor oder lassen Ergebnisse nicht zu.” (IH#6, 249)
[lxxix] „So, dass dann, ich sag mal, der Kern, das vorzeitig ein politischer Beschluss gefasst worden ist, ist ja, dass man eine bestimmt Variante eben so nicht wollte. So, das hat eine Mehrheit gefunden in der Husumer Stadtpolitik und insofern ist die Arbeit der Projektgruppe zwar dadurch nicht nachhaltig beeinflusst worden, als das wir das Ergebnis trotzdem fertiggestellt haben, aber es wurde natürlich, ich sag mal, gerade in der Kommunikation in die Öffentlichkeit, an die Bürger der Stadt Husum heran, hier mit einer selektiven Vorauswahl gearbeitet worden. Und das ist schade und das haben eigentlich, und das passt nicht zu dem Auftrag, so wie ihn die Projektgruppe wahrgenommen hat.“ (IH#5, 172)

[lxxx] „also es gab, wie gesagt, es gab nie eine, bis heute gibt es keine vernünftige Begründung, außer die, wie gesagt, man gibt kein eingedeichtes Land auf“ (IH#6, 289)
[lxxxi] „das sind dann oftmals männliche Alphatiere, die einen raushauen müssen, an der Stelle wo es keine Not tut. (IH#7, 294) Also das ist einfach Machgeplänkel gewesen.“ (IH#7, 312)
[lxxxii] “Genau und am Ende ist vielleicht die Kommunikation sozusagen zwischen der Gruppe und […] der politischen Ebene […]…also da fehlte es an gegenseitigem Verständnis, schien mit. Oder man hat sich irgendwie nicht so gut, man hat nicht so verstanden, warum oder wie das nun so lief.“ (IH#4, 319)
[lxxxiii] „Wenn man nochmal beginnen dürfte, dann hätte man in stärkerer Form diesen Dialog führen müssen direkt mit der Politik, um auszuloten was geht und was geht nicht. Anstatt hinterher zu erkennen, was aus Sicht von bestimmten einzelnen, eben von vorneherein wohl nicht gegangen wäre.“ (IH#5, 232)
[lxxxiv] „Denk ich schon, also dass das was gemacht hat mit den Leuten, auch mit den Leuten, die jetzt konventionell den Deich verstärken wollen. Also zum Nachdenken hat das auf jeden Fall geführt.“ (IH#1, 392)
[lxxxv] „Und ich glaube, dass durch solche Verfahren, dass man Akzeptanz schaffen kann und Verständnis für die machbaren oder nicht machbaren, oder akzeptierten und nicht akzeptierten Lösungen. Und wir haben in dem Verfahren herausgefunden, was politisch akzeptiert ist, wir haben aber auch ausgelotet, was vielleicht konzeptionell machbar wäre, wo vielleicht auch Chancen liegen und auch Schnitt- …sag ich mal win-win, so haben wir das ja irgendwie so genannt, aber wo auch Chancen sag ich mal, gemeinsam was zu erreichen sozusagen, Küstenschutz, Tourismus, Stadt Husum, Naturschutz, wo vielleicht Schnittmengen liegen. Darauf muss man sich dann einlassen, da muss man Mut haben, dass dann zu machen und es muss natürlich akzeptiert sein.“ (IH#4, 242)
[lxxxvi] „Wir sind also weg von einem Tabu ‚Da darfst du doch gar nicht drüber reden‘, sondern wir sind hin da, dass man auch drüber reden darf. Und dann muss man nur aufpassen, dass man da auch vernünftig ins Gespräch kommt.“ (IH#8, 195)
[lxxxvii] :“Und wir waren uns da eigentlich alle super einig. Also dass diese Variante eigentlich eine tolle Variante wäre.” (IH#6, 237).
[lxxxviii] „Und dann haben wir weiter gebastelt und besprochen und miteinander gestritten. Das war ja nicht alles homogen.” (IH#8, 459)
[lxxxix] “Es sind methodisch irgendwann auch so Grenzen gesetzt, also idealerweise wäre das immer auf dem gleichen Stand und immer alle mit drin und so, aber manchmal geht’s dann nicht mehr.”(IH#8, 487)
[xc] “Das ist oftmals eine hohe Herausforderung an Sozial- und Methodenkompetenz, können lange auch nicht immer alle leisten […]” (IH#7, 335).
[xci] „Das Thema Hotel in Husum und dann am Deich ist sowas von aufgeheizt, zu dem Zeitpunkt schon. Hatte man überhaupt eine Chance in eine neue und andere Diskussion zu kommen? Gabs die überhaupt zu dem Zeitpunkt, als man begonnen hat oder war schon Bürgerwerkstatt […] das war doch schon alles Vergangenheit. “ (IH#8, 507)
[xcii] „habe ich überhaupt noch ne Offenheit und Bereitschaft oder bin ich so satt von dem Thema in Husum, dass ich dit nicht mehr haben will.“ (IH#8, 523)
[xciii] „Ja, also bei den Fachleuten allemal. Die Vorausplanungen gehen heute sowohl in der Wasserwirtschaft als auch im Küstenschutz über 50 bzw. 100 Jahre. Also insofern sind die möglichen, zukünftigen Szenarien schon heute in den Planungen eingepreist.“ (IH#5, 109)
[xciv] „..die Erkenntnisse, die dazu kommen, die man entsprechend gewinnt auch über die Wissenschaft, die werden sicherlich auch in den Küstenschutz einfließen. Also es kann gut sein, dass da Alternativen gemacht werden irgendwann. [….] Was jetzt eben noch geschlossen ist, könnten vielleicht dann irgendwie, wie auch immer, dazu führen, dass man sagt, ok, wir haben neue Erkenntnisse, die dazu führen, dass man sagt, ok, wenn wir da entsprechend den Druck nehmen vom Wasser, dass der Deich an einer anderen Stelle eben hält.“ (IH#3, 355)
[xcv] »Das ein Deich hier gebrochen ist […], ist ewig her, gefühlt. [Ich] will nicht sagen, dass so ne gewisse Sorglosigkeit bei dem Thema eingetreten ist, aber [der] Mensch hat [sich] doch jetzt so nen kleinen Vorsprung […] irgendwo heraus gearbeitet. Gefühlt zumindest. « (IH#1, 189)
[xcvi] »Aber wir haben auch einen ganz großen Teil der Bevölkerung, die […] ehrlicherweise andere Probleme haben. « (IH#9, 549)
[xcvii] » ...also der Klimawandel insgesamt und auch der Meeresspiegelanstieg, das nehmen vermutlich mehr Leute wahr, als es vor 20 Jahren der Fall war, aber das daraus Ableitungen oder Konsequenzen gezogen werden und es insgesamt in der Küstenbevölkerung ein größeres Risikobewusstsein gibt, das jetzt jeder Vorsorge trifft, dass sehe ich nicht. « (IH# 4,139)

[xcviii] „Der Umgang mit Risiken verändert sich sehr langsam. Auf der einen Seite sind Gemeinden, insbesondere auch in Nordfriesland, auch auf den Inseln, schon aktiv dran, sich mit Themen des Klimaschutzes zu profilieren. Also Beispiel CO2-neutrale Gemeinden, der Kreis Nordfriesland möchte gerne Vorreiter sein in Klimaschutz-Maßnahmen, eingedenk der Bedrohung, die insbesondere dieser Kreis ja nunmal ausgesetzt ist. Das Verhalten der Menschen im Täglichen, da kann ich noch keine großen Veränderungen feststellen, da muss noch eine Menge passieren, da müssen wir auf die nächste Generation bauen, dass sie sich dessen stärker bewusst wird." (IH#5, 100)

Appendix

Interview guide – English version

Research question:

How do climate change adaptation discourses influence local negotiation processes and how do these affect the local risk culture and materiality of coastal areas??

2. What kind of climate change adaptation discourses/ -strategies exist in the case studies?
3. How are local negotiation processes and practices about climate change adaptation structured and which dynamics were/are they subject to?
4. In what way do different institutional contexts affect certain spatial visions and which role do institutional actors fill?
5. In what way did the handling of or dealing with risks change against the background of climate change and how is this change expressed?
6. Which structuring role do attachments to the dwelling place and spatial concepts have in regard to contested or agreed-upon negotiation processes?

Why am I here:

I am interested in the negotiation processes that result in decisions for specific projects and thus to find out how coastal areas are shaped.

I would like to record our conversation to be able to listen to it again for details that can't be written down while talking. The anonymised data will be used in my dissertation and for publications but will in no case be forwarded to third parties.

Guiding questions:

1. *Social and emotional attachment to the dwelling place*
   We have a saying in Northern Germany: "God created the sea, the Frisians the coast"

   - do you have something similar here?
   - Can you relate to this saying in this area?
   - How long have you been living here? Why? What are the reasons that you stayed?
   - What does it mean for you to live here?
   - What does home (Heimat) mean to you?
   - Did your relation to your home change over the past years?
     - If so, how would you personally explain these changes?
     - Are there specific or crucial events that changed your relation to home?
       - What exactly has changed?
   - Do you see any problems or threats for your region?
   - How severe are these threats?

2. *Place-based experiences and dealing with climate change adaptation*

   - Generally speaking: What is climate change for you?
   - Is climate change a relevant topic for you? Why/ why not?

- How and where is climate change visible here in your environs?
- Which consequences or impacts do these events have for/on coastal protection?
- How would you assess the current coastal protection and the safety of dikes?
- How do current and future adaptation-strategies look like?
- Did the handling of or the dealing with risks change in the past?
- Based on which criteria are current or future projects prioritised?

3. *Dealing with new adaptation strategies and their effect on negotiation processes*

   Since a few years, there are more and more new concepts that should counteract the impact of climate change and provide an adaptation to the altered conditions.

   - What do you understand by "new strategies"/ What could that be?
   - To what extent are "new strategies" relevant for this region/ important for the future?
   - Which options would be possible?/ are desirable?/are feasible?

   The Medmerry project represents such a new concept.

   - Can you describe the process? (What was your role?)
   - In what way did this project change common practices/ your work?
   - What kind of experiences did you make in the course of the project? In what way did it differ from business as usual?
   - What were crucial points or aspects that influenced the success or failure? (structurally, personally, politically, historically)
   - Would the outcome be the same, if the national strategy would be different?
   - With hindsight: Did your perspective on the project in special and on coastal protection in general change?
   - What are positive/negative aspects and consequences of the project?
   - How do you assess these consequences?

4. *A look ahead*

   - In what way will this region change in regard to climate change?
   - (Which problems/challenges may emerge from that?)

5. *Sociometry*

   Gender: male ☐ female ☐ X ☐

   What is your year of birth? _____

   Since when do you live in this area? _____

   (Where did you grow up?) _____

   What kind of training do you have?_____

Interviewleitfaden – German version

Fragestellung:

Welchen Einfluss haben Klimawandelanpassungs-Diskurse auf lokale Aushandlungsprozesse und wie wirken sich diese auf die lokale Risikokultur und die Materialität von Küstenräumen aus?

1. Welche Klimawandelanpassungsdiskurse / -strategien existieren in den Untersuchungsräumen?
2. Wie sind die örtlichen Aushandlungsprozesse und –praktiken dieser Klimaanpassung strukturiert und welchen Dynamiken unterlagen und unterliegen sie?
3. Inwiefern werden räumliche Vorstellungen von unterschiedlichen institutionellen Kontexten beeinflusst und welche Rollen nehmen institutionelle Akteure ein?
4. Inwiefern hat sich der Umgang mit Risiken vor dem Hintergrund des Klimawandels geändert und wie äußert sich dieser Wandel?
5. Welche strukturierende Rolle spielen Ortsbindungen und Raumkonzepte im Kontext umkämpfter oder auch gemeinschaftlich geführter Aushandlungsprozesse?

Warum ich hier bin:

Ich möchte mehr über Aushandlungsprozesse herausfinden, die zu bestimmten Entscheidungen führen und somit herausfinden, wie Küstenräume geformt werden.

Ich würde unser Gespräch gerne aufnehmen, damit Details nicht verloren gehen, die während des Gesprächs nicht aufgeschrieben werden können. Die anonymisierten Daten werde ich in meiner Dissertation und in Veröffentlichungen nutzen, werde sie aber in keinem Fall an Dritte weitergeben.

Leitfragen:

1. *Soziale und emotionale Orts- und Raumbindung*

   Historisch gesehen ist die nordfriesische Landschaft stark durch den Menschen gekennzeichnet. Nicht umsonst gibt es den bekannten Spruch. „Gott schuf das Meer; der Friese die Küste“.

   - Welche Bedeutung hat dieser Spruch für Sie?
   - Seit wann wohnen Sie hier? Und warum? Warum sind Sie hiergeblieben?
   - Was bedeutet es für Sie, hier zu leben?
   - Was ist Heimat für Sie?
   - Hat sich Ihre Beziehung zu ihrer Heimat über die Jahre verändert?
     - Wie erklären Sie sich diese Veränderung?
     - Gab es spezifische oder entscheidende Ereignisse, durch die sich Ihre Beziehung zu Ihrer Heimat verändert hat?
       - Welche waren das und was genau hat sich dadurch verändert?
   - Sehen Sie Probleme/Bedrohungen für ihre Heimat?
   - Wie stark schätzen Sie diese Bedrohung ein?

2. *Ortsbezogene Erfahrungen und Formen des Umgangs mit Klimawandelanpassung*

   - Ganz generell gefragt: Was ist Klimawandel für Sie?
   - Ist das Thema Klimawandel für Sie relevant und warum/warum nicht?

- Wie und wo zeigt sich für Sie ein möglicher Klimawandel in dieser Region?
- Welche Auswirkungen hatten oder haben diese Ereignisse für den Küstenschutz?
- Wie bewerten Sie den Küstenschutz und die Deichsicherheit heute?
- Wie sehen derzeitige und zukünftige Anpassungs-Strategien aus?
- Hat sich der Umgang mit Risiken in den vergangenen Jahren verändert?
- Nach welchen Kriterien werden derzeitige oder zukünftige Anpassungsprojekte priorisiert?

3. *Umgang mit neuen Anpassungs-Strategien und deren Auswirkung auf Aushandlungsprozesse*

   Seit einigen Jahren gibt es vermehrt neue Strategien, die den Auswirkungen des Klimawandels entgegenwirken sollen bzw. eine Anpassung an die veränderten Bedingungen darstellen.

   - Was stellen Sie sich unter „neuen Strategien" vor – was kann das i.M.n. sein?
   - Inwiefern sind „neue Strategien" für diese Region relevant/für die Zukunft wichtig? Welche Optionen wären für Sie denkbar/wünschenswert und warum?
     - Welche nicht? Warum nicht?

   Mit dem Dockkoog Projekt wurde ein neues Konzept initiiert.

   - Können Sie mir den Prozess beschreiben? (Was war ihre Rolle in dem Projekt?)
   - Inwiefern hat dies Ihre gängige Praxis/ihre Arbeit beeinflusst?
   - Welche Erfahrungen haben sie (und andere) gemacht? Was war anders als sonst?
   - Wo lagen die Knackpunkte, die einen Erfolg oder ein Scheitern beeinflusst haben? (Strukturell, personell, politisch, historisch)
   - (Wäre das Projekt anders gelaufen, wenn es mit der Strategie des Landes konform gewesen wäre?)
   - Rückblickend betrachtet: Hat sich ihr Blick auf die Sachlage verändert?
   - Was sind positive/negative Folgen aus diesem Projekt?
   - Wie bewerten Sie diese Folgen?

4. *Blick in die Zukunft*
   - Wie wird sich die Region in Zukunft mit Blick auf den Klimawandel verändern?
   - (Welche Probleme und Herausforderungen könnten sich daraus Ihrer Meinung nach entwickeln?)
5. *Soziometrie:*

Geschlecht: männlich ☐ weiblich ☐ X ☐

In welchem Jahr sind Sie geboren? _____

Seit wann leben Sie in der Gegend hier? _____

(Wo sind Sie aufgewachsen?) _____

Was für ein(e) Ausbildung/Studium haben Sie absolviert? _____

Table 7: Steps towards climate change adaptation for coastal protection in the European Union, the UK and Germany

	United Kingdom	**European Union**	**Germany**
2001	Going Dutch I ▪ Proposed managed realignment at Medmerry by Dutch planners ▪ Long-term and integrated approach needed		Generalplan Küstenschutz ▪ Climate enhancement + 50cm
2002		Recommendation on ICZM (2002/413/EC)	
2004	Foresigth Future Flooding Report ▪ Scenarios and possible responses: ▪ Catchment-wide storage ▪ Land-use planning ▪ Realign coastal defences ▪ Problem of sustainability and social justice in combination		
2005	**Making Space for Water** (DEFRA) ▪ Ensure adaptability to climate change ▪ Consider impact of flood risk in planning processes ▪ Sustainable development: make use of rural land-use solutions -> wetlands, washlands, MR of coasts and rivers		
2006			
2007		Floods Directive (2007/60/EG) ▪ Flood risk maps by 2013 ▪ Flood risk management plans by 2015	
2008	• Pagham to East Head Coastal Defence Strategy ▪ MR at Medmerry proposed • Going Dutch II		Deutsche Anpassungsstrategie an den Klimawandel (DAS) ▪ Coastal protection through spatial planning and passive protective measures
2009	• Coastal Change Pathfinder Project • MStAG		Sonderrahmenplan "Maßnahmen des Küstenschutzes infolge des Klimawandels"

			▪ Additional funds for the adaptation of coastal protection to climate change
2010	• Flood and Water Management Act • North Solent Shoreline Management Plan		
2011	• National Flood and Coastal Risk Management Strategy • Start of construction works MR		
2012			Anpassung an den Klimawandel - Küstenschutz (Umweltbundesamt)[26] ▪ " Raumplanung und IKZM müssen das alte Leitbild "Verteidigung um jeden Preis" überprüfen und in Richtung des neuen Leitbilds "Mit dem Wasser leben" weiterentwickeln." (S. 4) ▪ "Weiche" Küstenschutzmaßnahmen sowie die (wieder-) Anlage von Flachwasserräumen könnten unterstützt und damit zugleich Natur- und Klimaschutzziele erreicht werden (Win-Win-Potenziale)" ▪ "Innovative Küstenschutzmaßnahmen brauchen zielkonform gesetzte ökonomische Anreize" (S. 5) ▪ "Neu- bzw. wiedergeschaffene Wasserflächen hinter der bestehenden oder vormaligen Deichlinie könnten für den Tourismus und/oder die Aquakultur interessant sein." ▪ "Bestehende ökonomische Anreize stehen innovativen und flächenhaften

[26] https://www.umweltbundesamt.de/publikationen/anpassung-an-den-klimawandel-kuestenschutz

			Küstenschutzstrategien häufig entgegen." (Bsp. Agrarsubventionen) **Generaplan Küstenschutz - Fortschreibung** ▪ Reinforcement of the Dockkoog dike ▪ New shape of dikes with space for future enhancement on top
2013	• **Completion of Medmerry MR Scheme**		
2015			• **Strategie für das Wattenmeer 2100** ▪ "unusual solutions" to be tested in **pilot projects**" • **Start of the project group "Zukunft Dockkoog"**
2017			