Tides of Knowledge:

Navigating Local Knowledge, Cultural Values, and Environmental Adaptation across Wadden Sea islands



MSc. Thesis by Fenne Jasmijn Abels

[May, 2026]

Water Resources Management

WAGENINGEN
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Front page images:

Right: Image of salt marshes on the southern shore of Rømø

Middle: Image of the western coastline of Sylt near Westerland

Left: Image of ‘t Oerd, dune landscape on the eastern side of Ameland

Pictures taken by author.

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Master thesis Water Resources Management submitted in partial fulfilment of the degree of Master of Science in International Land and Water Management at Wageningen University, the Netherlands

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[May, 2026]

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It behaved as everything does on a Wadden island: it moved. For everything moves there, everything is on its way: the sand on the crest of the dune, the sand beneath the dune, the sand on the slopes of the dune; the clouds drifting overhead; the mist rising up from the sea; the silt that the sea silently churns loose in the channels; the crows above the dune valleys; the passersby with their memories. – Mathijs Deen, De Wadden (2013)

Acknowledgements

I would like to express my deepest gratitude to my supervisor, Jennifer Veilleux, for supporting me throughout this great journey of research, trusting me when I wanted to take different paths, and challenging me to explore new perspectives. I am also extremely grateful to my co-supervisor, Meike Klarenbeek, for coming in to help push this thesis to the finish line.

I would like to thank all the participants of this research; hearing your stories opened my eyes to so many new insights and inspired me to reevaluate the ways I care about my environment. You reminded me that, even in an increasingly globalised world, there is still so much pride, love, and connection tied to locality and landscape. Experiencing your openness and kindness made this thesis research a wonderful journey.

A special thank you goes to Bente Bjerrum and Nature Centre Tønnisgård for helping me find my way around Rømø, introducing me to the community, and offering me a place to work and feel welcome. I would also like to thank Lasse Sander from the Alfred Wegener Institute on Sylt for hosting me and helping me connect with residents on the island. Truly, without your help, I would not have been able to conduct this research.

I would further like to thank Camille Seaman, who showed me around the Danish Wadden region during my time on Rømø. I am especially grateful for her involvement in the photography workshop we organised on the island. I also want to thank the team from the '**Coastal Communities' Responses to Environmental Disruption of Coastlines and Estuaries'** project, for giving me the opportunity to carry out this research and supporting me through knowledge exchange during this thesis.

To my family and friends: thank you for listening to me geek out about the Wadden Sea over the past months. Thank you for listening to both my enthusiastic ramblings and frustrated rants, and for supporting me through the writing process.

Lastly, I would like to thank the Wadden Sea itself. What a special place you are, and how wonderful it was to be able to experience you through the eyes of your communities. Thank you for showing me your roughness, calmness, richness and dullness. You are a reminder that everything is dynamic, and to keep moving.

Abstract

This thesis examines how cultural values, local knowledge and perceptions of governance shape community agency and adaptation practices in response to environmental disruptions on the Wadden Sea islands of Rømø (Denmark), Sylt (Germany), and Ameland (Netherlands). As these coastal islands face increasing storms, flooding, erosion, and the impacts of climate change, adaptation strategies often prioritise technical expertise while overlooking situated local knowledge.

The research applies a qualitative case study design and uses semi-structured interviews and auto-photography, allowing participants to express their relationships with the islands both verbally and visually. A relational epistemology framework is applied, emphasising narrative and embodied knowledge, place-embedded agency, and epistemic legitimacy.

The findings show that cultural values and local knowledge are central to how environmental disruptions are experienced and interpreted. Rather than being seen solely as threats, disruptions such as storms, erosion, and gradual environmental changes are widely normalised and embedded in everyday island life. Strong place attachment, community cohesion and knowledge transmission shape how residents relate to these disruptions and generate forms of place-embedded agency, where adaptation is embedded in daily routines, embodied experience, and local practices of care. Governance interactions vary significantly across the islands, particularly in trust, participation, and recognition of local knowledge, which directly influence how included communities feel in decision-making processes and how they organise themselves to respond to environmental disruptions.

This thesis demonstrates the importance of recognising local and experiential knowledge within climate adaptation governance. By applying a relational epistemology framework, the research contributes to more inclusive and situated understandings of adaptation in coastal environments.

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1. Introduction

The Wadden Sea region, stretching along the coasts of Denmark, Germany and the Netherlands, is a UNESCO World Heritage Site, renowned for being rich in both biodiversity and cultural heritage (Döring et al., 2021; Döring & Ratter, 2021; Mose et al., 2025; Renes, 2018).

However, this cultural coastal landscape is experiencing the challenges of climate change. Sea-level rise is the primary driver of these challenges in the region (Becherer et al., 2018; Hofstede & Stock, 2018). Increased sea-level rise is drowning the intertidal mudflats and increasing the frequency and severity of unpredictable weather patterns, including heavy rainfall and storm surges (Hofstede & Stock, 2018; Huismans et al., 2022; Konyssova et al., 2025). The loss of mudflats means habitat loss for millions of migratory birds (Konyssova et al., 2025). Sea-level rise is also a threat to coastal safety, as drowned mudflats and marshes cannot act as a natural buffer zone for waves anymore, leaving people living behind the dikes and dunes more vulnerable to flooding (Hofstede & Stock, 2018).

Adaptation strategies for these challenges are largely informed by technocratic approaches that prioritise scientific and technical expertise (Egberts, 2019; Giebels et al., 2013; Slob et al., 2016; van der Molen et al., 2016; Walsh, 2019; Westerberg et al., 2025). As a result, adaptation has historically focused predominantly on hard engineering measures, such as dikes and sea defences (Döring et al., 2021)

Focusing on these technocratic and institutional dimensions of adaptation reproduces the separation between humans and the environment, expert and local knowledge and top-down and bottom-up approaches (Döring et al., 2021, 2022; Klöck, 2019; Mose et al., 2025; Schroor, 2018). Due to this, adaptation strategies in the Wadden Sea remain fragmented, neglecting the lived experiences, values and practices of local communities (Giebels et al., 2013; Klöck, 2019; Mose et al., 2025; Walsh, 2019). The challenges require adaptation strategies that focus not just on technical measures, but on strategies that address the social and cultural dimensions as well, as they directly influence daily life and local futures of communities (Mose et al., 2025).

However, scholarship on coastal governance, including literature on the Wadden Sea, reveals a lack of research on how communities experience environmental disruptions and how their knowledge enables them to take action (Mose et al., 2025; Rölfer et al., 2022; Sievers et al., 2024).This makes it difficult to include social and cultural dimensions of adaptation, as there is a lack of knowledge on what these dimensions entail. Van Dijk et al. (2024) call for understanding how values and traditions rooted in place affect the way environmental disruptions may be felt by inhabitants.

This thesis, therefore, explores how cultural values, local knowledge and perceived governance shape adaptation and agency in the Wadden Sea region. I will seek to understand how island residents experience environmental disruptions and governance processes, how they respond and adapt these disruptions, and how different ways of knowing and valuing the environment influence community organisation and collective action.

This study adopts a relational epistemology framework and uses qualitative methods, including semi-structured interviews and auto-photography, to understand the perspectives of local residents across the Wadden Sea region. This research will be included in a larger research project called the '**Coastal Communities' Responses to Environmental Disruption of Coastlines and Estuaries'.**

2. Background

2.1 The Wadden Sea as a dynamic landscape

The Wadden Sea is a highly complex socio-ecological landscape (Döring et al., 2021). It is an area known for its dynamics: tidal, ecological and social. These dynamics shape life on the coast and the islands in the Wadden region. Spanning across 450 km, the coast of the region runs along the countries of Denmark, Germany and the Netherlands (see Figure 1) (Schroor, 2018). The region is a relatively young tidal landscape that emerged about 8000 years ago (Bazelmans et al., 2012; Döring et al., 2021). Over time, human activity has transformed the landscape through dike constructions, land reclamation and drainage systems (Bazelmans et al., 2012). These human-environment interactions have made the Wadden Sea one of the most complex cultural landscapes in Europe (Renes, 2018).



Figure 1 Map showing the Wadden Sea region coastline, spanning across Denmark, Germany and the Netherlands (CWSS, n.d.).

The Wadden region is a multifunctional space for living, tourism, fishing, agriculture, energy extraction, transport, and recreation (Döring et al., 2022; Mose et al., 2025; Steijn & Huizer, 2013). It is home to thousands of people living both along the shoreline and on the islands (Döring et al., 2022).

Not only is the Wadden Sea renowned for its cultural landscape, but it is recognised for its unique natural values as well. The Wadden Sea region has the world's largest coastal ecosystem of intertidal mudflats and is one of the largest wetlands globally (see Figure 2) (Bazelmans et al., 2012; Mose et al., 2025).



Figure 2 Photograph of intertidal mudflat on Rømø, where the tide is coming in. Photography made by the author.

It has one of the highest rates of primary production in the world and is a vital feeding and resting place for millions of migratory birds (see Figure 3). The area falls under the EU Bird Directive, which also makes it part of the Natura2000 network. This high ecological value of flora and fauna has made the Wadden Sea a UNESCO World Heritage Site (Döring et al., 2021).



Figure 3 Auto-photograph by taken by participant depicting a bird flock taking off from an intertidal mudflat on Sylt (Participant 13, 2025).

2.2 Climate change and its socio-political impacts

Both the ecosystems and the livelihoods in the Wadden Sea region are threatened by environmental disruption. Climate change is impacting and altering the landscape and seascape. The main challenge is the accelerated sea level rise, which is predicted to increase significantly in the Wadden Sea by the end of the century (Hofstede & Stock, 2018; Konyssova et al., 2025). This can lead to a loss of intertidal flats and estuaries, which will have severe impacts on biodiversity (Becherer et al., 2018; Huismans et al., 2022). Climate change further threatens coastal safety and infrastructure. The loss of tidal flats and salt marshes reduces the coastline's natural capacity to absorb waves. This will increase pressure on other infrastructure, such as dikes or flood defences, increasing flood risk (Hofstede & Stock, 2018).

Beyond these physical impacts, climate change also has a great effect on the social and political ecosystems in the Wadden Sea region. Adaptation strategies often bring tensions and conflicting priorities, for example, between conservation, safety and livelihoods (Döring et al., 2021; Mose et al., 2025).

A prime example of these dynamics is the “Landunter”-dilemma on the Halligen. The Halligen in the German Wadden Sea experiences regular flooding of the island. These are called “Landunter” events and define the unique Hallig culture and attract tourists. The regional government wants to create a summer dike to prevent flooding, but residents argue that this would erase local culture (Klöck, 2019). Here, technical, top-down solutions, such as dike reinforcement, can be met with resistance from local people who prioritise the historical and cultural value of their islands and coasts (Klöck, 2019; Van Dijk et al., 2024).

Another example comes from Fanø, a Danish island. Here, a dilemma arises regarding whether to extend dikes into protected nature areas to increase the safety of human settlements. However, expanding the dike would mean bypassing national and EU environmental laws (Van Dijk et al., 2024). Here, tensions between protecting nature and protecting humans arise, while also addressing the extra dimension of national and EU regulations.

This shows that adaptation in the Wadden Sea is not a straightforward engineering problem, but a contested social and political process that requires negotiation between different perspectives.

2.3 Governance and knowledge systems in the Wadden region

The governance in the Wadden Sea region is complex. Due to a high number of actors that all exist within overlapping administrative structures, it is said that "none of the governments involved have persistence power, many have hindrance power" (Steijn & Huizer, 2013). This means that each country is exercising their own governance approaches in this region, which are distinct from each other. This creates a fragmented and contested governance landscape (Giebels et al., 2013).

The Trilateral Wadden Sea Cooperation (TWSC) was established in 1978 by Denmark, Germany and the Netherlands to protect and conserve the Wadden Sea (Slob et al., 2016). While TWSC is an important platform for international coordination, the implementation of policies remains the responsibility of national governments. This results in national approaches, where inclusivity and stakeholder engagement vary per country (Mose et al., 2025).

For example, Denmark is characterised by its bottom-up and inclusive approach. The Danish Wadden Sea National Park, for example, was established only after extensive public consultation processes, with the goal that this organisation would be supported by the local community (Mose et al., 2025). Germany, however, used a top-down, expert-driven approach when setting up their national parks, which led to significant local resistance (Mose et al., 2025). However, more recently, they are trying to involve more local voices in decision-making (Hofstede & Stock, 2018). In the Netherlands, coastal governance has shifted from centralised, top-down decision-making toward more participatory models (Steijn & Huizer, 2013).

Despite these differences in governance approaches, a common aspect is found: governance across the Wadden Sea tends to be dominated by scientific expertise (Klöck, 2019). This approach, in which scientific knowledge is prioritised, is used as it creates more legitimacy for policy-makers in decision-making (Giebels et al., 2013; Walsh, 2019). This leads to the exclusion of local lived experiences and cultural values of the coastal communities in the decision-making process, and devalues the knowledge systems of these communities (Döring et al., 2021; Hakkarainen et al., 2022; Klöck, 2019).

Especially in climate change adaptation strategies, this local knowledge is critical to create successful and effective practices appropriate for a specific place (Harnesk et al., 2025; Hofstede & Stock, 2018; Klöck, 2019). Recognising the relational and place-based knowledge of the inhabitants of the Wadden Sea region could help bridge this gap between scientific and political knowledge and community values and local knowledge.

3. Research questions

3.1 Main research question

In what ways do cultural values, local knowledge, and perceptions of governance shape the agency and adaptation practices of Wadden Sea communities when responding to environmental disruptions?

3.2 Sub research questions

1. How do local communities define and experience environmental disruptions?
2. What are the place-based cultural values and local knowledge systems of Wadden Sea communities, and how are they understood and expressed?
3. How do cultural values and local knowledge shape community adaptation to environmental disruptions and translate into place-embedded agency?
4. How do Wadden Sea communities perceive and experience governance and interactions, and the recognition of local knowledge?
5. How do Wadden Sea communities imagine the future of island life and adaptation in relation to environmental disruptions?

4. Theoretical framework

For this research, I will be working with a relational epistemology framework, of which I use three concepts:

- Narrative and embodied knowledge
- Place-embedded agency
- Epistemic legitimacy

4.1 Relational epistemology as a framework

Relational epistemology is a framework for understanding knowledge that emphasises relationships over separation. It critiques the idea that people are isolated, and posits instead that we are shaped by our interactions with other people, communities and our environment. Thus, relational epistemology views that knowledge is based on these connections, rather than coming from a single "expert" mind (Döring et al., 2021; Pormon & Lejano, 2023). It centres relationships, interconnectedness and participation as the foundation of knowing and being (Romm, 2024).

Important factors of relational epistemology are that we learn from interacting with each other, rather than from experts or books. Because of this, there is no hierarchy of "expert" versus "non-expert" or scientist versus non-scientists, which is apparent in technocratic frameworks. Through this, it undoes dualisms and rather considers everyone who engages in mutual exchange an agent of knowledge (Brownlee & Berthelsen, 2008; Curkpatrick, 2023; Pormon & Lejano, 2023).

This perspective provides an alternative to technocratic and expert-driven approaches that dominate climate change adaptation in regions like the Wadden Sea. It acknowledges that adaptation is not solely technical, but embedded in lived experiences and cultural values; the social, emotional and ethical dimensions of knowing (Allen & Lalonde, 2020; Mathews, 2022).

4.2 Foundations and ethics of relationality

Relational epistemology is informed by feminist and Indigenous theory, both of which directly challenge the Western patriarchal and scientific assumptions that focus on "science" as being the one true knowledge. Rather, at the core of relational epistemology is the critique of the separation of the subject and the object, mind and body, human and more-than-human (Bee et al., 2015; Döring et al., 2021; Gould et al., 2023; Zaragocin & Caretta, 2021).

The notion that we consist of the relationships we have with other entities is a concept that Indigenous traditions have practised for millennia (Gould et al., 2023). Indigenous epistemologies highlight the interconnectedness of all beings (Verma & Khan, 2024). Indigenous theory further informs relational epistemology by linking knowledge with ethics and responsibility. Indigenous approaches often use Natural Law, which centres on reciprocity, kinship and responsibility between humans, land and other beings (McGregor, 2015). Relational epistemology builds on this by acknowledging that knowledge should contain respect and care for your relationships, rather than exploiting them (Gould et al., 2023; Romm, 2024).

Relational epistemology further builds on the idea of humanising research (Hooks, 1994). It challenges the dominant practice of science that relies on the researcher being a "detached observer" who views knowledge as objective and extractable data (Hird, 2025; Mathews, 2022).

Instead, humanising research advocates for building on love, kindness and generosity (Hooks, 2000). This again ties into the theory of Natural Law and reciprocation (McGregor, 2015; Romm, 2024).

4.3 Concepts

4.3.1 Narrative and embodied knowledge

Relational epistemology focuses on prioritising non-technical forms of knowing, particularly narrative and embodied knowledge (Pormon & Lejano, 2023; Zaragocin & Caretta, 2021). Narrative knowledge is knowledge that derives from communication within a community, such as stories and local language. "With narrative knowledge, there are no more experts and passive recipients –instead, all are hearers and speakers of knowledge" (Pormon & Lejano, 2023, p. 3). Narratives help people understand their environment and express their relationship to it. Through narrative and local language, people can express the emotional and symbolic dimensions of their environment, which technical/scientific language is less adept at (Pormon & Lejano, 2023). Embodied knowledge adds another dimension of knowledge being physically experienced. The Latin American feminist concept of cuerpo-territorio (body-territory) highlights that the body itself has a way of knowing that is inseparable from the land in which it stays (Zaragocin & Caretta, 2021).

Through engaging with narrative and embodied knowledge, this study seeks to understand how coastal communities in the Wadden Sea feel, live, express and embody environmental disruptions beyond formal discourse. It acknowledges that adaptation is felt and told and recognises storytelling as a legitimate method of creating data.

4.3.2 Place-embedded agency

Place-embedded agency is the concept that the capacity and willingness of an actor to act are based on their connection to a specific place. It focuses on how relationships to a place shape action (Hakkarainen et al., 2022). Place-embedded agency is at the intersection between local knowledge and place-belonging, which are defined relationally (Döring et al., 2021). By recognising place-embedded agency, governance moves away from top-down decision-making. Instead, it acknowledges local agency and engagement in adaptation.

In the Wadden Sea, where livelihoods and identities are tied to land and water, acknowledging place-embedded agency reveals how relationships between communities and their environment form their adaptive capacity. This concept allows this research to go beyond institutional agency in the form of technical adaptation practices and include situated practice and local agency.

4.3.3 Epistemic legitimacy

The last concept within this framework that will be used in this thesis the concept of epistemic legitimacy. Epistemic legitimacy is a dimension of relational epistemology that is concerned with how knowledge and which knowledge is validated. It further focuses on how different knowledge systems interact with each other, and recognises the plurality, situatedness and co-production of knowledge of knowing (Romm, 2024; Verma & Khan, 2024). This means that lived experiences and cultural understandings of local communities in a specific environment are also legitimate ways of knowing, not just formal and expert knowledge (Leino & Peltomaa, 2012).

For this research, epistemic legitimacy is key. This concept understands that local knowledge and cultural values are a validated form of knowledge. It respects cultural understandings of the

environment, which may not be acknowledged in expert knowledge systems. It also supports understanding local agency: when local knowledge is seen as legitimate, communities are able to play an active role in creating adaptation processes. This concept is thus central in understanding the ways in which local knowledge is expressed, recognised and how it interacts with different knowledge systems. It could potentially inform inclusive pathways for future adaptation.

4.3.4 Integrated conceptual framework

These three concepts together combine into one integrated analytical framework. It shows the three steps of how relational epistemology is enacted.

First, narrative and embodied knowledge describe how knowledge is formed. It shows that forms of knowledge are situated and rooted in the relationship between people and place (Pormon & Lejano, 2023; Zaragocin & Caretta, 2021). Place-embedded agency then captures how this knowledge is translated into action. Inhabitants draw on their experiences and observations to respond to environmental disruptions (Döring et al., 2021; Hakkarainen et al., 2022). Adaptation practices, in this sense, are not just formal but embedded into daily routines and informal responses, showing how local knowledge is transferred and enacted. Lastly, epistemic legitimacy then addresses how different forms of knowledge are recognised. It reveals whether local knowledge is acknowledged or marginalised (Romm, 2024; Verma & Khan, 2024).

These three concepts show how knowing, acting and recognising are interconnected processes. Narrative and embodied knowledge inform place-embedded agency, while epistemic legitimacy dictates whether these practices and insights are actually valued within social systems. By linking these dimensions, relational epistemology provides a framework for understanding how knowledge is produced, mobilised and contested in local contexts.

5. Methodology

For this research, I have travelled to three islands in the Wadden Sea: Rømø (Denmark), Sylt (Germany) and Ameland (The Netherlands). To answer the research questions, two methods are used. Interviews are used to understand the dimensions of local knowledge, culture and governance interactions. They further reveal adaptation practices and future hopes when it comes to adaptation. Auto-photography is an arts-based method used to understand place attachment on a deeper level, by giving room to also express oneself through art.

5.1 Data collection

5.1.1 Case study selection

Three islands across the Wadden Sea region were selected as case studies for this research. Given that the Wadden Sea spans across three countries (Denmark, Germany and the Netherlands), the aim was to capture a representative overview of the region by including one island from each country as a case study.

The first island selected was Rømø in Denmark. This choice was made as contacts at the National Park Vadehavet connected me to the local nature centre Tønnisgård on the island, which helped me with local contacts. As this research was conducted using only public transport, logistics also influenced the case selection. Travelling to Rømø required passing through the German island of Sylt. Given this proximity and the chance to get into contact with researchers at the Alfred Wegener Institute located on Sylt, this island was selected as the second case study.

For the Netherlands, Ameland was chosen as the third case study. This decision had multiple reasons: a recommendation from a contact on Sylt who had connections with a local nature centre on Ameland, a couple of local contacts on the island, and the ease of access via public transport.

Together, these three islands proved to be logistically the most practical and ended up contextually diverse for exploring cultural values and local knowledge across the Wadden Sea region. In the next subchapters, I will provide a background of each island for a better understanding of the different histories and development.

5.1.1.1 Rømø

Rømø is a Danish island approximately 14km long and 4 km wide, located at the northern end of the Wadden Sea (see Figure 4) (Johannessen et al., 2007; Madsen et al., 2007). It lies about 8 km from the mainland and is connected to it by a dam. Geologically, the island began forming about 9000 years ago, when rising sea levels created sandbanks that gradually formed the island (Madsen et al., 2007). Today, the west coast of the island has one of the widest beaches in Europe (1-4 km) due to high sand deposition. Despite rising sea levels, the coastline on the Western part of the island remains growing (Madsen et al., 2007).



Figure 4 Map of Rømø, Denmark (Miljøministeriet Naturstyrelsen, n.d.).

Human settlement on Rømø began around 1200. Historically, the island population used to be primarily fishermen and farmers. Around 1600, the men living on Rømø started joining whaling expeditions on Dutch and German ships. This had a significant impact on the local economy and the islands' wealth. Traces of this wealthy period of the island remain visible in the preserved commanders' (the captains) houses on the island (see Figure 5) (Port Rømø, n.d.; The Danish Nature Agency, n.d.).



Figure 5 Kommandørgården, a museum located in the old sea captain's house on Rømø . The museum has conserved the old structure and interior of the captain's houses, which is on display for visitors interested in the history of the island (Kleist Pedersen, n.d.).

Today, Rømø's economy relies primarily on tourism, alongside the brown shrimp fishing industry. Tourism started on the island around 1900, when the island was still under German rule. Near Lakolk, the beach in the middle of the island, a hotel was built, which was relatively cheap for Germans. This marked the beginning of large-scale holiday home development, which has expanded significantly over the past century (see Figure 6) (The Danish Nature Agency, n.d.).



Figure 6 Lakolk on Rømø. Beachside town consisting almost solely of holiday houses (Müseler, 2020).

While the number of tourists visiting the island keeps increasing, the island's population has seen a historical decline, dropping from 1336 inhabitants in 1860 to 557 in 2025. The island is divided into three units: Juvre in the North, Kongsmark in the middle and Kirkeby and Havenby in the South. Even though there are small villages on the island, most houses are stretched along a line in the Eastern part of the island (Aagesen, 1953; Larsen, 2025).

The island also faces critical challenges related to climate change and extreme weather. The region has a long history of storm surges, such as the "Second Great Drowning" of 1634. In the last four decades, the frequency of storm surges with water levels above two or three meters has more than tripled (see Figure 7). While dikes have prevented fatalities for over 10 years, rising sea levels are expected to put coastal defences under greater pressure (Nationalpark Vadehavet, n.d.).



Figure 7 Dike breach by Toftum, Rømø during a 1976 storm (Hul i Diget Ned for Toftum, 1976)

5.1.1.2 Sylt

Sylt is a German Wadden Sea island located near the Danish border and is characterised by its elongated shape (see Figure 8). The island covers an area of 58,25 km^2, and as of 2023, has a population of 14,356. The population is ageing, with a current average of 49.4 years (AdminStat Germania, n.d.). The island is connected to the mainland by a dam with a railway track.



Figure 8 Map of Sylt, Germany (Sylt Map, n.d.).

The island was formed about 7000 years ago and is defined by strong coastal dynamics. The western shoreline is about 40 km of sandy beach, which is directly exposed to waves and continuous erosion (see Figure 9). This process results in an average historical mean retreat of 1.5 meters per year, and about 1.2 million m^3 of sediment loss annually (Ahrendt, 2001). Furthermore, the island is highly vulnerable to sea-level rise and climate change. Future scenarios predict a sea-level rise of about 0.5 m by 2100, increasing the vulnerability of the western coast (Ahrendt, 2001). As a result of these processes, the island relies on annual sand replenishment to maintain its coastline.



Figure 9 Coastal erosion at the Rote Kliff on Sylt (Sistermans & Nieuwenhuis, n.d.).

Economically, Sylt is primarily driven by tourism and is widely known as an exclusive island. The island has the highest density of luxury cars and second homes in Germany. While tourism is essential for employment on the island, it also contributes to rising housing prices. This creates problems for local workers who can no longer afford island rents and must commute from the mainland to work. As a result, residents also view tourism as a threat to local community structures and their overall quality of life (Milner & Wolff, 2023).

Ecologically, Sylt is known for its diverse coastal habitats, including rare biotopes and “wandering dunes”, which are dunes that are still migrating landward (see Figure 10). However, rising sea temperatures are influencing ecological change, including shifts in species. For example, the spread of the invasive Pacific oyster has significantly altered the local biodiversity (Baird et al., 2019). This shows that Sylt is undergoing noticeable shifts in its ecosystem as a result of environmental change, and highlights the islands’ increasing vulnerability to its effects.



Figure 10 Rare dune landscape of "wandering dunes" in List, Sylt. Photograph taken by author.

5.1.1.3 Ameland

Ameland is a Dutch Wadden Sea island formed around 5000-6000 years ago. The island originally consisted of three separate dune ridges (Hollum-Ballum, Nes-Buren & the Oerduinen), separated by mudflats that were flooded during high tide (see Figure 11).

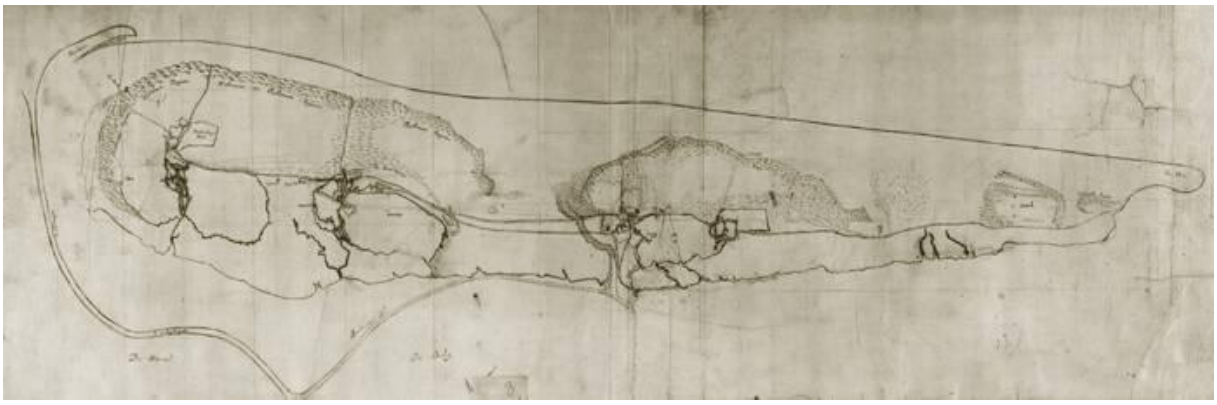

Figure 11 Old map of Ameland from 1665. The map shows the three different islands that made up Ameland: Hollum-Ballum, Nes-Buren & the Oerduinen (Schetskaart, 1665)

Unlike Rømø and Sylt, Ameland has a west-to-east orientation rather than a north-south. During the 19th and early 20th century, these three separate islands were connected through the construction of dikes by the island's residents' (see Figure 12) (Weiland, 2019). This history is still visible in the settlements that are mainly concentrated in the four villages of Hollum, Ballum, Nes and Buren.



Figure 12 Map of Ameland from 2015 (Van Aalst, 2015).

The island has 3180 inhabitants as of early 2026. After a long period of population decline in the 19th and 20th centuries, the island is now experiencing a population growth again(CBS, 2026). However, this growing population is ageing, which raises concerns about community stability and the continuity of local culture (Schroor et al., 2017).

Historically, the island's sandy soil caused residents to adopt a farmer-fisher lifestyle. During this period, whaling also became an important source of wealth on the island (see Figure 13). However, when whaling and fishing declined, the local economy shifted more towards tourism (Stichting De Ouwe Pôlle Ameland, n.d.; Weiland, 2019). While this shift has brought increased economic stability, it has also brought challenges like rising property prices and gentrification, which has made it hard for younger islanders to be able to buy or rent a house (Schroor et al., 2017).

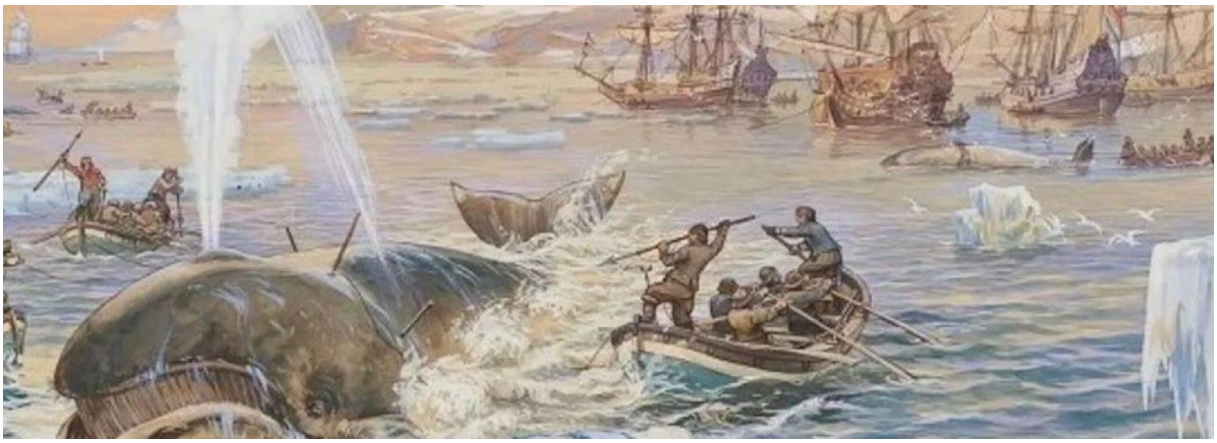

Figure 13 Whaling ships with captains and seafarers from Ameland (Commandeurs En Walvisvaarders, n.d.).

Ameland is also exposed to climate change and has a long history of extreme weather events. Storm surges and floods have led to massive land loss, damage to infrastructure, and livestock deaths (Stichting De Ouwe Pôlle Ameland, n.d.). Furthermore, accelerated sea-level rise and more frequent and heavier storms increase coastal erosion on the island's west coast, placing additional pressure on coastal protection measures (Meesters et al., 2025; Schroor et al., 2017).

5.1.2 Interviews

The main method for data collection was interviews conducted with local inhabitants on the islands. To find suitable participants, a preliminary online search was done. Through the Danish National Park Vadehavet, I got in contact with the Naturcenter Tønnisgård on Rømø. They helped me get in contact with residents of the island. For Sylt, I got in contact with the Alfred Wegener Institute and the Naturschutzgemeinschaft, who referred me to local residents. For Ameland, I emailed local organisations Amelander Musea and Amelander Kunstenaars, that got me in touch with residents. While on the islands, I attended community events, visited museums, approached people while out exploring the islands, and used snowballing as a method to further expand my participant base. This brought my total research participants to 20.

For the 20 interviews, I conducted seven on both Rømø and Sylt, and six on Ameland. 18 interviews were held in person, either at the participant's home, a local centre, out in nature, or at the locations hosting me. The remaining two were conducted via a video call and a phone call. The interviews on Rømø and Sylt were conducted in English, and those on Ameland in Dutch.

The ages, genders, jobs and backgrounds of the participants all differed. Most participants were over 48, except for 3 who were between 28 and 38. The participants were not chosen on any aspect other than that they were living on the islands. When reading about younger people in the analysis (chapter 6), please note that these are perceptions of the elderly interviewees, and not the opinions of the local younger generation, as I was not able to do interviews with people from that generation. The interviews are anonymised, meaning that no names will be used in this research.

The interviews were semi-structured. The themes discussed during the interviews relate to the research questions and can be roughly divided into the following themes: community and place, environmental disruptions, local knowledge and traditions, agency and adaptation practices, governance and inclusion, future visions and pathways.

This research is part of a larger project named ‘Coastal Communities' Responses to Environmental Disruption of Coastlines and Estuaries’ . This project does not only focus on the Wadden Sea, but on different case studies across the world. As a research team, we developed five core questions that all researchers will be asking their interviewees. I have structured my own interview guide around these core questions. The interview guide can be found in Annex 1.

The interviews were not recorded, but notes were made by hand and transcribed based on the notes. The duration of the interviews was flexible and lasted between 45 minutes and 5 hours.

5.1.3 Auto-photography

A second method used was auto-photography. As our world is becoming more visually oriented, research methods relating to visualisations are becoming increasingly more popular. Photography, in particular, is a method that is recognised as it allows for non-discursive and experiential engagement (Hall, 2009). Auto-photography is a method in which participants generate their own pictures. Participants are often given cameras and are asked to take photographs on a specific theme or topic (Balomenou & Garrod, 2016). Auto-photography focuses on the active role and agency of the participants as they are able to choose for themselves the places they want to document (Klingorová & Gökarıksel, 2019; Lombard, 2013).

Auto-photography is useful for this research as it facilitates the exploration of embodied and narrative knowledges of a place that might be difficult to access through just interviews (Lombard, 2013). It further helps in understanding the place meaning for participants, as images reflect personal experiences and attitudes (Lombard, 2013).

For this research, the interviewees were asked to send me a photograph that they had already taken due to time constraints. The requested photograph was asked to depict a visual representation of why the island is meaningful to the participant. I received 17 photographs from 11 participants across all three islands. Some participants sent a short explanation of the photograph or explained the reason behind choosing it in the interviews, others just sent the photographs by itself. The photographs are anonymised, and those with faces in them are now blurred.

5.2 Data analysis

5.2.1 Interview analysis

The data from the interviews has been analysed using the steps of thematic analysis by (Braun & Clarke, 2006). This method follows six phases:

1. Familiarisation with the data: the researcher repeatedly reads the raw data (e.g. transcripts, notes) and notes initial patterns and ideas.
2. Generating initial codes: the researcher creates initial codes based on meaningful or repeated features mentioned in the dataset.
3. Searching for themes: the researcher groups codes into broader themes that are related to the research questions.
4. Reviewing themes: the researcher reviews the themes for coherence within and distinctions between themes, by immersing themselves in the data again.
5. Defining and naming themes: the researcher refines the themes for a final time and describes how it relates to the research questions.

6. Writing the report: the researcher presents the data through the created themes, with the use of quotes and analytical commentary.

For this research, I used both deductive and inductive coding, using ATLAS.ti Scientific Software Development GmbH (2025). I started with an initial codebook, which I altered three times to fully capture the meaningful data. The full codebook can be found in Annex 2. Five themes were found based on the data (Table 1):

Table 1 Themes and the desriptions of the themes used for the thematic analysis of this thesis.

Theme	Description
Environmental disruptions	Perceptions and emotions tied to environmental disruptions
Cultural values and knowledge	Place-based identity and knowledge systems
Agency & adaptation	Local responses and adaptation practices
Governance, participation and recognition	Locally perceived trust, inclusion and recognition by governance institutions
Future visions & pathways for collaboration	Imagined futures, hopes and ideas for collaborative adaptation

5.2.2 Photography analysis

The photographs have also been analysed using thematic coding. This thematic coding method uses four phases (Faber et al., 2013; Newell & Canessa, 2018):

1. Descriptive coding: identifying what is visually present in each photograph and finding patterns by quantifying the data.
2. Interpretive coding: analyse visual patterns that are related to mood and senses.
3. Perspective and orientation analysis: analyse how a participant frames a scene, for example, where a photo is taken and whether the photographer is inside the frame or not.
4. Categorisation and thematic synthesis: group the individual codes into broader place-meaning dimensions to understand why they sent this particular picture.

The photographs that were analysed can be found in Annex 4.

The data of the interviews and the photographs are stored on my personal laptop and OneDrive only accessible by me. The data is anonymised, meaning no names of participants will be used. Verbal permission to use the data and to store it was given before the interviews. It will be used in future research for the project **'Coastal Communities' Responses to Environmental Disruption of Coastlines and Estuaries'** **.**

5.3 Positionality

This research is shaped my positionality as a researcher and by my academic background. Within my study International Land and Water Management, I am deeply inspired by relationality frameworks and feminist studies. Especially focusing on everyday life, caring for your environment, and how we understand and know our environment (epistemology). This has influenced both the choice of research topic and the framework used in this thesis.

My interest in relational and feminist approaches comes from a broader concern with how everyday experiences, care for the environment, and embodied forms of knowledge are often less valued as legitimate knowledge systems. This perspective has influenced the decision to use a relational

epistemology framework for this thesis, thus, approaching knowledge not as objective or universal, but as produced through relationships between people, place and environment.

I chose the Wadden Sea as a case study as I am interested in seeing how culture and place-embeddedness play a role in Western countries, especially in Europe. Often, literature on relationality and local knowledge focuses on Indigenous communities or feminist studies. However, I wonder how this is reflected in European circumstances that are heavily influenced by the patriarchy and scientific hierarchy, and where there is a lack of recognition of relationality in natural resource governance. This not only helps me better understand the presence of culture, heritage and care for the environment in the European contexts, but also can help further deepen and normalise my own relationship with the environment.

At the same time, I acknowledge that my positionality shaped how this research was conducted in practice. During fieldwork, my background as a young Dutch researcher in water management likely influenced how participants engaged with me and how they framed their experiences of environmental change and governance. Furthermore, being less familiar with local social structures and histories, participants sometimes explained island practices and traditions in great detail, which helped reveal how local knowledge is communicated and understood. It also opened other doors for me, as participants were at times more comfortable sharing their opinion on topics such as governance, environmental change and community structures with someone who is not part of the community, rather than their neighbours. A couple of times, participants told me that they would not have discussed these topics with their friends or community members, while they were open to actively discussing it with me. At the same time, being an outsider may have limited access to more closed community dynamics or sensitive topics of discussion.

6. Analysis

This chapter presents the thematic analysis of the interview data collected across three Wadden Sea islands: Rømø (Denmark), Sylt (Germany) and Ameland (The Netherlands). It addresses the main research question:

> *In what ways do cultural values, local knowledge, and perceptions of governance shape the agency and adaptation practices of Wadden Sea communities when responding to environmental disruptions?*

This chapter is structured into five thematic sections. Section 1 examines how environmental disruptions are perceived by local communities, highlighting the different interpretations of disruptions and how these disruptions are experienced. Section 2 focuses on place-based cultural values and local knowledge systems. Section 3 goes on to analyse how these knowledge systems and cultural values translate into everyday agency and adaptation practices. Section 4 investigates governance interactions between authorities and local communities and how recognition, inclusion, trust and epistemic legitimacy are perceived across the islands. Finally, section 5 shows how local communities envision their hopes for the futures of their islands in terms of environmental disruptions.

The auto-photographs show participants' visual representations of how they view their islands as meaningful. The images primarily emphasise natural landscapes, cultural practices and social relations. However, governance interactions and adaptation processes are largely absent from the visual dataset. This absence is not a limitation, but indicates that these aspects are not felt to be a meaningful part of island life. This does result in governance and adaptation being primarily analysed through interview data, while photographs are used to deepen understanding of lived, relational and embodied experiences.

6.1 Environmental disruptions

This section explores how residents understand and experience environmental disruptions. These narratives show how risk and disruptions are understood in everyday life. This section explores the different dimensions of environmental disruptions, and how it shapes perceptions of urgency, normalisation and environmental change.

6.1.1 Environmental disruptions as identified by communities

'Environmental disruptions' is a term without a clear definition. It generally refers to events or processes that alter ecosystems, but perceptions vary depending on local experiences. Interviews revealed three main categories of how the islands' communities define these disruptions:

a. *Extreme weather events*

The most frequently mentioned disruptions are extreme weather events. These are events whose intensity is unusually large for the time and place where it occurs. Examples include severe storms, heavy rainfall and floods, droughts, heat waves and wildfires (World Meteorological Organization, n.d.). Across the islands, storm surges, floods, and heavy rainfall were mentioned the most when discussing extreme weather events.

Residents often recalled specific events, particularly the 1999 hurricane Anatol and the 2013 Cyclone Xaver. The 1999 storm was especially impactful on the islands of Rømø and Sylt; all the interviewees who were living on one of those islands at that time mentioned this storm when discussing their experiences with environmental disruptions.

Though less frequent than these big storms, smaller storms occurring in sequences, thunderstorms, and heavy periods of rain were also mentioned. One interviewee described a heavy rainfall incident (see Figure 14) , *"The whole forest was inundated, and we found ducks swimming in the forests. It was fascinating to see."*

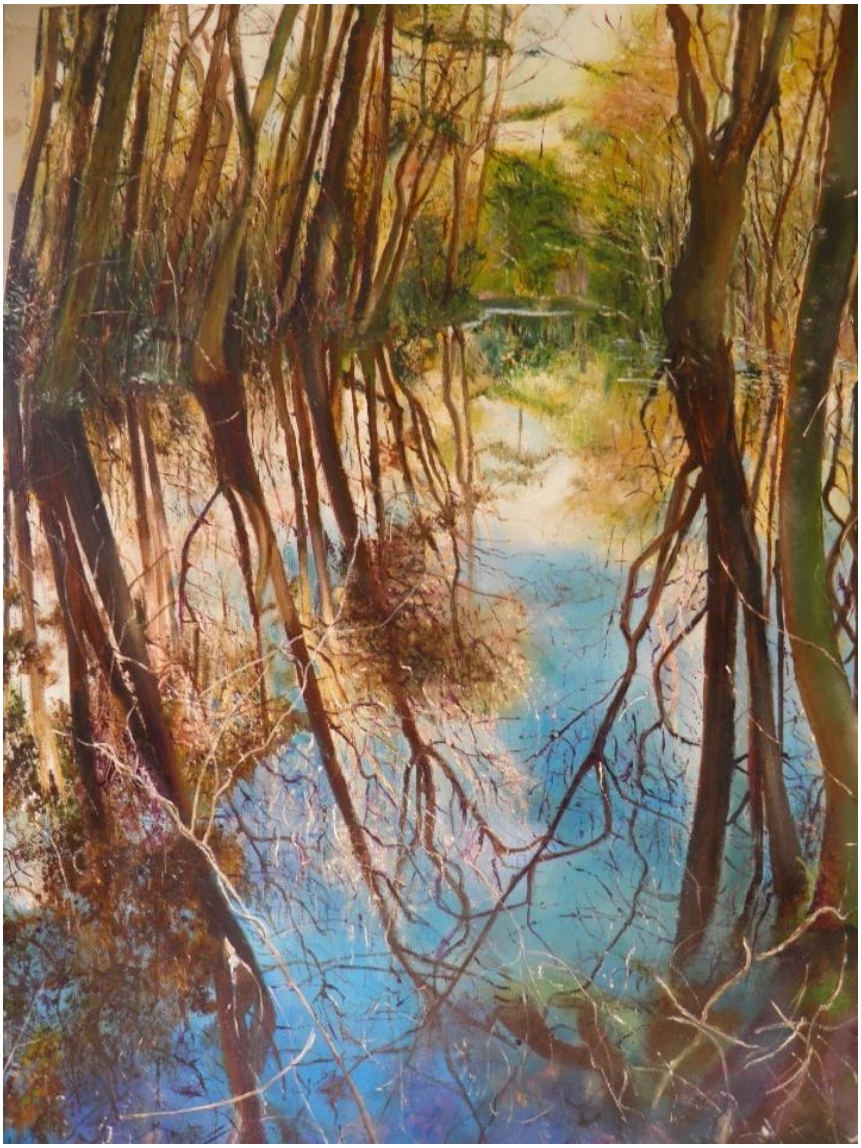

Figure 14 Painting by interviewee depicting inundated forest. This painting was made after the interviewee was fascinated by seeing the forests on Ameland inundated after a heavy period of rain (Participant 15, 2024).

b. Gradual changes

Another recurring theme identified amongst participants of Sylt and Ameland was slower changes, like coastal erosion. On these islands, erosion is a major concern, while Rømø, on the other hand, experiences quite a lot of sand deposition.

Several participants across the islands also noted biodiversity shifts. One interviewee from Ameland reported noticing a decline in insects in the crops she harvests over the years. She expressed concerns about how climate change would further change populations. Droughts and hotter weather were also mentioned in relation to concerns for species well-being. One resident of Sylt states, "*We had a big drought in the summer of 2018. Even the dune valleys were dried up, which had negative effects on the vegetation and the animals living there. There was no moisture left, and the heather plant, which is special in this area, even died. Dry weather is becoming quite a problem.*"

These concerns also extend to worries for future water security. Several interviewees mentioned thinking there will be a drinking water problem soon, due to the high amounts of tourists coming in, and the increasing periods of drought. They state that the groundwater levels are decreasing a lot in the summer and that they have concerns about the consequences for both humans and animals.

c. Human interventions

Environmental disruptions were not defined solely as natural by the participants of this research. Human activity, especially tourism, was viewed as highly disruptive, particularly by the residents of Rømø. They stated that tourists often stray from the dune paths, litter, and try to make fires in the dunes. Local people see this as "destroying" the dunes and mention seeing the dunes actually moving over time, becoming lower and farther inland as the tourists are moving the sand.

Infrastructure expansion, such as vacation homes in previously natural areas, is also perceived as disruptive. This is particularly a problem for both Rømø and Sylt. A Rømø resident shared their thoughts on this expansion: "*Back when I first moved here, we could walk across the heath, and there would be no houses for hours. Now, there are houses everywhere.*"

On Sylt, a similar sentiment is also shared about attempts at coastal defence. Multiple interviewees discussed their discontent with the tetrapods (artificial wave breakers) that were placed in the South of the island, as these have unintentionally damaged beaches: "*They [the government] built tetrapods to protect the coast more, but it increased the erosion a lot in the South of the island… We used to be able to walk about 4 hours on the beach; now you are done in 45 minutes*."

These examples show that environmental disruptions are understood as both climatic and socio-ecological processes.

6.1.2 Normalisation of environmental disruptions

Although extreme weather events are described as the most prominent environmental disruptions, they are simultaneously normalised in local discourse.

When asked how storms or floods affect everyday life, residents simply state, "*We are used to it*". Across the islands, this normalisation is a common theme. An Ameland resident said: *"Storms are part of the island. It is part of existence here".* He goes on to say*: "It is never windless here, I would be more scared if that were to happen than I would be for a storm or extreme weather".* This shows that living with storms is considered "normal"; it would be considered strange when the weather is calm on the islands.

Several participants go on to argue that these disruptions are part of what makes living on the islands special for them. They do not see it limiting their lives on the islands, but rather speak about the

events with fascination and affection. One Sylt interviewee explains, *"I don't think about it [extreme weather] as limiting. It makes living here special."* Another participant from Rømø goes on to say, "*I think we also like it, that is why we live here. It shows that nature has power, extreme weather is exciting and can be cosy as well."*

This familiarity and fascination with environmental dynamics also became visible in the photographs. Several images captured dark stormy skies and rough winds (see Figure 15), flooded landscapes (see Figure 14), and the visible impacts of storms, such as fallen trees after extreme weather events (see Figure 16).



Figure 15 Auto-photograph showing an impressive sky created by strong winds during a storm on Rømø.(Participant 6, n.d.)



Figure 16 Auto-photograph depicting the consequences of a large storm on Ameland (Participant 16, 2013)

At the same time, these images did not solely portray environmental phenomena. One participant submitted a photograph of people kitesurfing during storm conditions (see Figure 17, reinforcing the idea that extreme weather is often experienced as normal and makes living on the islands special.



Figure 17 Auto-photograph depicting stormy weather with high tide, and people watching and kitesurfing on Rømø (Participant 6, 2025)

Rather than fear, residents thus express fascination and respect toward powerful weather. Storms are seen as demonstrating the force of nature and showing what makes life on the islands unique. In this sense, weather is not external to everyday life, but it is embedded in local identity.

This creates an interesting paradox in which events are described as “extreme”, yet are simultaneously treated as normal. What might be externally seen as a disruption is internally understood as part of living on the islands.

6.1.3 Embodied and emotional experiences of environmental disruptions

Emotional responses to environmental disruptions vary, but they are most vividly expressed when participants discuss a specific extreme weather event.

The first thing that stands out is that people are very vocal about not being afraid of extreme weather. Those who grew up on the islands describe storms as familiar and non-threatening, even as kids. Those who moved to the island later in life admit that their first major event can be a bit shocking, but afterwards, "*you get used to it".* As one interviewee put it, "*It has been a long time since I was frightened by a storm".*

Discussions of reactions to environmental disruptions often involve a distinction between "local people" versus "outsiders". Tourists were often described as "being surprised" or "scared", whereas local people described themselves as "calm" and said they do not panic.

Fear is not absent, as it depends on the intensity of an event or the personal circumstances. A volunteer firefighter on Rømø mentions one of the fire vehicles driving into a lake during the storm of 1999, as they could not see the road anymore. The men in that car were obviously shocked. These moments, however, are exceptions rather than the norm.

Overall, extreme weather is more often associated with fascination than fear. These embodied experiences suggest that environmental disruptions are not just physical events, but also experiences that show what it means to live on the islands.

6.1.4 Sense of safety, risks and perceived lack of urgency

Noticeable across the interviews is the uneven awareness of environmental disruptions and their consequences. Whereas some participants clearly observe changes in the environment (chapter 1.1.b), others express that such changes are not necessarily noticeable or relevant to their sense of safety. An elderly participant from Ameland stated, *"Storms and their severity have not changed over time; it is always storming here."* This reflects how long-term exposure normalises environmental disruptions, rather than increasing perceptions of risks.

Similarly, lived experiences and repeated exposure to weather events strongly influence what is considered safe or risky in terms of environmental disruptions. One participant described how, during storms, their father would take the children outside to check how high the water had risen. If the water reached a particular road, the storm was considered dangerous. Others described going outside to surf, walking through the dunes or playing games as children during storms. They state knowing when the storm would be dangerous, and doing these activities only when they deemed it safe. At the same time, participants across the islands joked about the severity of extreme weather: *"When others say it is a storm, we say the neighbours have left their doors open*." Such expressions show that repeated exposure to storms can reduce perceptions of risk and rather embed a sense of familiarity and control.

At the same time, repeated exposure to environmental disruptions also influences the sense of urgency people feel. This differs strongly between communities and generations. On Sylt, especially, interviewees explained that people "do not really care that much" about environmental disruptions, because severe storms have not influenced local livelihoods in recent decades. Residents linked this to feelings of safety created by coastal protection infrastructures and trust in government protection. One participant stated*, "As long as everything works, people are not worried".* At the same time, older residents who have experienced storms such as Hurricane Anatol generally describe themselves as more aware of environmental risks, while younger generations were perceived to be more distant

from the risks. As one participant stated, "*Old people try to tell stories about past events … but young people don't listen*."

At the same time, on Rømø , where the consequences of storms and floods are more often experienced, perceived urgency seems to be more present. Here, participants express concerns for future dike and dune breaches and actively think about possible consequences of environmental disruptions.

Awareness of urgency also seemed to differ along another line on Ameland: between Amelanders, those who were born and raised on the island, and "islanders" who moved to the island later. Interestingly, newcomers are often perceived as more attentive to environmental change. One islander observed that, for example, local fishermen do not recognise shifts in fish population, despite decades of working on the sea, while newcomers are more aware of biodiversity shifts. Some Amelanders themselves reiterate this by expressing that they do not notice stronger storms or ecological change.

Overall, environmental disruptions are not experienced uniformly, nor is the rate of awareness of possible risks equal among all communities. Differences can be seen between generations and individuals. As gradual change often lacks immediacy and is hard to notice, there seems to be a lack of urgency to be more aware.

6.2 Cultural values and local knowledge

This section explores different dimensions of place attachment, belonging and cultural values while simultaneously examining local knowledge systems. Interviewees describe their connection to the island not just in emotional terms, but also as a form of knowing embedded in shared history, everyday life and community.

6.2.1 Place attachment and responsibility

Across all three islands, participants expressed a strong emotional and relational attachment to place. This attachment is not just directed towards the physical landscape, but also toward the people and the culture. There is a sense of belonging that seems prominent; a sense of familiarity and reciprocity between the land and the people.

Local people speak with affection about the sea, dunes, forests, and marshlands. This attachment also became visible in the photographs, where natural landscapes dominated the visual material sent in. Dunes, beaches, sunsets, impressive skies and coastal areas appeared repeatedly (see Figure 18 and Figure 19). This high presence of natural elements in the photographs reinforces the importance of the natural environment in how residents experience island life.

Another recurring theme across all the islands was participants describing feeling calm and "at home" on their respective islands. It was explicitly mentioned by the participants that this feeling begins upon arriving on the island, and not just inside their individual houses. The photographs similarly reflect this broad sense of calm. Oftentimes, warm light, open landscapes and undisturbed dunes created a strong sense of calmness in the photographs (see Figure 18 and Figure 19). Interestingly, as well none of the images sent in by the interviewees included participants' homes, further suggesting that the feeling of calmness and sense of belonging is not tied to private property, but to the island itself.



Figure 18 Auto-photograph depicting a sunset in the dunes, near the beach and sea on Ameland. The picture was taken on a walk with their dog (Participant 18, 2025)



Figure 19 Auto-photograph depicting colourful sky and the dune landscape on Sylt (Participant 14. n.d.)

Place attachment also manifests itself as pride across the islands. Residents describe themselves as being very proud of the island: they love being from the island and identify strongly with its nature and culture. Interestingly, interviewees who moved to the island later in life noted that they feel more pride for the island than for their original hometowns*: "I would never say that I was proud of where I came from, but after moving here I finally understood that feeling."*

Place attachment is also social. Multiple participants from the different islands mention valuing knowing their community and being able to rely on mutual support. This brings a sense of safety and cohesion, which is important, especially for older community members. At the same time, across the islands, concerns arise about declining community connectedness, disappearing meeting places and divisions between "local people" and "outsiders", particularly when newcomers do not try to integrate. This is seen as a threat to local culture*: "I want our culture to stay as it is now. A lot of outsiders are coming to the island and they don't interact with us, not like we are used to. I want the friendliness to stay the same".* In this sense, attachment is partially maintained through social networks as well.

This social dimension of attachment is also visible in the photographs. Several images feature family members, friends, and close community relations, making personal ties an explicit part of how participants visually represent meaningful island life. For example, photographs of everyday interactions with pets (see Figure 18), family members (see Figure 20), community events (see Figure 21) and weddings (see Figure 24) illustrate how social relationships are embedded in daily life on the islands.



Figure 20 Auto-photograph depicting the daughter of the participant in dune landscape on Sylt (Participant 13, n.d.)

These photographs reinforce the idea that attachment is not only related to physical aspects of the landscape, or embodied experiences, but that relationships with community, family and friends are also integral for what makes life on the islands meaningful. In this way, both interviews and

photographs demonstrate that social networks are central to place attachment and experiences of island life.



Figure 21 Photograph depicting participant with friends at local event on Sylt. The participant was able to show other locals their organic farming practices and harvest (Participant 9., 2025)

This attachment translates into a strong sense of ownership and responsibility. Participants frequently use phrases such as “our island” and “we take care of it”, showing symbolic ownership. Responsibility is enacted through everyday practices: volunteering in nature associations, organising beach-clean-ups, monitoring behaviour in dunes, or confronting tourists damaging the landscape.

Place attachment, therefore, extends beyond emotional ties; it creates care. Local people describe a reciprocal relationship in which caring for the landscape ensures that the landscape also takes care of them. Place attachment, furthermore, appears to be understood as both environmental and social.

6.2.2 Community life, knowledge and cultural continuity

Community life is central to cultural values across all three islands. People appreciate “knowing everyone”, value meeting places and cherish their community in general. On Rømø, in particular, community life is deeply integrated in the culture through volunteer associations, including the fire

brigade, rescue teams, cultural and nature groups, and music or art initiatives. These associations reinforce bonds between people and place.

This relational dimension of attachment became visible in photographs depicting family members, traditional island clothing, and community celebrations. Two participants submitted photographs in which they are dressed in traditional clothing from Rømø. One participant explained the significance of this dress as it was handmade by her mother, and represents the generations of family that came before her on this island (see Figure 22).



Figure 22 Photograph depicting participant in traditional clothing on Rømø. The dress was made by the participant's mother (Participant 5, n.d.)

The other participant associated the photograph with her previous work at a local cultural museum, connecting her personal attachment to the island with the importance of cultural preservation (see Figure 23).



Figure 23 Photograph depicting participant in traditional clothing on Rømø, in an old sea captain's house turned into a museum (Participant 4, 1998)

One particularly clear example was a wedding photograph. The arch depicted on the photograph was made by firefighters, the participant's husband's colleagues, members of a gastronomic club, members of the sports association, and some of her students from school (see Figure 24) . They were celebrating alongside the couple outside the church of Rømø. Beyond documenting a personal moment, the image reflected the close connection between community life, volunteering culture, and belonging on the island.



Figure 24 Photograph depicting the wedding of the participant on Rømø. Members of different volunteering associations were there to congratulate them by creating a arch outside the church (Participant 7, 2006)

Volunteering is also present on the other islands, though less prominently. Still, across all cases, community interactions are closely tied to knowledge exchange. Local people value learning from each other (parents and grandparents, friends, neighbours). Narrative knowledge and experiential knowledge, like stories and lived experiences of storms, fishing, or landscape changes, are appreciated and seen as part of preserving culture.

However, interviewees express concern that this transmission of knowledge is weakening. Across the islands, similar factors for this concern are described: younger generations moving away, high housing prices preventing returning to the islands, and growing divides between local people and newcomers. Residents describe their communities as being protective of their knowledge and do not wish to share it with outsiders easily, while at the same time, newcomers are described as not always wanting to integrate into the community.

Ageing and population decline further influence community structures. This is a problem among all islands. Volunteer associations lack new members, and schools, restaurants and other social infrastructure are closing or operating strictly seasonally due to tourism. In the interviews, local people often get nostalgic when talking about these situations and recall the past in which community cohesion was stronger and more families lived on the islands. This nostalgia, however, is not merely sentimental; it reflects the transformation of community structures and local economies on the islands.

Community life, thus, is the foundation through which cultural values and local knowledge are being reproduced. As social structures transform, local people worry that cultural continuity and with it, island life, will disappear over time.

6.2.3 Local knowledge systems

Local knowledge on the islands has multiple forms and is expressed in everyday life. First, there is knowledge produced through experiences and observations. Interviewees mention knowing when storms are coming by changes in the weather, reading tides based on the moon, or simply “just knowing” what the weather is going to do. Others talk about observational knowledge: they see the landscape changing through shifting dunes, beaches shrinking, and forests emerging. These types of knowledge are produced through long-term interactions with the environment; it is embodied. It is not discussed among families or communities, but rather something you attain by observing and experiencing your environment.

Second, there is knowledge in the form of learning from others. Many interviewees mention learning from parents, grandparents, neighbours or friends. Who they go to is dependent on the topic. One interviewee describes going to her neighbour for island history, going to her friend about fishing, and her son about extreme weather preparation. A local school teacher described taking schoolchildren out in nature to pass on environmental knowledge. Another participant states taking her grandchildren out to show them how to take care of nature here on the island. Collective memory also plays an important role in knowledge sharing. Stories of past storms, local conflicts and just everyday life are frequently shared within the different island communities, reinforcing shared identity on the respective islands. In this way, knowledge is not just created through individual experiences, but also through shared stories and experiences within communities and intergenerational transmission.

In relation to environmental disruptions, local knowledge plays an important role in how storms, flooding and environmental risks are understood and responded to. As argued before, continued experiences with extreme weather have influenced what residents consider a "serious" storm. Intergenerational transmission is also an important aspect of this knowledge production. Knowledge about storms and environmental disruptions is not only based on personal experiences, but also on stories, habits and observations passed down through generations. Parents, neighbours and other community members play an important role in teaching younger generations how to interpret environmental conditions and how to respond during disruptions. In this way, local knowledge shapes not only practical responses, but also how environmental disruptions are perceived and understood within island communities

This shows that knowledge on the islands is not strictly formal or expert, but rather it emerges from embodied engagement with the island and social interactions. This knowledge is specific to those living here and thus strengthens identity, while continuing to evolve through lived experiences.

6.2.4 The identity of being local

Culture and knowledge on the islands are closely tied to local identity. Yet, the interviewees show that "being local" is not fixed. The interviews show that there are degrees of being local, and it differs among generations and islands.

The first distinction arises when discussing heritage. At one end, there are those born on the islands with multiple generations of family history. At the other end, there are the long-term residents and newcomers who have moved to the islands more recently. Older islanders often view those who have generational roots on the islands as "local". Younger islanders and long-term residents tend to define "local" more through commitment: someone becomes local when they take care of and are responsible for the island, and participate in community life. They see a local as someone who reflects the identity of the land and respects the cultural values and knowledge. In this sense, local identity can be earned through engagement rather than inherited solely through lineage.

At the same time, there is a strong distinction between "us versus them" in the interviews. Outsiders are often described as tourists damaging nature, new residents not understanding island life, or mainland authorities lacking knowledge of what it is like to live on an island. The outsider, thus, is framed as someone lacking situated knowledge or place attachment.

Even within the communities, these hierarchies of being local influence epistemic legitimacy. Those born and raised on the island are often seen as more legitimate than those who moved there later. One participant, a member of the local Rømø island council, states, *"I was born here, so that is why people on the island listen to me".* Another islander who moved later to Ameland states, "*I have been living here for 50 years, but I will never be seen as an Amelander… If I, as an islander, were to say anything, they would not listen to me, because I am not from here*."

Local identity, thus, is relational and dynamic, shaped by inclusion and exclusion. The boundary of who is local is constantly changing depending on individual perspectives, definitions and the social or spatial scales.

6.3 Agency and adaptation

Building on the previous sections, this part examines how local knowledge influences agency and adaptation practices. Local people's responses and daily adaptation to environmental disruptions reveal forms of knowledge rooted in routine behaviour and collective action. This section will further explore different aspects of adaptation practices and demonstrate how local knowledge is put into action. Analysing agency from this perspective highlights how community resilience arises from relational knowledge systems. It will also explore where the local agency is limited.

6.3.1 Every day and historical adaptation practices

Adaptation in the interviews is often described as everyday routines, historical practices or practical adjustments. When describing how local people adapt to the environmental disruptions, a distinction can be drawn between historical adaptation practices and current practices.

Historically, adaptation focused strongly on infrastructure. In the Wadden Sea region, houses were traditionally built on terps, dwelling mounds characteristic of the Frisian culture, to protect against flooding (see Figure 25). One of the residents found out that their home was actually built on such a mound as well: *"This house was placed on a higher mound to protect against the water… I found out during renovations. Then you realise how risky it was to live here."*



Figure 25 Example of a terp, a dwelling mound, that was used by the Frisians as a defence system against floods (SERC, 2016).

Other types of infrastructure historically created by local people are dikes. Residents of Ameland describe how the island was once made up of three separate islands. The inhabitants of the islands in this period constructed their own dikes between the islands for flood protection. Similar, though smaller-scale, people on Rømø used to build turf dikes around their homes for flood protection.

On Sylt, coastal erosion and wandering dunes required a different response. Participants describe that in the past, local people had to regularly take down their houses and rebuild them further inland to prevent flooding and being covered in sand. Over time, residents began planting heather grass to stabilise the dunes. This fixing of the dunes also became a popular measure among other islands.

Housing design also reflected weather conditions. Several participants from different islands explain that homes were oriented west to east to minimise exposure to strong western winds. During storms, doors and windows on the east side were opened to let the wind pass through so the houses wouldn't explode. The barn was placed on the west side of the house to block cold winds, while the living quarters were on the east side (see Figure 26). The foundations of the houses were often built on wooden poles with clay or stone in between as walls. During floods, the walls could wash out while the main structure remained intact. Families would shelter in the attic and could easily rebuild afterwards.

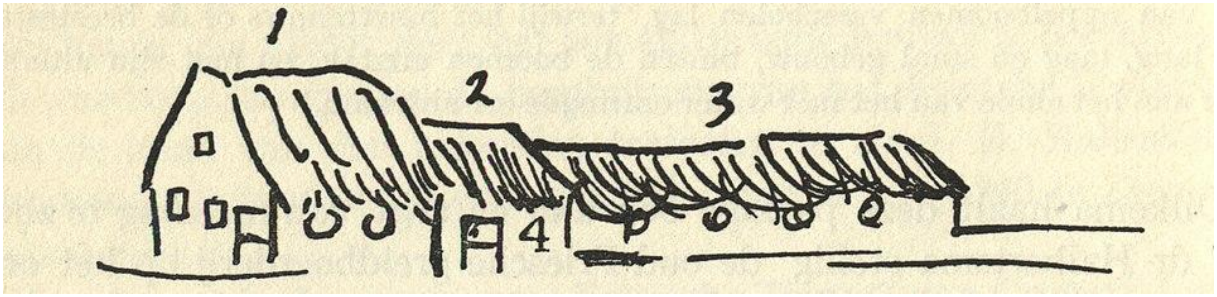

Figure 26 Rough sketch of an old Frisian Longhouse created by J.H. Halbertsma in 1850. Here 1 functions as the living quarters, 2 & 4 as the entrance, and 3 as the barn (Halbertsma, 1850).

Older interviewees also recalled their parents insisting on having fireplaces, wood-burning stoves, wells and local pumping systems. This ensured that they would have water and heat during extreme events and reduced reliance on the mainland.

Overall, there is a high knowledge of historical adaptation practices within the different island communities. All interviewees, including those who moved to the islands later in life, were able to describe historical practices. When asked how they knew about this, participants often referred to their family members, conversations with other community members, or their own observations and research. Through this, adaptation is not only preserved through physical infrastructure, but also through collective memory and social interactions within the community.

Many of these historical measures still inspire current adaptation practices; buildings in the port of Rømø are still constructed on elevated foundations, and on Sylt, some houses are still relocated due to erosion. Islanders still install wood stoves, solar panels, and heat pumps to increase self-sufficiency, which brings new challenges, such as making these systems more resistant to weather conditions. While interviewees suggest current building techniques are more resilient, they also recommend modernising historical adaptation ideas, for example, through mobile houses for wandering dunes or floating homes to cope with flooding.

These examples show that adaptation is deeply embedded in local knowledge and long-term interactions with the environment. Rather than adaptation being viewed as formal policy-driven strategies, these practices result from historical observations and practical responses to environmental disruptions. Building methods, dune fixing, self-sufficiency practices and home layouts reflect how knowledge is passed down through generations and everyday routines. Therefore, adaptation is not just policy-driven, but based on situated experiences and cultural memory.

6.3.2 Responses during extreme events

Islanders describe different types of responses during extreme events. First, there is the immediate response: moving cars, securing loose objects, and placing sandbags in front of doors. These actions are often described by participants as “minor” or even as “doing nothing”. However, they reflect routine habits and familiarity with storms. Phrases such as “we know what to do” suggest that these responses are forms of knowledge embedded in everyday experiences.

A second form mentioned is the organised response, particularly visible on Rømø. Local volunteers, including the fire brigade and first responders, check on tourists during the storms and gather at the old school on the island, used as a catastrophe hall. There, they prepare food, beds, blankets and first aid. This collective response highlights the importance of community networks and social cohesion when managing disruptions.

On Ameland, a similar type of organised response emerges. Residents of the island can sign up to become a “dike watcher” during storms. While this is initiative is organised by the regional water board, it relies on volunteers from the island itself. During a storm, volunteers will be called upon to monitor the dike for potential damage.

Another form of organised response can be seen in the local practice of “jutten”, which entails going to the beach and searching for interesting objects the storms have brought to shore. On Ameland, there is a local association that organises this activity, with members using cars on the beach to transport interesting objects, something which is not normally allowed. In exchange for being allowed to access the beach by car, the association established an agreement with the local government to clean the beaches afterwards. A member explains, “This has been an agreement since 1994, and we don’t mind doing it. It is something positive, as we now have the cleanest beach in the Netherlands!’ These practices show that formal governance and local community action become intertwined when managing environmental risk. At the same time, it demonstrates that collective action relies on the community’s willingness to care for the island and its environment.

The most frequently mentioned response across all islands is simply staying inside and waiting for the storm to pass. This “doing nothing” does not indicate indifference, but rather reiterates that storms are temporary and part of island life. People further state trust in infrastructure, which reduces panic and urgency.

Some responses show that storms are also viewed as spectacles. On Sylt, interviewees mentioned going out to surf during severe weather. Others walk to the dunes or beach to watch the waves, feel the force of the winds, or take photos and videos. As children, some recalled going out and watching how fast rubbish would fly down the streets. This is reiterated by the earlier photograph by a Rømø resident that was shown (see Figure 17) depicting a kitesurfer during a storm and a couple walking through the dunes.

These responses show that storms are not viewed solely as threats, but also as a familiar part of island life. Many participants described environmental disruptions as something expected and manageable, which is reflected in the responses and routines described above. This further shows that responses are shaped by long-term experiences with environmental disruptions, by shared understandings of risk within the community, and the collective need to take care of the environment.

6.3.3 Preparation

When discussing responses to environmental disruptions, interviewees emphasise anticipatory response and preparatory practices.

At the informal level, across the islands, residents describe routinely checking weather forecasts, often more frequently than mainlanders. These checks also include checking tidal patterns, which help anticipate the severity of storms. Many residents keep emergency supplies such as candles, radios, extra food, and emergency bags prepared in case they need to evacuate.

Decisions on where and how to build also reflect anticipatory thinking. Local people avoid high-risk flood areas and think about house structures to reduce vulnerability. These practices are never framed as a conscious emergency preparation by the interviewees, but rather as common sense. Preparation, in this sense, is based on habits and local knowledge.

In addition to these everyday routines, there are formalised preparation measures. On Rømø, a yearly storm flood exercise was initiated by the local fire brigade after the storm of 1999. These exercises have strengthened emergency response and protocols, improved coordination amongst volunteers and have resulted in a well-supplied catastrophe hall. Local volunteers are trained through this yearly exercise, and in the last edition, the fire brigade even invited tourists to participate, to prepare them for environmental disruptions as well. On other islands, there were no mentions of such exercises. However, early warning systems from formal institutions were mentioned, often being received as a phone alert. These practices show that preparatory measures are both informal and formal and instigated at different levels of society.

Preparation, however, is not equally acknowledged among residents. Interviewees note generational differences, in which older residents tend to rely on self-sufficiency measures, while younger people are perceived to have great trust in formal infrastructure and do not feel the need to prepare. Similarly, individuals who have experienced an extreme event feel the need to prepare more than those who have not. One interviewee said, *"My husband is not from this region; he has never experienced a heavy flood, so he does not know what to do or how to prepare for it."* Interesting to see, though, is that the storm flood exercise on Rømø seems to bridge this gap as both those who have and those who haven't experienced extreme events sign up to volunteer.

These examples show that preparedness is both visible on informal and formal levels and differs among residents. It further suggests that these differences are shaped by local knowledge systems created through lived experiences and shared understandings of risk.

6.3.4 Collective versus individual agency

The interviews reveal a clear distinction between individual and collective agency in responding to environmental disruptions.

Individual agency is embedded in domestic and practical routines; securing property, monitoring the weather, and everyday adaptation. These actions are largely informal and rarely described as "adaptation" or "preparation". Instead, they are framed as "normal".

Collective agency, in contrast to this, emerges through social cohesion, care for the landscape, and a sense of urgency. It becomes visible in volunteer work, local associations, community meetings, and

informal support networks. On Rømø, where interviewees emphasise strong community cohesion and high awareness of environmental disruptions, collective agency seems to be most prominent. Besides the storm flood exercise, the volunteering work is central to local life and taking care of the island.

On Sylt, social cohesion is mentioned less frequently, and there is a higher sense of safety. Here, collective forms of agency seem less central in everyday life. On Ameland, where levels of community cohesion and perceived safety seem to lie somewhere between the other two islands, forms of collective agency are present but more closely intertwined with formal governance structures. This suggests that collective agency is relational and depends on the strength of social networks and the extent to which environmental risks are perceived as immediate or urgent.

At the same time, individual and collective agency are mutually dependent. Individual action relies on collective infrastructure and shared knowledge, such as weather websites and formal warning systems. Conversely, collective agency depends entirely on the participation and commitment of individuals. Agency, therefore, operates across scales, and these scales reinforce one another.

6.3.5 Limits, constraints and inaction

There are limits and constraints to local agency, and inaction is a recurring theme in the interviews. The most frequently mentioned constraint is the power of nature. Local people state that the intensity of storms, the amount of rainfall and wind speeds are beyond their control. They recognise these limits and frame inaction not as laziness, but rather as the understanding that some forces are beyond human control.

Interviews also reveal that dependence on larger systems, particularly coastal infrastructure, limits action. On Sylt and Ameland, residents express strong trust in dikes and flood defences, reinforced by decades without catastrophic events. This trust creates a sense of safety that reduces the urgency of immediate local action and thus influences the amount of agency.

These observations show that local agency is situated and relational. It operates within the limits of natural forces, local experience and external governance structures. Even when residents “wait out” a storm, this inaction is informed by an understanding of the local environment and earlier experiences with similar situations.

6.4 Governance, participation and recognition

While the previous section discussed that island communities enact place-embedded agency in different forms in responding to environmental disruptions, these practices do not occur in isolation. Rather, they act in broader governance structures that influence how local knowledge and action are recognised. This section examines how communities perceive and engage with formal decision-making processes and how these interactions influence place-embedded agency.

Across the interviews, it became clear that governance is experienced differently between the islands and that participation, trust and recognition perceived by local communities vary significantly. These differences will become apparent in the following paragraphs and reflect structural, demographic and historical conditions.

6.4.1 Perceived inclusion and recognition

All communities have a good sense of governance and decision-making processes, but perceptions of inclusion and recognition vary significantly.

On Rømø, local people feel largely ignored and excluded. Rømø is part of a larger municipality that is also in charge of an area on the mainland. The municipal board is located on the mainland. Rømø residents describe the municipality as prioritising tourism over community needs and making decisions without informing them, such as building vacation homes or attempting to sell the local school, which is used as a community centre and a catastrophe hall. One interviewee states, *"We are not involved at all. We try to be included, but it is so difficult. The municipality does not listen to us".* A local firefighter says, *"I just want them to take us more seriously. We see what happens here, we live in it. They should listen to us*". They feel abandoned by local government authorities. For example, during storms, the municipality stopped sending paramedics and ambulances over the dam, leaving the local people with the feeling they had to fend for themselves. On Rømø, it seems that inclusion by the local government is reactive rather than proactive, and island residents often feel compelled to advocate for themselves.

On Sylt, the situation is different. Local people feel quite included in decision-making processes. The coastal defence authority (LKN) visits annually with mayors and firefighters to assess erosion and coastal safety and meet with local farmers. The participants themselves, however, mention being less engaged in the decision-making processes. Some express wanting to be included in the discussion on coastal safety on the island, while others do not share this need. In general, residents describe the community of Sylt as content to rely on the existing process of participation as long as "everything still works". Residents state, *"most people don't really care what is going on in terms of coastal protection, as long as there are no floods, people are happy*". On Sylt, inclusion in general is perceived as sufficient. Established participation processes with local mayors, firefighters and farmers are appreciated among the participants and are perceived as successful for coastal defence. Here, governance is less contested.

On Ameland, perceptions are mixed. Information evenings inform local people of decision-making processes and allow for questions and objections. However, they are rarely involved in the decision-making itself. Some accept this and state they want to leave the decision-making to the "experts", with which they mean the government. Others express frustration with not being involved and recognised. One participant stated, *"I would like for us islanders to be recognised by the government more; they talk about us, but not with us".* For this, it is important to specifically recognise local ideas and knowledge. An Ameland resident stated that when the community would make suggestions to government institutions, they would be portrayed as "stupid Amelanders", rather than actually take the suggestions into consideration. This shows that formal inclusion through providing information does not equal feeling heard and recognised by government authorities.

Overall, these cases show that inclusion is relational and context-dependent. It is not only dependent on formal procedures, but also on recognition, representation and response by authorities. Across the islands, perceptions of inclusion are related to epistemic recognition. Local people do not just want to be involved in procedural participation, but want their experiences and knowledge to be acknowledged as relevant to decision-making processes. This shows that inclusion is not simply about being informed, but about local experiences and knowledge being recognised as legitimate.

6.4.2 Trust and mistrust in authorities

Another important factor of how local people perceive and engage with decision-making is trust in the government. Expressions of trust increase with visible and structural government action (e.g. sand replenishment, dike raising), long periods without flooding or other consequences of environmental disruptions, trusting expert knowledge, perceived meaningful inclusion and feeling safe and stable through these previous actions. Expressions of mistrust are based on perceived government favouritism, lack of understanding of local conditions, lack of transparency and limited inclusion of residents.

Levels of trust differ significantly across the islands. On Rømø, no interviewee mentioned any sign of trust in the government. They explicitly addressed their discontent and their mistrust by stating that the government ignores their local needs, there is a lack of communication, and they are excluded from decision-making.

On Sylt, the level of trust was quite the opposite. All interviewees mentioned trusting the government and their decisions. Residents feel safe due to effective infrastructure, the absence of floods, and the presence of annual participation in decision-making processes, which creates confidence in governance.

On Ameland, trust seems to be more conditional. Local people differ in their opinions of whether they trust governance processes or not, and depending on the topic, their trust differs. For example, physical infrastructure like dikes brings this feeling of protection and safety. Especially those who have seen the dikes being raised and strengthened over the years, appreciate this transition, which earns trust. However, people tend to be more sceptical when it comes to nature-related regulations, such as dune management or Natura 2000 regulations. This scepticism does not come from opposition to nature protection itself, but rather because residents, especially the older generation, perceive these regulations as limiting their traditional use of these landscapes. They state being concerned about the cultural impacts of strict regulations, as they can restrict historical uses such as hunting, fishing and gathering food. As one participant explained*, "it makes it hard for us to maintain our culture when these kinds of regulations are imposed… We cannot pick berries from the forests, we cannot take mussels and oysters from the Wad*". They reiterate that it is not because they do not want to protect nature, *"I would understand these regulations if birds didn't have enough food, but there is enough for humans and animals".* This shows that these tensions around environmental governance are not due to opposition to conservation itself. But rather because regulations can clash with local cultural practices and livelihoods.

Combining these observations with the findings in chapter three reveals patterns showing that levels of trust and agency are based on interactions local people have with place, infrastructure, and governance. On Rømø, trust in the government is low, residents feel that their knowledge is not recognised, and there is greater collective action in the community. Conversely, on Sylt, trust in the government is high, residents feel included in decision-making processes, and collective action is less present in the community. On Ameland, trust in the government seems conditional, residents feel semi-included in decision-making processes, and collective action is often intertwined with formal governance.

Based on this, how governance is perceived is, therefore, not only shaped by effective adaptation, but also by the degree and ways in which residents are included in decision-making processes.

6.5 Local future hopes for adaptation

Across the islands, interviewees spoke not only of experiences of governance, but also about their hopes and concerns for the future in relation to environmental adaptation. These imaginaries showed aspirations for cultural continuity, ecological coexistence, infrastructural security and community resilience. This section examines these hopes for adaptation.

6.5.1 Living with nature and its dynamics

Across the islands, residents consistently describe environmental disruptions as a part of their existence on the island. They understand that nature is dynamic and more powerful than humans. This awareness evokes fascination, wonder and respect, rather than fear. Across all islands, local people emphasised their hopes that the future should focus on living with nature's dynamics and that nature should have the ability to control itself. For example, interviewees mentioned wanting more room for salt marshes to develop, to accept and restore the wandering dunes across the islands rather than fixing dunes, and to accept the natural life of the coast. One resident stated, *"The North Sea coast is dynamic; we need to adapt and live with these dynamics".*

At the same time, local people strongly value protecting existing nature. They propose creative interventions, such as a raised boardwalk through the dunes, designed to both protect the nature and teach tourists about the historical development of the dunes. Others call for the continued removal of invasive species and maintaining beach cleanups. In general, this calls for interventions that respect the natural identity of the landscape.

6.5.2 Cultural continuity

Another hope for the future of the islands is cultural continuity . Residents express their desire to preserve community cohesion. They hope for young people to stay or return, families to settle, and for community cohesion to remain: "*I want an exodus stop. We need to stop people from moving away, and have more people that live here, participate in the community and are interested in our culture".* Interviewees mention this can be achieved through affordable housing, job opportunities, and more local infrastructure. Local people are concerned that the islands might become solely tourist destinations, and are losing cultural identity and community life.

Preserving the islands' historical identity is equally important. Local people want to restore historical buildings, maintain museums and continue to pass down stories and local knowledge. One participant stated, *"history should be told orally to new people… We need people who know the history to tell it to future generations, so it can continue to be part of our community in the future"*. When discussing conserving island identity, several participants explicitly mention not wanting new infrastructure unrelated to island culture: *"I don't want more buildings that do not reflect our island identity. We should focus on repairing old buildings and get our culture back in the landscape, rather than building more and more and more".*

These concerns are not only related to social change, but also to future adaptation. Across the interviews, local knowledge and historical adaptation practices were described as integral to island culture and passed down across generations. Participants describe learning about building techniques, storms, and environmental risk through parents, neighbours or other community members. Cultural continuity, therefore, is also important for the continuation of situated and

embodied knowledge. Without active members in the community and intergenerational knowledge transmission, these forms of knowledge risk disappearing.

These findings show that future adaptation, from a local perspective, is not only about physical safety or technical protection measures, but also about maintaining the social and cultural conditions through which local knowledge, adaptation practices and community resilience can continue to exist.

6.5.3 Coastal protection imaginaries

Local people imagine coastal safety through two ideas. The first is based on *engineering-based* protection. Local people mention wanting higher dikes and more dikes, and continued reinforced infrastructure. They explicitly mention continued sand replenishment. These are examples of clear and visible protection. They also mention wanting more equipment, such as cars and boats, that would be resistant to environmental disruptions.

On the other hand, there is a call for more nature-based protection measures. Residents want their dunes to be strengthened, to use salt marshes as natural buffers and to respect ecological systems.

These two imaginaries are not necessarily contradictory, but can also be seen as complementary. Local people envision a future in which protection remains visible and felt through impressive infrastructure, while also wanting different measures that align with the island's dynamic landscape. In the end, people want safety first.

6.5.4 Self-sufficiency and local resilience

Across the interviews, another recurring future vision concerns self-sufficiency and local resilience. Local people express a desire to reduce dependency on the mainland, in terms of utilities, economy and crisis-response. This wish is often connected to earlier experiences of delayed responses during environmental disruptions, feelings of being overlooked by authorities, and a historical island identity of being independent and not needing "outsiders". Islanders want to be able to take care of themselves when needed and not rely entirely on outside assistance.

Some interviewees mention the importance of having local energy systems, for example, an Ameland resident mentioned: "*We want to be self-sufficient on the island, for example, in terms of our own solar or tidal energy production".* Others want more focus on food security and local production, suggesting that the islands should not rely solely on imports. These suggestions reflect the ambition to create a local industry that benefits the community rather than depending on external actors. A friend group on Sylt discussed that they "would like to see more money invested in local initiatives that are for local islanders", rather than investing solely in tourism.

Other ideas on self-sufficiency, especially in terms of environmental disruptions, regard better equipment for local fire and rescue brigades, reliable infrastructure and accessible community spaces that can function as catastrophe halls. These ideas are influenced by the awareness that the islands can become isolated during environmental disruptions and, thus, are dependent on their own resources.

At the same time, these hopes also reflect the importance of local agency on the islands. Local adaptation is already often described throughout this thesis as relying on informal support networks,

volunteer work and local knowledge. This shows that strengthening self-sufficiency is not solely about infrastructure or resources, but also about maintaining social structures and community networks.

These visions reveal that future adaptation, from a local perspective, involves reinforcing local self-sufficiency and resilience. This way, communities are not solely dependent on external decision-making, but can also respond on their own.

6.5.5 Meaningful participation, epistemic recognition and situatedness

While local people expressed different wants and needs for the future of their islands, a common theme across the islands is the need for meaningful recognition within governance processes. Whereas on Sylt, this seems to be already established, with a general contentment with inclusion amongst the participants, interviewees on Rømø and Ameland emphasise that inclusive adaptation is more than being informed about decisions.

They describe wanting earlier involvement in planning processes, clearer communication and more transparency regarding proposed plans. On Ameland, several people note that the information evenings often occur after decisions have already been made, limiting the influence of local people. This creates a sense that participation is procedural rather than substantive. On Rømø, multiple participants stated that they often find out about decisions on housing projects or nature legislation after asking about it themselves. Amongst them, there is a high demand for transparency. They also describe that they would like a system in which they could propose ideas themselves and be able to make decisions themselves: *"My ideal scenario, I would also like us, the local people, to be able to make decisions, and the municipality to support us in taking care of the island."*

At the same time, interviewees generally do not reject governance institutions or expert knowledge. For example, a Rømø resident states: "*I want the municipality, the council and other actors to work together and have the same mindset*". Participants emphasise the importance of recognising lived experience and local knowledge alongside technical expertise. Interviewees describe local observations, long-term familiarity with environmental conditions, and everyday experiences on the islands as valuable forms of knowledge that are often overlooked within formal governance processes.

Across the islands, interviewees also highlighted the importance of local context in adaptation planning. Participants repeatedly referred to the social, environmental, and cultural specificities of island life and expressed concern that externally developed approaches do not always reflect these realities. A Rømø resident stated, *"The government must understand what we need and what we do not need. We do not need big new hotels and mass tourism. We need local community spaces, we need to keep the island clean, we need affordable housing".* Another participant from Sylt stressed, *"we need to keep the island liveable*", highlighting the importance of taking local realities into account. While governance experiences differed between the islands, residents consistently stressed the importance of situational awareness and local experiences in decision-making.

7. Discussion

This thesis investigated how cultural values, local knowledge and perceptions of governance shape the agency and adaptation practices of Wadden Sea island communities in response to environmental disruptions. Across the three islands of Rømø, Sylt and Ameland, the results showed that environmental disruptions are not understood solely as threatening, but as deeply embedded within island life, culture and identity. Local knowledge emerged through shared narratives, lived experiences and long-term interactions with the environment, which shaped adaptation practices and forms of place-embedded agency.

This research further showed that governance interactions differ significantly between the islands. These interactions influenced local perceptions of trust, inclusion and recognition. The differences demonstrated that the tensions surrounding governance do not necessarily arise from disagreements on environmental change itself, but rather from the lack of recognition of local knowledge and the use of this in decision-making processes. Furthermore, the results showed that local future imaginaries focus on moving beyond technical adaptation measures and should rather include concerns about cultural continuity, liveability, and meaningful collaboration.

This discussion chapter reflects on the analysis and situates its results within broader debates in the literature. It further looks into how the insights could inform inclusive climate adaptation strategies in island communities. Lastly, the chapter reflects on the methods and limitations of this research and offers suggestions for future research in this field.

7.1 Environmental disruptions, normalisation and agency

7.1.1 Normalisation of environmental disruptions in local culture

In the analysis, it becomes apparent that environmental disruptions seem to be normalised in daily life and local culture on the islands of Rømø, Sylt and Ameland. Residents express this by referring to these disruptions as something that “is part of life on the island” and that they “ just live with it”. Literature on sociology supports this by stating that environmental disruptions are normalised when hazards are accepted as frequent life events (Bankoff, 2007). This ‘normalisation of threat’ occurs through the integration of risk into a community’s physical landscape, social structures and mindsets (Bankoff, 2007; Šakić Trogrlić et al., 2021).

First, the integration of environmental disruptions became visible in the interviews when discussing how island communities adapted their built environment. Interviewees described historical ways houses were built to be resistant to storms, and how houses are still being built to withstand these events. This reflects broader literature that suggests communities adapt their fundamental systems, such as architecture and infrastructure, to adapt to repeated environmental shocks (Bankoff, 2007; Firdaus et al., 2023). Through these types of actions, local people literally start to live with environmental disruptions by changing their physical environment.

The results further show how normalisation of environmental disruptions is enforced through social and cultural practices. One aspect of this is engaging in recreational or normal activities during a disruption, such as going for a walk in the dunes, or children going out to play games during storms. Other participants describe going out to surf during storms. Another aspect is using storytelling or rituals as a way to reassure others during these events. For example, an interviewee mentioned that

as a kid, her mother would always make “lightning coffee” during extreme storms, and that this would calm her down. These findings align with the literature arguing that communities develop rituals and shared values that manage the psychological burden of living with uncertainty (Bankoff, 2007; Rosa-Rosa et al., 2025). Engaging in recreational or everyday activities during disruptions can therefore be interpreted as an act of resilience and cultural continuity.

The findings also support literature on memory and situated knowledge. Across the islands, environmental disruptions were recalled through stories and lived experiences that influenced how local communities currently understand risk. For example, several interviewees remembered their experiences of Hurricane Anatol in 1999 in great detail, recalling flooded roads, fallen trees and volunteer efforts. Participants said that these stories were often still recalled within the community and continue to shape how residents think of these types of disruptions. This reflects broader ideas on “memory work”, in which narration and experiences of past disasters become an integral part of history, which reinforces the community’s identity (Farny & Dentoni, 2025).

Similarly, participants often described knowing when a storm was going to be “bad” through long-term observation and experience. Taking this into account, the idea of going out to surf during a storm or to film videos when trees are falling can also be viewed as an expression of local knowledge. Long-term exposure to disruptions creates “situated knowledge” which allows local people to predict imminent danger (Leino & Peltomaa, 2012; Setten & Lein, 2019). A local who “draws on what they know” may perceive a storm as safe based on their earlier experiences, whereas an outsider might view this as dangerous. The choice to go outside despite extreme weather then becomes a calculated risk. Literature suggests that “not being scared” in this perception is an active state of evaluating risk rather than passive ignorance of it (Bankoff, 2007; Farny & Dentoni, 2025; Leino & Peltomaa, 2012).

7.1.2 Perceived safety, urgency and agency

Another result from the analysis is that perceived safety influences the urgency of a community to take action. Across the islands, perceptions of trust in governance institutions strongly influenced how urgently local people felt the need to respond to environmental disruptions. When perceptions of trust and perceptions of safety were low, local people described a stronger sense of urgency and responsibility to act. This aligns with literature suggesting that when a community’s perceived safety is low, due to environmental threats or a lack of trust in institutional protection, their sense of urgency increases (Rivera-Kientz et al., 2024). On the other hand, a high sense of perceived safety can reduce urgency. On Sylt, for example, trust in dikes, sand replenishment and coastal protection structures contributed to feelings of safety and reduced the perceived need for collective agency. This supports literature that suggests that being overly trusting of official protective structures can undermine the perceived need for residents to engage in protective action themselves (Farny & Dentoni, 2025; Human Adjustment to Floods, n.d.; Macdonald et al., 2012; Thaler & Seebauer, 2019).

The results further show that increased urgency generally leads to higher levels of action. For example, a Rømø resident describes her experience of setting up a catastrophe hall without any prior knowledge during the 1999 storm: “*Nobody was prepared for it. I was living next to the school, and the headmaster called me and said, “You have to come to the school and help me”… We didn’t know what to do, we never had a storm that bad that people had to be saved and come to the school. We just divided everyone into different rooms and searched for blankets and mattresses… More volunteers came during the night and helped. I was called in at 22:00, and we left the following*

morning." This supports broader literature arguing that during the first hours of an extreme event, a high sense of urgency triggers emergent actions (Farny & Dentoni, 2025; Rosa-Rosa et al., 2025; Setten & Lein, 2019).

These dynamics show that community agency in environmental disruptions is not just driven by local motivation or place attachment, but also by how safety, responsibility and support are perceived and their impacts on perceived urgency.

7.1.3 Perceived lack of effective governance as a catalyst for agency

The findings of this research show that perceived gaps in governance can act as an important trigger for local agency. This dynamic is visible in the case of Rømø. Interviewees discussed that a lack of government action made them feel responsible to take care of the island and themselves, which resulted in beach clean-ups, regular community council meetings and local emergency response exercises. A clear example is the municipality retracting first aid help during severe storms when the dam to the island would close. This retraction triggered the residents to get first aid training themselves and to advocate for a first aid vehicle to be permanently stationed on the island.

This response of local communities starting to organise themselves is often the result of governance being perceived as slow, lacking transparency, or insufficiently responsive (Ibrahim et al., 2023; Thaler & Seebauer, 2019). In this sense, perceived governance dysfunctionality and absence create a "resource gap" that pushes local people to step in and take collective action (Rosa-Rosa et al., 2025; Thaler & Seebauer, 2019).

Distrust in formal authorities further reinforces this dynamic. When residents feel historically marginalised or ignored, mistrust becomes a motivator for community activism (Rivera-Kientz et al., 2024). In the case of Rømø, and also on Ameland, ignoring local needs and prioritising other values, such as nature protection or tourism, over local culture, enforces the need for local action. Agency in this sense is reactive: it emerges not only from place attachment, but also from institutional shortcomings.

7.2 Local knowledge and epistemic legitimacy

7.2.1 Epistemic legitimacy from a local perspective

This thesis draws on epistemic legitimacy and situated knowledge. With epistemic legitimacy, the recognition of whose knowledge is valid and credible is meant. The analysis showed that from a local perspective, epistemic legitimacy is rooted in situated knowledge and place-based competence rather than expert knowledge (Leino & Peltomaa, 2012; Setten & Lein, 2019). Residents expressed that they "know what to do" and "understand what living is like". Their perspective on epistemic legitimacy also results in finding "expert" knowledge often less legitimate. Statements such as *"they [the government] make decisions without even visiting the island*" and "*they don't know what it is like living here"* show that immersion in the local environment is a big part of what makes one's knowledge valid from a local perspective.

Broader literature on epistemic legitimacy supports this notion. Legitimacy is often given to those who are "immersed in and part of the community" and share a "common fate" with residents (Rosa-Rosa et al., 2025; Setten & Lein, 2019). Frontline communities often view themselves as the true experts of their own environments, and regard outsider decisions as illegitimate, as they ignore the

local knowledge residents hold about their own environment (Rivera-Kientz et al., 2024). On Ameland, for example, a local shares his perspective: *"Back in the day, we had people from the state water authority living on Ameland. Then, a lot more happened locally and with the community… Now, people who create legislation sit behind their desks in The Hague, while having never been here themselves. Who are they then to make these kinds of rules?"*

At the same time, from an expert/outsider perspective, local knowledge is often viewed as subjective or inferior to physical sciences and engineering. On Ameland, local people tried to share ideas on sedimentation in the port, and were cast aside as 'stupid Amelanders'. This is a central theme within literature on epistemic legitimacy and justice: the dichotomy between scientific knowledge and local knowledge (Šakić Trogrlić et al., 2021; Setten & Lein, 2019).

These findings suggest that epistemic legitimacy is not fixed, but depends on perspective. Where experts may see local knowledge as illegitimate, vice versa, local people may find expert knowledge illegitimate.

7.2.2 Shifting definitions of "the local" and epistemic legitimacy

In the analysis of this research, it became clear that the definition of "local" differs significantly between participants. With this, debates on whose knowledge should be considered as legitimate also arose. An Ameland participant who has lived on the island for 50 years, for example, stated that those born and raised on the island would never listen to her as she is not an "Amelander". At the same time, several other participants defined a local as someone who actively engages with local culture, community and takes care of the island. From my perspective as an outsider, I considered everyone who was living on the island a local. This triggered ideas on what " local " is and what the influence of this shifting definition is on epistemic legitimacy.

There is a large body of literature within the sociology, human geography and disaster risk reduction fields on local versus outsider dynamics. Within this literature, it is argued that the definition of "local" is not fixed, but a relational construction that shifts depending on the scale of observation (Hogenstijn et al., 2008). This scalar variation directly influences epistemic legitimacy, as to what and who is considered valid when it comes to knowledge.

For example, at a hyper-local scale, "local" can be defined by everyday practical engagement with the environment. This definition coincides with the perspectives of younger and long-term residents participating in this research. Legitimacy here is rooted in situated knowledge and local experiences (Leino & Peltomaa, 2012; Setten & Lein, 2019).

On an institutional scale, organisations that are rooted in the community, yet operate at a larger institutional scale, can be considered legitimate. Their legitimacy comes from their ability to translate hyper-local needs into formal institutions (Rosa-Rosa et al., 2025; Setten & Lein, 2019). Take, for example, the local council on Rømø, who are in charge of communicating local perspectives to the municipality.

The space between insider and outsider is also an interesting concept. Most actors in disaster contexts occupy a space between complete insider and complete outsider status (Kerstetter, 2012; Liu & Burnett, 2022). For example, someone who moved to Ameland 50 years ago can be seen as a local from a government perspective, but will still be seen as an outsider by Amelanders. Thus, this definition of local is relational, based on who is defining and at what scale they are defining.

Epistemic legitimacy, then, is situated and is the product of this dynamic definition of the "local". Who is granted this legitimacy moves at different scales, and different perspectives (Leino & Peltomaa, 2012).

7.3 Rethinking adaptation and inclusive climate governance

7.3.1 Adaptation as embedded in everyday life

In this research, local adaptation occurs primarily as everyday activities or routine behaviour rather than as formal or institutional planning. Across the interviews, residents describe adjusting routines, preparing for storms, and responding to environmental changes through practices that are often not explicitly recognised as "adaptation" by the participants themselves. Interviewees describe checking the weather and tide conditions, securing their homes before storms, adjusting their commuting plans based on wind and water conditions, or relying on neighbourhood support during disruptions. However, these actions are regarded as part of ordinary island life rather than active adaptation strategies. In this sense, adaptation is closely tied to lived experience and long-term interaction and familiarity with environmental dynamics.

This idea of adaptation as everyday practices aligns with what literature refers to as "autonomous", "private" or "individual" adaptations (Alda-Vidal & Olazabal, 2025; Castro & Sen, 2022). Oftentimes, residents do not recognise the adaptation that they are practising as "adaptation". This is what literature refers to as "agnostic adaptation", in which people unconsciously respond to ecological changes. Residents often adapt based on their own observations and experiences with environmental disruptions and adjust their routines based on that (Castro & Sen, 2022). Managing disruptions such as storms is, then, often seen as a routinised part of living, passed down through families and communities, and is seen as "common sense" rather than as active adaptation (Baron et al., 2025).

This shows that adaptation is not just technical, but is rather more embedded in local culture and everyday life through social networks and intergenerational knowledge transmission (Alda-Vidal & Olazabal, 2025; Baron et al., 2025). In this sense, the results of this thesis challenge dominant adaptation discourse that privileges institutional and technocratic approaches over local adaptation practices (Alda-Vidal & Olazabal, 2025; Castro & Sen, 2022; Olazabal et al., 2024). While large-scale interventions such as coastal defence infrastructure are still necessary in the Wadden Sea context, they disregard the everyday adaptive skills that have been produced through lived experiences and intergenerational knowledge in the communities. Recognising these practices and broadening the definition of adaptation emphasises the importance of local, context-specific responses to environmental change.

7.3.2 Moving beyond mere participation towards place-embedded climate governance

This thesis further suggests that inclusive adaptation from a local perspective should involve more than just increasing participation within existing governance structures. Across the islands, residents described feeling informed rather than involved when discussing participation in decision-making processes. They state that governance feels as something that happens "about them" rather than "with them". Information evenings and consultations were often experienced more as procedural and symbolic rather than meaningful. This reflects broader critiques in climate governance literature that

participation does not necessarily translate into influence (Ibrahim et al., 2023; Leino & Peltomaa, 2012; Rawsthorne et al., 2022; Šakić Trogrlić et al., 2021; Setten & Lein, 2019; Thaler & Seebauer, 2019).

However, the results indicate that tensions around governance are not just about participation and inclusion in decision-making itself, but also about whose knowledge is considered legitimate. While local people often describe environmental disruptions through local knowledge and long-term interactions with the environment, this dimension seems to be ignored in adaptation governance. Literature states that adaptation governance often remains dominated by institutional and technocratic approaches that prioritise expert-led planning and infrastructural solutions (Macdonald et al., 2012; Pesch, 2022; Rawsthorne et al., 2022; Setten & Lein, 2019).

This shows there is a need for recognition of local voices outside of merely procedural participation. Rather, there is a call for epistemic legitimacy in which local and experiential knowledge should be recognised alongside scientific expertise. This supports broader scholarship arguing that adaptation requires epistemic justice (Alda-Vidal & Olazabal, 2025; Leino & Peltomaa, 2012; Olazabal et al., 2024; Pesch, 2022; Rawsthorne et al., 2022; Rivera-Kientz et al., 2024; Šakić Trogrlić et al., 2021).

It is important to note that recognising local knowledge does not mean rejecting scientific knowledge or formal governance. Residents across the islands generally did not oppose institutional involvement, but instead called for approaches that take local experiences seriously and involve communities earlier and more meaningfully within decision-making processes. Inclusive adaptation, therefore, requires more than participation alone. It requires governance approaches that recognise residents not as passive stakeholders, but as active knowledge holders whose lived experiences already shape how adaptation takes place in practice.

The findings of this research further suggest that more inclusive climate adaptation strategies require moving towards forms of governance that are place-embedded. Across the islands, residents emphasised the importance of environmental, cultural and social realities of island life. Institutional adaptation often aims for standardised solutions (Olazabal et al., 2024). The findings, however, demonstrate that local experiences of environmental disruptions differ significantly between places. Adaptation strategies that fail to recognise these differences risk overlooking the already present local responses and preparations to environmental disruptions.

However, place-embedded governance is not just about adding local perspectives to existing governance structures. The results show that governance should instead be understood as relational and collaborative. Residents described frustration with late-stage inclusion. More meaningful inclusion, therefore, requires ongoing dialogue, early involvement, and stronger forms of collaboration between institutions and local communities.

Overall, this suggests that inclusive climate governance requires moving beyond technocratic adaptation strategies towards place-embedded strategies. Adaptation should not be merely focused on infrastructure or policy, but rather on recognising how communities already live with and respond to environmental disruptions in everyday life.

7.4 Reflections and limitations

7.4.1 Reflecting on relational epistemology as a framework

This thesis used relational epistemology as a theoretical framework. The use of this framework shaped how knowledge was approached in this thesis. Rather than treating knowledge as objective or a singular "truth", this framework understands knowledge as situated and produced through relationships, experiences and interactions with place. This influenced the research to focus more on embodied experiences, lived knowledge, and local definitions.

The framework also shaped the interpretation of the findings. Environmental disruptions were not analysed solely as physical risks or natural phenomena, but also included local experiences and locally defined meanings. Similarly, adaptation was approached not only from formal policy or infrastructure, but also through everyday practices, social relations and place attachment.

The use of relational epistemology was of great relevance for this research as it provided a useful lens for understanding how local knowledge systems are formed and how residents use their experiences in defining, living with and adapting to environmental disruptions. Across the three islands, residents defined environmental disruptions through narrative and embodied knowledge developed through long-term interactions with their environment and communities. Stories of past historical adaptation, lived experiences of storms such as Hurricane Anatol, and observations of landscape changes shaped how people understand their environment, risk and adaptation. These forms of knowledge inform place-embedded agency in which local communities use their experiences and observations in everyday adaptation practices and collective action. The framework further helped understand the influence of recognition of local knowledge for interactions with governance by revealing different dimensions of epistemic legitimacy.

At the same time, the use of this framework also limited how the findings were interpreted. By focusing on situated and embodied forms of knowledge, it shows how knowledge is produced and acted upon through relationships with place and community. Foregrounding knowledge as an influence for action and perceptions of governance, the use of the framework tends to overlook other dimensions. While addressing how the participants felt regarding their knowledge being included in decision-making, further understanding of the influence of power dynamics and external actors that influence these perceptions remains limited. Using a different framework, for example, a political ecology approach would likely have made power relations more explicit as it focuses more on the role of institutional structures, governance arrangements, and external actors in shaping epistemic legitimacy.

Overall, while relational epistemology set limits to this research, it was a relevant and valuable approach for understanding how knowledge, experiences, culture and place all relate to each other and how it shapes adaptation and agency.

7.4.2 Reflecting on the comparative case study approach

This thesis is based on fieldwork conducted on three Wadden Sea islands, Rømø, Sylt and Ameland. Using a comparative approach allowed for the identification of important differences into how environmental disruptions, local identity and governance experiences differ across the islands. At the same time, it also revealed shared ideas such as the normalisation of environmental disruptions and

the importance of place attachment. The comparative approach helped show how even though the cases had similar environmental conditions, it can lead to different responses depending on historical, cultural and governance dimensions.

However, it cannot be said that these results are general for the whole Wadden Sea region. The Wadden Sea has over 20 inhabited islands that differ in size, demographics, governance structures and socio-economic contexts. After seeing the differences even between these three islands, it is important to emphasise that each island has its own unique characteristics. As such, the results of this thesis should not be interpreted as representative of the entire region, but as situated within the specific contexts of Rømø, Sylt and Ameland.

The fieldwork was conducted over a limited period of approximately two weeks per island in the period from November to January. Although this allowed for in-depth interviews and discovering the islands, the short duration means that the research represents a specific moment in time for both environmental conditions and social perceptions. Environmental disruptions and their meanings are not static, but are influenced by lived experiences and temporal contexts (Baron et al., 2025). In this case, particularly storms and storm-related events such as floods, inundations and strong winds were mentioned in the data. This reflects the long-term experiences local communities have had with storms in their lives and their role in shaping normalised understandings of risk and adaptations. However, other disruptions such as droughts, heatwaves or freshwater scarcity were mentioned far less. If this research had been conducted during the summer time or directly after such events, they might have shown up more frequently in the data. As these types of disruptions are less historically embedded in local culture and experiences, they may also influence the sense of urgency, awareness and adaptation practices differently. The findings, therefore, reflect not only spatial differences but also the temporal conditions under which this research was conducted.

7.4.3 Participation, representation and language

Participation by residents in this research was voluntary, which influenced who was included in the research and which narratives became most visible. Those who chose to participate were often more engaged in island life, community organisations or held strong opinions about governance and environmental-related issues. As a result, the findings tend to highlight perspectives that hold high place attachment and are actively concerned with adaptation and environmental change.

This also results in certain groups being underrepresented in this research. This includes seasonal workers, younger residents and individuals who are less involved in island life. These perspectives may offer different perspectives when discussing experiences with environmental disruptions, governance, and place attachment, which are not fully captured in this thesis now. Thus, while the findings show shared patterns of place attachment, adaptation and governance experiences, they also foreground more publicly expressed and community-engaged narratives.

Lastly, on Rømø and Sylt, interviews were conducted in English due to language limitations. Through this, I missed out on interviewing those who are not fluent in English. Conducting the interviews in a second language for both the participants and me may also have affected how some ideas were expressed. Certain meanings, local expressions, or details might not have come across as clearly as they would have in Danish or German. Even though I asked for clarification during interviews when needed, some nuances may still have been lost in translation.

7.4.4 Reflecting on auto-photography as a method

Auto-photography was used to give a visual alternative to the usual verbal data used in qualitative research. The photographs captured emotional and relational dimensions that may have been difficult to verbalise, such as feelings of warmth or amazement, and also complemented the interviews. They were able to visualise atmospheres, calmness, place attachment and environmental dynamics. These visualisations were especially useful for analysing cultural values and place attachment.

However, in retrospect, the photography prompt shaped the themes that emerged most strongly from the visual analysis. Participants were asked to submit photographs representing what makes living on the island meaningful to them. As a result, the photographs aligned primarily with themes of place attachment, cultural values and community life, while governance interactions and adaptation practices were less visible. This absence is meaningful in itself, as it suggests that governance and adaptation are not necessarily central in how participants experience island life. However, different prompts may have resulted in a broader range of visual material and stronger integration of auto-photography throughout the wider analysis.

There is also a fundamental tension in analysing auto-photography. On the one hand, the method gives participants space to express meaning visually, without immediately needing to translate their experiences into words. In this sense, photographs can be seen as expressions of lived and embodied experience, where meaning is communicated through image rather than explanation.

On the other hand, once these photographs are brought into academic analysis, they are almost always reinterpreted through text. The researcher describes, selects and contextualises them within an analytical framework. This process inevitably introduces interpretation and can shift emphasis from what participants intended to show toward how the researcher reads the image. In that way, the photographs become partially “translated” into text, which risks reducing their openness as visual expressions. This reflects a broader tendency in much academic research to prioritise written explanation as the main form of knowledge production. Visual material is often treated as something that needs to be explained to be considered analytically valid.

In this research, auto-photography is therefore understood as both a valuable method of expression and something that is shaped by interpretation. The photographs themselves already communicate important aspects of place attachment, atmosphere and lived experience, but they also become part of a broader analytical process once they are included in the thesis.

I think it is important to recognise this tension of auto-photography, and in retrospect, would have done further research on how to include it in a way that would go against this analytical “translation”, and to include it in a more meaningful way that respects the participant's autonomy more.

7.5 Recommendations

During this research, some interesting aspects came up that I wanted to further explore, but sadly fell outside the scope of my thesis. While this thesis focused on governance perceptions, relational epistemology, and cultural values, additional dimensions emerged during the fieldwork that could deepen the understanding of island life and adaptation dynamics.

The first theme that emerged concerns gender dynamics on the islands. Several interviewees described early emancipation of women on Wadden Sea islands. They describe women having to take on leadership roles and work on the land when men were at sea. This raises questions about historical gender roles and their influence on local culture and agency on the islands. Research could further examine whether this has influenced community organisation and explore the role of women in knowledge sharing and place attachment.

Another interesting angle would be to explore the comparison of inclusion and recognition from the perspective of the institutions versus that of the local islanders. This thesis focused on local perceptions of participation and recognition, but did not examine how municipal or regional authorities understand these processes. Exploring institutional perspectives and comparing it with community perspectives could reveal where misunderstandings occur and improvements could be made.

Besides this comparison, another interesting one could be between island community perspectives and those of mainland coastal communities. It would be interesting to explore which experiences are specific to island communities and which overlap with those of coastal life in general. The Wadden Sea region includes both the islands and the mainland coastline. Comparing the two could further explore the dimensions of place attachment, self-sufficiency and adaptation practices in the Wadden Sea region.

Generational differences are also a topic that was often touched upon in the interviews. Older participants suggested that younger generations are less engaged with environmental disruptions or less strongly attached to the islands. Further research could focus specifically on younger residents to examine whether this perception reflects reality and to find out how they define adaptation and place attachment.

Another theme that would be interesting to further explore is the shifting definition of “local” and what the tipping points for “local” versus “outsider” are. Not only from a sociology perspective would it be interesting to understand these dynamics deeper, but it could also help inform place-embedded governance approaches, as it raises questions about who should be involved in the collaborative adaptation strategies.

Finally, future work could focus on implementing place-embedded governance in practice. Rather than staying conceptual, research could explore how co-production and inclusive adaptation might be operationalised on the islands. This could be done through, for example, pilot projects in which epistemic recognition and legitimacy would be central.

Together, these topics can further explore not just adaptation, but also social, cultural and relational dimensions of island life.

8. Conclusion

This thesis set out to explore how cultural values, local knowledge and perceptions of governance shape the agency and adaptation practices of Wadden Sea communities in response to environmental disruptions. Cultural values such as attachment to the landscape, pride in island identity, and community cohesion influence how local people care and feel responsible for the islands. It further influences how environmental disruptions are viewed, often not solely as threats, but as part of everyday island life and culture.

Local knowledge plays an important role in shaping both perceptions of risk and adaptation practices. This knowledge emerges through long-term interactions with the environment, everyday experiences, and knowledge transmission through community networks. Residents draw on observations of previous environmental disruptions to assess the severity, risks, and how to respond to new events. Historical adaptation practices further demonstrate how situated knowledge is also visible in practical infrastructure created by generations that have lived with environmental dynamics. These practices continue to influence current adaptation strategies and future hopes for resilience and self-sufficiency.

Perceptions of governance further shape local agency and adaptation practices. Where residents feel recognised and included, trust in governance tends to increase, and collective agency is not perceived as necessary. Where local knowledge is perceived to be ignored, mistrust and frustrations emerge, which trigger local action. Community initiatives and volunteer networks often emerge where residents perceive gaps in institutional support.

Overall, this thesis demonstrates that adaptation across the Wadden Sea islands is not only technical or policy-driven, but relational, shaped by culture, lived experiences, local knowledge systems and governance interactions. Adaptation practices are embedded in everyday life, community networks, and cultural continuity, showing the importance of recognising local perspectives and situated knowledge in future adaptation governance.

9. Personal reflection

My positionality as a researcher has developed significantly throughout the process of writing this thesis. It began even before I chose the Wadden Sea as a case study. Initially, I wanted to work with Indigenous women in North America, focusing on Indigenous knowledge regarding water. However, a conversation with Sharon Day, Ojibwe leader and water rights activist, changed my perspective drastically.

During our conversation, I asked what she would want researchers to communicate about Indigenous knowledge. She responded that her community does not need their knowledge to be scientifically validated, as it is already true within their worldview. This made me reconsider travelling to a distant community to conduct research. It began to feel extractivist, especially as now it seemed I would be going for my own interests instead of the community's needs.

She further shared stories about how her community understands nature as part of their community rather than something separate from it. She suggested that similar ways of understanding our environment once existed, and might still exist, in Europe as well. However, those people are often not heard. This led me to reconsider where and how I would want to conduct my thesis research. Rather than travelling across the world to study a topic that interested me, but would not necessarily benefit the communities involved, I began to think about researching a similar topic closer to home.

This shift in perspective led to the Wadden Sea region. Although I do not personally come from this region, it was selected as a case study in a broader research project in which I was offered a place and geographically and culturally closer to my own home. Studying the Wadden Sea felt like an opportunity to research topics of knowledge systems, water justice and community perspective within a European setting, combining the two things I was looking for.

Once I began the actual fieldwork, I learned how important it is to remain open and to avoid prejudice or assumption to influence the research. Based on my literature review I thought I would find certain outcomes; that the Danish would be content with existing governance structures, the Germans would be more opposed, and the Dutch would fall somewhere in the middle.

However, these assumptions were quickly proven wrong. After only one day of fieldwork on Rømø, it became clear that the actual lived experiences of people regarding governance were starkly different than what was written in academic literature. The realities people describe are dependent on their specific circumstances, the timing of the research and personal experiences, and thus can hardly be compared to academic reviews of governance structures. This gave me the realisation that I should further approach this fieldwork with an open mind, rather than assumptions.

Another important learning experience was stepping outside my comfort zone when engaging with communities. Although I would generally consider myself quite social and outgoing, entering a small community as an outsider can feel uncomfortable. On my first day on Rømø, my hosts informed me about a storm flood exercise that was taking place and encouraged me to attend. Since none of them was able to join me, I ended up going on my own. This made me quite nervous, due to language barriers and as it would be my first interaction with the community.

However, the moment I walked in, I was welcomed by elderly ladies who invited me to help in the kitchen during the exercise. Through them, I was introduced to many local residents and this interaction provided most of my contacts on the island. I also had the opportunity to speak with the local fire chief. I assumed he would be too busy to engage with my research, but he turned out very interested and eager to discuss how his work related to my topic. He even mentioned that if he had known I would be on the island, he would have given me a role in the exercise so I could observe the emergency response practices more closely.

Similar experiences occurred on the islands of Sylt and Ameland. I was often invited into people's homes, I was invited for a Christmas party, given books and food, and all sorts of personal stories. These interactions made me feel as though this research process was not just extractive, but also relational. I was not just collecting information, but also building connections with people who were willing to share their experiences. These interactions also made me feel a certain responsibility. I felt it was important to give something back to those who contributed in this research, for the kindness they showed me.

This also brings me to the most challenging part of this research process: the uncertainty about what will happen now. Many participants shared their concerns about the future of their communities, as well as their hopes for change. Sometimes, the interviews provided a space for people to express their frustrations and ideas that they might not be able to express often. While I hope this thesis will contribute to broader discussions about coastal governance, I do not know if any practical outcomes for these communities will emerge.

As a research team, we decided to give back to the communities I visited as an act of reciprocity for inviting me into their communities and sharing their experiences with me. For this, we organised a workshop on the island of Rømø. To stay close to this thesis, while also giving back something useful for the local community, we organised a photography workshop. This workshop was facilitated by my thesis supervisor, Jennifer Veilleux, and featured National Geographic and award-winning photographer Camille Seaman. We are looking for similar possibilities on Sylt and Ameland.

This workshop was for me a great opportunity to give back to the community and reconnect with the island and its residents. Even though the participants of the workshop did not include many of the participants from this research, it was a nice experience to be able to give something back to the community as a whole. In retrospect, it would have been better to be in contact with the participants of this thesis more while shaping and pRømø ting the workshop. While I did invite everyone and informed them beforehand, it could be that they would rather have a different type of workshop or have aspects changed so it would be more accessible. For example, initially the idea was to organise a two-day workshop, which was later felt to be too long. This could have been avoided through more direct contact with the participants during the shaping of the workshop. However, I am happy with the outcome and that we organised a way to give back for accepting me in the community during my research. Showing that you are grateful and not merely extracting knowledge, but actually invested in community life and their culture, is important for my personal ideas on conducting research.

In general, the whole experience of my thesis research raises important questions about my responsibility and impact as a researcher, and my thoughts on future careers. For now, I hope that this research offered participants the opportunity to feel heard and that their experiences and knowledge are represented respectfully. I further hope that other students will be inspired by this

thesis and that it can further develop within the broader '**Coastal Communities' Responses to Environmental Disruption of Coastlines and Estuaries'**project.

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Annex 1: Interview guide

Interview guide – Fenne Abels MSc Thesis

For this study, I am interested in how local people **living in island communities of the Wadden Sea** experience extreme weather events and how they respond to them. I am looking to understand how traditions and culture influence responses. I want to understand how the coastline is looked after; who makes the decisions, how that happens, and how local people are involved.

But first, I would like to know a bit about the area.

1. Could you tell me about the people who live here?
2. I would also like to know how you personally experience this area. How would you describe your connection to your environment?
3. Can you tell me about the culture of this island?
4. Please describe an extreme weather event that you have experienced here. What happened and when?
5. How did the people that live here respond during the event?
6. What impacts did it have on your home or daily life?
7. How did you know what to do during the event?
    a. Where did you learn how to respond to these events?
    b. Did any previous generations (parents or grandparents) have the same events and how did they respond to it?
8. What do people here do to prepare for or deal with changes in the weather or sea today?
    a. Are there any traditions or local ways that are used when dealing with these changes?
    b. Who do you turn to when you need information about the environment?
9. Have you or others changed any routines or practices because of environmental changes?
10. How is the island being looked after?
11. Do you feel that you and other local people are included enough in the making of decisions?
12. Can you think of an example where local people have influenced decisions made about the coast?
13. How would you like to see this place look in 25 years?
14. What would you like to see stay the same, and what should change?
15. Who needs to work together and what steps need to be taken to get where you would like the coastline to be in 2050?
16. What can local people contribute that outsiders might not see?

Annex 2: Interview overview

Number	Island	How	Date
1	Rømø	In person, sit-down & walking	27-11-2025
2	Rømø	In person, walking	27-11-2025
3	Rømø	In person, sit down	28-11-2025
4	Rømø	In person, sit down	01-12-2025
5	Rømø	In person, sit-down, walking and driving	02-12-2025
6	Rømø	In person, sit down	03-12-2025
7	Rømø	In person, sit down	03-12-2025
8	Sylt	In person, walking	07-12-2025
9	Sylt	In person, sit down	10-12-2025
10	Sylt	In person, sit down	10-12-2025
11	Sylt	In person, sit down	11-12-2025
12	Sylt	In person, sit-down & walking	12-12-2025
13	Sylt	In person, sit down	15-12-2025
14	Sylt	Via MS Teams	18-12-2025
15	Ameland	In person, sit down	17-01-2026
16	Ameland	In person, sit down	17-01-2026
17	Ameland	In person, sit down	20-01-2026
18	Ameland	In person, sit down	21-01-2026
19	Ameland	In person, sit down	22-01-2026
20	Ameland	Via phone call	22-01-2026

Annex 3: Codebook

A1. Extreme weather experience
A1. Extreme weather experience: A1a. Emotions tied to extreme event
A1. Extreme weather experience: A1b. Extreme weather event
A2. Normalisation of extreme weather
A3. Observed environmental change
A4. Impacts on daily life
A5. Lack of awareness for consequences of environmental change
B1. Local environmental knowledge
B2. Learning from others
B3. Narrative knowledge
B4. Embodied knowledge
B5. Observational knowledge
B6. Learning through experience
B7. Expert knowledge
C1. Local culture
C1. Local culture: C1a. Communtiy life
C1. Local culture: C1b. Historical culture
C1. Local culture: C1c. Perceived lack of culture
C1. Local culture: C1d. Cultural change or loss
C1. Local culture: C1e. General culture
C2. Place attachment
C2. Place attachment: C2a. Care for the landscape
C2. Place attachment: C2b. Embodied attachment
C2. Place attachment: C2c. Sense of ownership/responsibility
C2. Place attachment: C2d. Attachment to peopl
C2. Place attachment: C2e. General place attachment
C3. Nostalgia
D1. Local action
D1. Local action: D1a. Individual action
D1. Local action: D1b. Community action
D1. Local action: D1c. Preparation
D1. Local action: D1d. Local inaction/lack of response
D2. Sense of responsibility to act
D3. Limits to local agency
E1. Everyday adaptation practices
E1. Everyday adaptation practices: E1a. Historical practices
E1. Everyday adaptation practices: E1b. Current practices
E2. Responses during extreme events
E3. Lack of adaptation
E4. Inadequate adaptation measures
E5. Formal adaptation practices
F1. Governance actors
F2. Local voices
F2. Local voices: F2a. Recognition of local voices
F2. Local voices: F2b. Ignoring local voices
F3. Local participation

F3. Local participation: F3a. Inclusion of local people
F3. Local participation: F4a. Exclusion of local people
F4. Government action
F4. Government action: F4a. Government action
F4. Government action: F4b. Government inaction
F5. Trust in governance
F5. Trust in governance: F5a. Trust
F5. Trust in governance: F5b. Mistrust
G1. Local people versus outsiders
G2. Lack of understanding by outsiders
G3. Counter-discourses
H1. Hopes for the future
H2. Concerns for the future
H3. Ideas on collaborations for the future

Annex 4: Auto photographs



Figure 27 Photograph depicting participant in traditional clothing on Rømø, in an old commandors house turned into a museum (Participant 4, 1998)



Figure 28 Photograph depicting participant in traditional clothing on Rømø. The dress was made by the participant's mother (Participant 5, n.d.)



Figure 29 Auto-photograph depicting a roe in a residential area on Rømø (Participant 6, 2025)



Figure 30 Auto-photograph depicting stormy weather on Rømø (Participant 6, 2025)



Figure 31 Auto-photograph depicting stormy weather with high tide, and people watching and kitesurfing on Rømø (Participant 6, 2025)



Figure 32 Photograph depicting the wedding of the participant on Rømø. Members of different volunteering associations were there to congratulate them by creating a arch outside the church (Participant 7, 2006)



Figure 33 Auto-photograph depicting sunrise in the dunes on Sylt (Participant 8, n.d.)



Figure 34 Auto-photograph depicting a sunrise in the dunes near the beach on Sylt (Participant 8, n.d.)



Figure 35 Photograph depicting participant with friends at local event on Sylt. The participant was able to show other locals their organic farming practices and harvest (Participant 9, 2025)



Figure 36 Auto-photograph depicting a bird flock taking off on Sylt (Participant 13, 2025)



Figure 37 Auto-photograph depicting the daughter of the participant in dune landscape on Sylt (Participant 13, 2025)



Figure 38 Auto-photograph depicting colourful sky and the dune landscape on Sylt (Participant 14,. 2025)



Figure 39 Auto-photograph depicting sunset in the dunes of Sylt, (Participant 14, 2025)



Figure 40 Painting depicting an inundated forest on Ameland after a season of heavy rain (Participant 15, 2024)



Figure 41 Painting depicting an inundated forest on Ameland after a period of heavy rain (Participant1 5, 2024)



Figure 42 Auto-photograph depicting the consequences of a large storm on Ameland (Participant 16, 2013)



Figure 43 Auto-photograph depicting a sunset in the dunes, near the beach and sea on Ameland. The picture was taken on a walk with their dog (Participant 18, 2025)