

“Sometime, somewhere, maybe someone has to do something”:

A case study in place attachment and climate change perceptions in the
context of sea level rise adaptation on the Falsterbo peninsula, Sweden



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Abstract

In response to sea level rise, municipalities in Sweden are already underway in the process of constructing seawalls to protect infrastructure and communities. However, these adaptive measures are not always well received in the communities they are intended to protect. This thesis examined a case of citizen protests against a proposed seawall on the Falsterbo peninsula in Vellinge, Scania, through the concepts of place attachment and climate change perception. The aim was to understand how residents' relation to their place and their perception of climate change may affect adaptation acceptance. Through a combination of thematic analysis of documents and in-depth, semi-structured interviews, the thesis explored the relationship between place attachment, climate change perception and sea level rise adaptation. The findings showed that place attachment may function as a factor in both citizen adaptation acceptance and resistance in expressions of place disruption due to the instructive element the seawall may pose. Past experiences of physical climate change are more influential in residents' perceptions than projections of the future.

Keywords: Sea level rise adaptation, climate change perception, place attachment, place change, case study

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1. Introduction

Climate change is an inevitable part of the future, and even if the exact effects remain to be seen the demands for climate change adaptation are only increasing. Everyone needs to relate to climate change adaptation in one way or another either as supporters or resistors. What determines these stances? What mechanisms may increase adaptation protests? This shall be explored in this thesis through a case of citizens reacting to climate change adaptation in a Swedish context. Scania, being a low-lying part of Sweden with a long coastline, will undoubtedly be affected by rising sea levels, by unstable weather, and by many other climate change effects we have not yet observed in this part of the globe (E. Bontje et al., 2015). Why might people living in sea towns still be hesitant to protect their home?

While climate change is ubiquitous, the risks produced affect different populations, communities and places differently. Sweden's response to climate change has long been skewed towards mitigation (Wamsler & Brink, 2014). Regardless of the (in)effectiveness of mitigation, i.e. lowering emissions of greenhouse gases, climate change is occurring and threatening human livelihoods across the globe (Monani et al., 2018). Aside from mitigation, adaptive measures in response to the changing climate are needed (Hurlimann et al., 2021). Information about adaptive measures in developed countries, including Sweden, is scarce, and the lack of information can sometimes be ascribed to the actual lack of engagement in adaptive strategies among institutions (Wamsler & Brink, 2014). Adaptation in Sweden has historically been low, passive or non-existent, but in recent years the inactivity among institutions and governments has lessened (Wamsler & Brink, 2014). The Falsterbo peninsula in Vellinge municipality, Scania, is one of many areas in Sweden threatened by current and future climate change impacts. The municipality, as the first local government in Sweden, recently applied to the Swedish Land and Environment Court to be authorized to construct a seawall to protect the urban areas on the Falsterbo peninsula (Vellinge kommun, 2018). The seafront properties on the low-lying peninsula are vulnerable to sea level rise. The municipality concluded that in order to protect infrastructure and property from future sea level rise, a physical construction to prevent sea water from flooding the peninsula is needed (Vellinge

kommun, 2018). However, the municipality's plans quickly faced protests from property owners on the peninsula (Bjerström, 2020).

Protests against adaptive measures is a new and relatively unexplored area in a Swedish context, partly because hard physical adaptation has only recently become realized in Swedish urban planning (E. Bontje et al., 2016). Properties and urban areas in shoreline vicinity, especially throughout the south coast of Sweden, are at risk of an increased frequency of storms, extreme precipitation, coastal erosion and floods (Hieronymus & Kalén, 2020). As global warming and climate change continues to increase risks globally, local adaptive measures are needed in response (Church et al., 2014). These adaptive measures inevitably cause landscapes known and valued by residents to change. In Sweden, where climate change is often seen as something distant in space and time (Glaas et al., 2015) the major changes to local milieus may thus be predominantly adaptive in nature. There is a need for further research on how residents affected by local adaptive projects react to these changes in their environment, to provide further understanding for how municipalities can apply adaptation as smoothly as possible. As adaptive measures move from being distant, passive actions within the municipality to physical structures with great impacts on local environments, knowledge on the mechanisms behind citizen's protests and engagement needs to be developed.

Climate change will continue to affect the global and local environment and hard infrastructural adaptation projects in Sweden will increase in number (Glaas et al., 2015). Research on how citizens react to sea level rise adaptation is relatively unexplored in Sweden (Wamsler & Brink, 2014). Hence, the relevance of this work. As more and more Swedish municipalities shift into active adaptation-oriented urban planning, it is relevant to understand how and why conflict between citizens and governments may arise. Discrepancies in how citizens cooperate with or challenge plans for constructions intended to protect their livelihoods and infrastructure are important to map out.

2. Aim and research questions

This thesis aims to explore how place attachment affects adaptation acceptance among citizens in communities vulnerable to sea level rise. This issue is approached through a qualitative case study of the proposed seawall on Falsterbo peninsula in Vellinge, Sweden, using the following research questions:

How can residents' relation to their environment affect adaptation acceptance?

What is shaping the Falsterbo residents' perceptions of climate change?

By answering these questions, this thesis aims to deepen the understanding of citizen acceptance and protests in adaptation projects by studying opinions among residents and citizens regarding the seawall construction on the Falsterbo peninsula. Knowledge on how Swedish citizens may react to municipal adaptive measures such as seawalls is an important tool in urban planning. Furthermore, antagonism against adaptation raises questions. Why are people protesting something intended to protect them? What mechanisms may influence or aggravate this type of conflict? Through the application of place attachment theory and climate change narratives in a case study, knowledge about these mechanisms can be deepened and nuanced.

3. Background

This section of the thesis provides background information on climate change-induced sea level rise and sea level rise adaptation, starting on a general scale, before narrowing down into previous research of sea level rise processes in a Swedish context. The section moves from a global scale, that is, empirical research on mean sea level rise, to further narrow down into the national and local conditions before expanding into the final section. The final section describes literature on adaptation acceptance and practices.

3.1 Sea level rise

This section zooms in on sea level rise as a manifestation of climate change. While there is general consensus that the rate of mean sea level rise is increasing and will continue to do so (Church et al., 2014; Kulp & Strauss, 2021; Tahvildari & Castrucci, 2021), and that anthropogenic greenhouse gas emissions form the basis of global warming and henceforth the increase of rates, there is no biophysical factor that can be singled out as being the one and only cause to sea level rise (Church et al., 2014).

The linkages between processes and components that contribute to sea level change affect different regions unevenly (Tahvildari & Castrucci, 2021). Land-locked ice like glaciers and ice sheets contribute to both the global ocean mass as well as regional sea level (through density and circulation changes), which in turn affect the global ocean water volume (Church et al., 2014). Thermal expansion due to the heating of the oceans further contributes to the rise (Church et al., 2014). Changes in regional sea level and sea level extremes are further impacted by waves and storm surges (Tahvildari & Castrucci, 2021). All of these components contribute to sea level impacts, adaptation and vulnerability (Church et al., 2014). The Fifth Assessment Report (AR5) projects that the global sea level rise at year 2100 will reach a median of 0.44 m in the case of a global warming temperature of 2.6 degrees (RCP2.6), while the “worst case scenario” RCP8.5 describing the warming if global emissions continue in a contemporary fashion the global mean sea level would reach 0.74 m

(IPCC, 2014). Hieronymus & Kalén (2020) presents new projections on sea level rise in Sweden based on the evidence presented in the SROCC. In these new projections, the “worst case scenario” outcome of RCP8.5 could mean a regional sea level rise in southern Sweden of up to 1 m (Hieronymus & Kalén, 2020; Nerheim et al., 2017). The use of integrated assessment models often result in remarkably accurate projections of the future, but there is a risk that these models might be mistaken for objective facts. Furthermore, attention should be drawn to the tendency within the IPCC projections to underestimate the scope of sea level rise (Hieronymus & Kalén, 2020; Kulp & Strauss, 2019). The previous assessment reports provided by the IPCC are notable for the consistent conclusions that the sea level *will* rise, but each of these assessment reports have been disproven by the next in regard to the biophysical drivers behind the rate of sea level rise (Hieronymus & Kalén, 2020). In the twentieth century, climate change-induced global mean sea levels rose up to 16 cm (Kulp & Strauss, 2019). The rate of sea level rise in the twenty-first century is continuously contested as new data emerges, but by 2050 there is consensus that global mean sea levels may rise up to 30 cm (Kulp & Strauss, 2019). The scenarios used in the IPCC almost always include net-negative emissions, except for the business-as-usual scenario RCP8.5 (Church et al., 2014). If anything, the IPCC has underestimated the true scope of sea level rise (Kulp & Strauss, 2019). Precautions should be taken when reviewing projections and scenarios, but overall the conclusion can be made that sea level rise is a substantial hazard to current and future communities.

The natural and geological topology of the Falsterbo peninsula means that the climate hazards identified in this area not only interact with mean sea level rise, but also the expected increase in storms and changes in western wind currents (Landberg et al., 2011). The Öresund strait is a narrow passage in which water flows in and out of the Baltic Sea and the Atlantic (Landberg et al., 2011). During storms, water is pushed through the strait at a higher rate, temporarily forcing the water above mean sea levels in tidal waves or temporary floods. The reason for the floodwall construction on the Falsterbo peninsula is thus a response to both mean sea level rise as well as expected increases in extreme weather (Landberg et al., 2011). While the scenarios of the Fifth Assessment Report by the IPCC (2014) all attribute a rise in mean sea level ranging from + 0.40 m (RCP2.6) to 0.63 m

(RCP8.5), an additional 0.40 cm should be considered in the Baltic Sea region due to changes in wind currents (Landberg et al., 2011). Subsequently, storm surges in combination with the linkages and processes mentioned above, may create much larger temporary sea levels than merely rise in regional mean sea level (Landberg et al., 2011; Tahvildari & Castrucci, 2021).

3.2 Sea level rise adaptation in Sweden

This section reconnects with the scenarios mentioned above. Aside from the IPCC report of AR5, scientific progress has added to the knowledge on sea level rise in Sweden since the release of the AR5 (Nerheim et al., 2017) and the release of the Plan of Action (2013) by Vellinge municipality. The use of the AR5 in projections of Swedish sea level rise rates has led to the assumption that sea level in Sweden will rise much like the global rate, but recent research instead suggests higher levels of regional differences (Hieronymus & Kalén, 2020).

Temporary storm surges in relation to the relative rise of sea level has been posed as the main threat to coastal areas in Sweden (E. Bontje et al., 2016). While the post-glacial rebound generally compensates for sea level rise, the south of Sweden, especially Scania, is already experiencing a higher degree of coastal erosion and floods (E. Bontje et al., 2016). The Fifth Assessment Report by the IPCC generally forms the basis of projections in Sweden, in coastal planning as well as a general source of knowledge among citizens (Hieronymus & Kalén, 2020). In a Swedish context, the main issue with adaptational projects lies in their ties to local government. Climate *mitigation* has long been the focus of centralized government, while adaptation is the responsibility of local governments (Hieronymus & Kalén, 2020). The practice of implementing hard structural adaptation is relatively new in Sweden, but adaptation to erosion through beach nourishment and beach fortification has been common in municipalities in Scania in the past (E. Bontje et al., 2016).

In summary, the knowledge on sea level rise impacts and adaptation in Sweden has only recently extended beyond traditional counter-erosion measures. Seawalls and

other hard infrastructural adaptive measures are however on the rise, with the case of the Falsterbo peninsula in Vellinge municipality as one of the first (Bjerström, 2020).

3.3 Adaptation acceptance

Adaptation is inevitably affecting environments that may be considered valuable to humans. To understand the way citizens may react to adaptation processes, this section describes previous research on citizen reactions to adaptation planning. Limited research has been conducted on citizen-government and place attachment interplay in relation to adaptation in Sweden (Wamsler & Brink, 2014). Place attachment refers to the cognitive and emotional bond people may form with their close environment (Daryanto & Song, 2021). Additionally, research conducted on place attachment and adaptive attitudes among residents has shown that place attachment can play a key role in pro-environmental behavior (Daryanto & Song, 2021; Monani et al., 2018; Stephenson et al., 2020). Daryanto & Song (2021) concludes that pro-environmental behavior, including adaptive approaches, tend to be stronger when implementing place-specific measures, due to a greater need for residents to protect their place (Daryanto & Song, 2021). The level of engagement in residents or place users in pro-environmental measures varies according to type of place user, and whether the place users are part of a collectivist culture or an individualist culture. In individualist cultures, there is a weaker link between sustainability and place identity, which may result in negative outcomes in response to adaptive measures (Daryanto & Song, 2021).

Swedish adaptation practices are generally decentralized, allowing for a monopoly among municipalities in terms of finance and engagement (Hieronymus & Kalén, 2020). It functions largely without national adaptation goals or responsible agencies, leaving much of the adaptation planning to regional governments (Glaas & Juhola, 2013) or civilians (Wamsler & Brink, 2014). Climate adaptation management within the EU, and subsequently Sweden, has been criticized in Glaas & Juhola (2013) for being fragmented, placing much of the responsibilities of adaptation strategies on lower governments rather than in a centralized organ.

As shown in Hayward (2008), adaptive measures implemented by local governments may also lead residents to protest. In the case of Waihi Beach, attempts by local governments to prohibit new buildings while simultaneously fortifying the erosion-prone beach started already in the late 1900s (Hayward, 2008). The local governments recommended a form of managed retreat in 1999, mainly in the form of preventing new buildings in at-risk areas. Local residents strongly protested against the prohibitions as well as the plans of beach fortification (Hayward, 2008). It is thus possible that individuals with strong place attachment underestimate the gravity of climate change (Leichenko & O'Brien, 2020; Glaas et al., 2015) and thus shift the desire to protect their place to preserving it "as it is" instead of accepting adaptive measures (Dayranto & Song, 2021; Stephenson et al., 2020). Non-resilient communities already under pressure emotionally, physically and financially may experience implementations of hard infrastructural adaptation as yet another major change to their environment (Stephenson et al., 2020). Municipalities attempting to implement hard structural climate change adaptation projects often lead to engagement from citizens, but in some cases this engagement can lead to citizen opposition (Wamsler et al., 2020).

4. Conceptual framework

This chapter describes the conceptual framework of the paper, mapping out a web of a limited number theories and practices that connect to the basis of climate adaptation opinions among citizens. The chapter begins with describing place attachment, moving on to sea level rise adaptation and climate change narratives. While the focal point of the conceptual framework should be considered the function of place attachment in adaptation acceptance, climate change narratives and perception should be viewed as complementary and integrated in the analysis. See illustration of conceptual framework below.

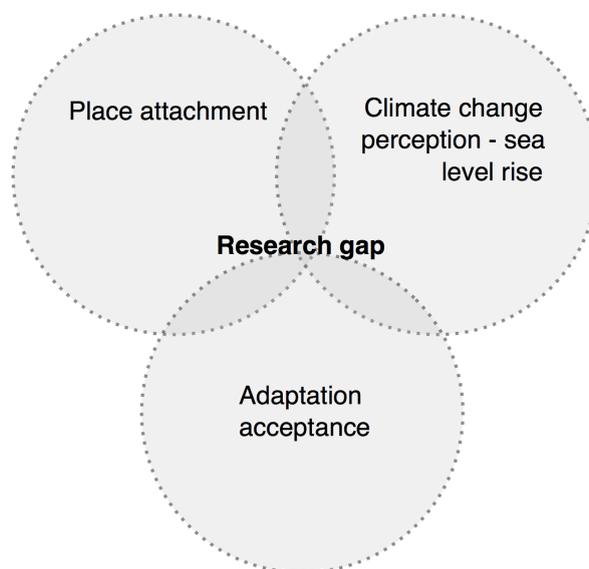


Figure 1. Visualization of conceptual framework. By Hilda Bergkvist Andersson (2021).

The figure above visualizes the interplay between theories and concepts that are explored in this study as well as the research gap observed and intended to be explored.

4.1 Place attachment

The main theory used in the thesis is place attachment. Place attachment emerged in the humanistic approach to geography of the 1970s, and is in itself a critique of the

singular notion of space prevalent in contemporary human geography (Tuan, 1974). Given the many lines of thought within this concept, some of which lack connection to climate change and adaptation, the chapter focuses on place attachment frameworks with a clear link to climate adaptation.

Place attachment refers to the cognitive and emotional bond people form with certain places (Amundsen, 2015). It can be defined as the sense of identity, dependence and emotions among residents in a certain area, or in some instances suggest a similar state of mind on a virtual scale (Monani et al., 2018). With roots linking back to the human geography paradigms of the 1970s, including Tuan (1974) and Relph (1976), place attachment as a theory has recently gained new interest in the field of climate change adaptation (Amundsen, 2015). Place attachment can be seen as a “sense of place”, in itself a broad term for identity in relation to place, or as identifying within a landscape, community and morals unique to a particular area, as seen in Amundsen (2015).

Tuan’s definition of space and place forms much of the basis of place attachment as a theoretical framework (Tuan, 1974). This humanistic approach emerged as a critique against the narrow spatial definitions of earlier human geography, placing emphasis on the division of space and place, whereas place can be viewed as a personal experience with many connotations (Tuan, 1974). Place attachment points towards not only the physical aspect of spaces but also the emotional aspect, the cognitive transition from space to place. Tuan (1974) describes the ‘meaning of place’ as connected to *spirit* and *personality*, that is, the spirituality and uniqueness of a place. The spirit of a place is defined in the literal sense; human beliefs single out a certain place from the rest of a profane space because it is sacred. As for personality, Tuan argues that just like people identify other people through unique signatures and personalities, places stand out. A landscape acquires its personality through prolonged interactions with human activities (Tuan, 1974). Two aspects of personality can be distinguished, according to Tuan (1974). A place may be awe-inspiring, or it might be a place of affection. Great natural structures such as the Grand Canyon are awe-inspiring while places evoking affection are connected to the unique character assigned to it by visitors and residents (Tuan, 1974). Tuan (1974)

describes the *sense of place* as the demonstration of human applications of morale and aesthetics to sites.

Within recent climate management research, place attachment has been used to understand citizen *engagement* in adaptation projects, and to a limited extent citizen *resistance* (Amundsen, 2015; Hayward, 2008; Monani et al., 2018). A resident of a particular area facing the threat of climate change might feel a stronger obligation to preserve the sense of place they experience by engaging in, encouraging or actively partaking in adaptational processes (Monani et al., 2018). Similarly, other residents might feel that physical structures intended to protect infrastructure and buildings actually destroy the irreplaceable landscape or community to which they express a deep bond (Manzo & Devine-Wright, 2021).

The impact of climate change on the environment results in undeniable place change (Manzo & Devine-Wright, 2021). Processes of change, whether in social mobility or physical dynamics of a place, lie at the root of place attachment. As mentioned in Tuan (1974) a space becomes a place only through continuous interactions with humans. Continuity over long periods of time is often identified as a principle of place attachment theory, where identities of past, present and future have been viewed as the narrative of the individual's attachment. For example, an individual might use ancestral connections to explain their bond to a place, and imagine a future on the place throughout their life as well as future generations. Recent studies, however, address dynamics of people or places as prevalent within the framework. Research within the category *changes to places* refer to environmental disasters and other alterations of the material environment (Manzo & Devine-Wright, 2021). A dialectic relationship can be seen in place attachment, a constant interaction of the "fixity" and "flow" in places and the relations humans form with them (Di Masso et al., 2019). Place attachment is thus deeply interconnected with climate change, from a global scale to a local (Manzo & Devine-Wright, 2021).

The change of places as defined in Tuan (1974) occurs in various ways. The sense of community and "moral order" in a place (Amundsen, 2015; Agnew & Smith, 2016) may be affected by changes in legal definitions or by inflows of newcomers. The physical arena can be transformed through urban growth or new constructions,

giving rise to unease among residents of a place (Manzo & Devine-Wright, 2021). Instead of the conceptual framework of NIMBY (not-in-my-backyard) sometimes used to describe community opposition towards new development, Devine-Wright (2009) suggests that these forms of protests may be guided towards a place-protectionist line of thought embedded in the experience of place attachment. New development, from new housing areas to large-scale adaptation projects, may cause place disruption among residents. Devine-Wright (2009) understands this “disruption” of place attachment as closely contingent on the level of speed, scope and control of the change. If a place is transformed quickly, extensively and with little influence from those that express place attachment, the aftermath may result in negative emotions among those affected (Manzo & Devine-Wright, 2021). Place change can also result in a continuous, dialectic understanding of negative and positive outcomes, as seen in figure 2 below:

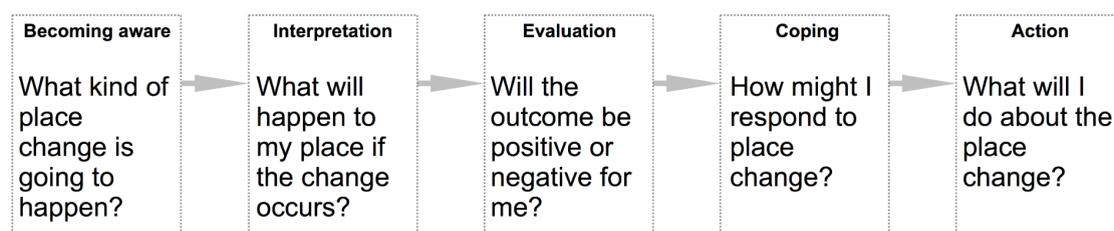


Figure 2: The process of understanding, coping and acting on place change. Hilda Bergkvist Andersson, inspired by Manzo & Devine-Wright, page 232 (2021).

When adapting to climate change, governments may predict the risk of a hazard as something in the far future (Glaas & Juhola, 2013), while hard adaptive constructions in preparation for the risks inflict an immediate and extensive place change (Manzo & Devine-Wright, 2021). The various levels of place attachment among residents can result in negative or positive outcomes, or a combination of both (Manzo & Devine-Wright, 2021). Manzo and Devine-Wright (2021) concludes that a strong place attachment indicates more engagement among residents to protect their milieu (Manzo & Devine-Wright, 2021), thus presenting the notion that adaptive measures often are welcomed by affected residents. Research on citizen resistance in hard

adaptive constructions is less studied and this research gap provides the foundation for this thesis.

4.2 Sea level rise adaptation

The second part of the conceptual framework deals with sea level rise adaptation. Here, sea level rise adaptation will be defined and social conflicts that may arise due to adaptive measures will be assessed.

Adaptation refers to the process of adjusting human or natural systems to climate change (IPCC, 2014). It is part of the wider notion of resilience, meaning the level of flexibility and ability in economic, social and environmental systems to maintain their basic, essential functions in hazardous events and trends such as climate change (IPCC, 2014). Adaptation in response to sea level rise may take many forms (Church et al., 2014), such as protective measures, accommodations, or even retreats from the hazard (Young & Essex, 2020; Church et al., 2014). Responses to sea level rise-induced disasters may take a pre-planned adaptation approach, or an unplanned one (Cooper & Lemckert, 2012). Hazard management in response to sea level rise can be divided into two lines of approaches: the “technical” hard strategy of constructing seawalls, or the second strategy of reducing vulnerabilities in various adaptive responses (Rulleau & Rey-Valette, 2017). Managed retreats from areas at risk of floods belong to the second approach, while the construction of seawalls belongs to the first. Seawall construction is often preferred among decision makers in densely populated, low-lying areas (Rulleau & Rey-Valette, 2017), such as the Falsterbo peninsula.

As mentioned above, recent scientific research has concluded that the scope of sea level rise is difficult to estimate. Even if greenhouse gas emissions were to be lowered to the pre-industrial levels as suggested in the Paris Agreement, some important contributors to sea level might have already reached a tipping point, causing sea levels to rise regardless of mitigating actions taken by society (Hinkel et al., 2018). A common approach in societies at risk of extreme sea level rise is the construction of hard coastal engineering measures mentioned above. While

managed retreat is emerging as a viable alternative and sometimes considered more sustainable, this approach is often faced with opposition among property owners and residents (Rulleau & Rey-Valette, 2017). Nonetheless, seawalls may also be subjected to conflicts and barriers in society. Some barriers in this type of sea level rise adaptation have been identified in Hinkel et al (2018). These include technological limits, economic and finance barriers, as well as social conflicts. All of these barriers may vary depending on geographical context. A coastal city in Bangladesh faces different barriers as opposed to a city in the Netherlands, though conflicts and barriers may arise anywhere (Hinkel et al., 2018). Through a series of cases in various contexts, Hinkel et al (2018) identifies two types of conflicts that tend to arise when implementing hard coastal engineering. The first type relates to different actors' benefitting or being disadvantaged by this kind of adaptation; tourism sectors benefit from protecting coastal areas through this method, while others sectors such as fishermen may protest against it. The second type of conflict relates to the use of public money to implement these measures. Communities not at risk of floods may protest against public finance being used to protect coastal communities. Overall, sea level rise adaptation tends to redistribute benefits, giving rise to "winners" and "losers" (Hinkel et al., 2018, p. 575).

4.3 Climate change discourses

Adaptation is inevitably linked to the perception of climate change risks and threats, from an institutional level to the individual (Leichenko & O'Brien, 2019). This subsection explores the notion of climate change narratives, or climate change discourses. These narratives may be identified as isolated trains of thought in some cases but they also interact and a single individual may express elements relating to any of them (Leichenko & O'Brien, 2019), relating to the issue of this thesis. There are many ways to describe or analyze climate change perceptions. However, since climate change narratives may be viewed as the manifestations of these perceptions, the thesis will place emphasis on these narratives. This section should be viewed as a complementary conceptual framework, adding strength to the analysis.

Discourses can be described as the realization of various systems of beliefs, language, norms, institutions and rules that make up dominant perspectives in society (Leichenko & O'Brien, 2019). In regards to climate change, discourses can be understood as the way governments, societies, communities and individuals perceive climate change. An important component of discourses, and the focus in this thesis, is the narrative the discourse connects to. In climate change discourse, narratives represent the story of climate change, the story told and perceived by governments as well as individuals and groups. Language is thus an important tool; how one describes the situation also relates to the prevalent narrative (Leichenko & O'Brien, 2019). Leichenko & O'Brien (2019) mention how language can give clues to different discourses: "words such as "urgent" and "irreversible" may dominate some discourses, whereas others might focus on words such as "uncertainty" and "doubt" (Leichenko & O'Brien, 2019, p. 42). Narratives are important to note in bodies of society, because they give incentives as to how individuals, institutions or governments may respond to the risks created through climate change. Furthermore, discourses influence how individuals may perceive climate change altogether (Ruiz et al., 2020).

Leichenko & O'Brien (2019) identify four different discourses dominant in climate change today. The biophysical discourse acknowledges that climate change is caused by greenhouse gas emissions through human interference. The biophysical discourse is one of the most prevalent in societal climate change narratives, evident in influential bodies of knowledge such as the IPCC (Leichenko & O'Brien, 2019). According to the biophysical discourse, policies and innovative technology can be employed to lower the amount of greenhouse gases. The critical discourse identifies climate change as a social problem ruled by a nexus of politics, economy and culture. The critical discourse concludes that a major shift in how society is run is needed to solve climate change, especially in the distribution of power and resources as opposed to the current norms in the world. The integrative discourse seeks to unite the elements of both biophysical and the critical, placing emphasis on changing norms and rules of society as well as implementing policies to prevent unsustainable use of resources (Leichenko & O'Brien, 2019). The fourth discourse identified in Leichenko & O'Brien (2019) is the dismissive discourse. It is connected to trains of thought that dismiss parts or the entirety of climate change. While some within the

Dismissive discourse rejects the notion of climate change in its entirety, there are others who acknowledge that climate change is happening but underestimate or dismiss its impacts (Leichenko & O'Brien, 2019). While not rejecting science, these people might consider climate change as a less significant problem than other human issues. Climate change in this worldview might be viewed as something that is not ubiquitous or at least a phenomenon less of a threat than suggested by mainstream science reports (Leichenko & O'Brien, 2019). Elements of the dismissive discourse can be seen among people in Nordic countries failing to grasp climate change as anything else than a distant occurrence in space and time (Glaas & Juhola, 2013). The dismissive approach could, according to Leichenko & O'Brien (2019), further be interpreted to include people with awareness of climate change who still abstain from action or view climate change as too much of an abstract, overwhelming problem (Leichenko & O'Brien, 2019).

Perceptions and awareness of climate change in the public may vary over time, independent of the body of knowledge produced by the scientific community (Ratter et al., 2012). Declines in awareness or the perception of climate change as a serious threat may depend on several reasons, such as a discrepancy between scientific research and media coverage (Ratter et al., 2012). There may also be tendencies among residents within a community to shape their perceptions according to the physical experiences of climate change, leading to a dismissal of scientific bodies of knowledge (Ruiz et al., 2020). The role of the community and interactions between residents seem to give rise to some of these perceptions (Ruiz et al., 2020), in turn falling within the dismissive narrative of climate change.

The spectrum of human understanding of climate change differs across individuals, governments, NGOs and communities. Elements from all above mentioned discourses may be represented in a single individual (Leichenko & O'Brien, 2019). Some narratives may function as the broader line of perception within a community at large while individuals express opposing opinions (Ruiz et al., 2020). As such, the usefulness of these narratives lie in their service as umbrella terms of broad thoughts on the changing environment (Leichenko & O'Brien, 2019). In this thesis, the discourses are employed to find clues about the perception of climate change among individuals on the Falsterbo peninsula.

4.5 Evaluation

The section above contains a variety of concepts aimed to increase understanding of adaptation sentiments. Beginning with research and theories on place attachment and its relation to adaptation, a prevalent line of thought within this field connects a high level of adaptation acceptance with a high level of place attachment (Manzo & Devine-Wright, 2021). However, through the concept of place change and place disruption, the ability to understand resistance and non-acceptance through this lens increases. As for the section on climate change narratives, the intention is to understand to what level climate perception may play a part in the place-based adaptation resistance exhibited in the selected case of the Falsterbo peninsula. The understanding of climate change among individuals can be expected to influence the way the very same individuals anticipate the need for adaptation. Narratives evident in documents and individuals may help understand how citizens perceive this threat. According to the projections of the IPCC (2014) and Hieronymus & Kalén (2020) presented in this segment, the Falsterbo peninsula is at risk of floods in the future. Thus, there is a need to view place attachment, climate change perceptions and sea level rise adaptation as interconnected when exploring adaptation acceptance or resistance.

5. Methodology

This chapter presents the methods and materials used to answer the research questions of this study. The overall choice to use qualitative methods in this study is motivated by the focus on citizen's opinions.

To answer the research questions, the thesis combines semi-structured interviews and document analysis to produce analytically relevant questions to explore the theories presented above. The strength of such an approach is that it offers possibilities to gain understanding of particular reasons for a respondent to give certain answers or histories behind a certain viewpoint manifested in documents or statements (Kapiszewski et al., 2015; Kvale & Brinkmann, 2014).

Qualitative methods may be criticised for lacking generalisability and validity. The aim of this case study is however not to generate statistical significance or generalisability, but rather to add analytic strength to existing theories, inspired by the inductive approach (Bryman, 2012). The thesis has no intention to validate or confirm a hypothesis, instead searching to develop an already existing field of research (Bryman, 2012). However, the understanding of place attachment as an element in adaptation acceptance will also be assessed through the application of conceptual frameworks on findings. In this case, the methods are used to explore the function of place attachment in citizen's climate change adaptation engagement. The level of analytical generalisability of this qualitative place-based case study relies on various contexts and history that may or may not be reproduced elsewhere, which is why rather than generalisability, this study is built upon understanding analytically relevant material. Reliability is ensured by consulting the method of document analysis. The understanding of place attachment is inevitably bound to the context of the place and case studied. However, adaptation projects and citizen reactions have, does and will arise in other places. Hence, studying an isolated case will gain researchers the tools to conduct similar studies on other cases and fill a research gap in Swedish adaptation planning research.

5.1 Limitations

The scope of this thesis is limited by time and extent. The example selected in this case is the floodwall construction on Falsterbo-Skanör, chosen as it is the first instance of sea level rise adaptation in Sweden facing protests from citizens, to the point of it being hailed “Sweden’s first climate battle” in press media (Bjerström, 2020). A limited number of documents and people will be consulted in order to collect enough empirical data to answer the research questions mentioned above. As for the number of individuals asked for interviews, the aim is not to collect the opinions of each and every one of the residents of the Falsterbo peninsula, but rather to capture certain lines of thought that may be represented among the affected citizens. The document analysis used to supplement information gathered from interviews will be directed towards documents provided by the municipality, primarily the “Consultation with Citizens” from 2018 and the Verdict by the Land and Environment Court from 2020. Both of these documents provide extensive information on citizen opinions on the seawall.

The decision was made to conduct the study using climate change discourse and place attachment as the main conceptual framework. This is because sea level rise adaptation is ultimately place-based. To best understand how and why people react to these place-based changes which are created solely due to climate change, place attachment, climate change discourse in individuals and sea level rise adaptation practices was deemed a fitting combination.

As mentioned before, the dataset in this study is limited. This can be explained through several factors. Firstly, due to the covid-19 pandemic, the search for respondents in interviews was conducted online. This limited and obstructed outreach possibilities. While the initial respondent pool was larger than the one presented in the study, several prospecting interviewees dropped out on the way. Face-to-face interactions may have prevented this issue. Still, the interviews were deemed to provide enough empirical data, especially in combination with the document analysis. Secondly, the study was conducted on a relatively small case, both in terms of geographical area covered and the affected population. Thirdly, the project is still in progress. This means that the amount of data available on the case

is limited. On the other hand, it offers the opportunity to conduct a study in real-time on citizens and documents directly integrated in the process, allowing for the capture of perspectives and opinions that may not be available in hindsight. As such this thesis is relevant in a contemporary setting and provides a relevant basis for further research in the future.

5.2 Case study

This thesis makes use of a case study method to examine the observed phenomena. Since the thesis is guided by theoretical concerns and research questions, a case study is valuable to gain intensive knowledge on adaptation acceptance and its relation to climate change awareness. All case studies can be defined as the study of a location or setting (Bryman, 2012). In this case, the setting is the Falsterbo peninsula, its community, and the shared antagonism of residential clusters. The thesis makes use of a combination of critical and revelatory case types (Bryman, 2012). The critical case study refers to case studies where a well-grounded theoretical hypothesis is tested to see whether or not it will hold in the specific setting. The case of the Falsterbo peninsula can be defined as critical since it explores the concept that strong place attachment leads to a higher acceptance among residents regarding climate change adaptation. The revelatory case type can be described as a case giving the researcher the opportunity to investigate a phenomena not previously available to study (Bryman, 2012). The Falsterbo peninsula case may be guided towards a revelatory case study type because protests against adaptive measures in response to sea level rise is a new phenomenon in Sweden. Below follows a description and summary of the case.

The residents of Falsterbo peninsula are no strangers to floods. The land is naturally low-lying, less than 3 - 4 meters above the current sea level (Vellinge kommun, 2011), and as previously mentioned the peninsula's placement in the narrow Öresund strait tends to enhance tidal wave effects already in motion by storm surges and wind patterns (Landberg et al, 2011). The case of Falsterbo-Skanör is chosen because it is the first Swedish municipality-based climate adaptation project facing protests from citizens. As mentioned in Wamsler & Brink (2014), Swedish

governmental bodies have up until recently placed emphasis on mitigation rather than adaptation in response to climate change (Wamsler & Brink, 2014). The floodwall construction will set a legal precedent for other similar projects. The case was dealt with in the Land and Environment Court (Mark- och miljödomstolen) in 2020, where most of the municipality's suggested plan was approved, and will be further scrutinized in the Supreme Land and Environment Court (Mark- och miljööverdomstolen) in 2021 (Vellinge kommun, 2021).

Vellinge municipality has cooperated with Lund University in flood and erosion research since the 1980s, showing that the Falsterbo peninsula is at risk of floods, especially tidal waves and temporary flooding following storm surges (Landberg et al., 2011). While temporary floods are a natural component in the ecosystem of the low-gradient landscape (Landberg et al., 2011), unstable weather conditions and storms may cause the peninsula to flood with extreme water levels in so-called coastal surge floods (Bilskie & Hagen, 2018). These extreme conditions are called "hundred year events" in Swedish hazard and risk planning (Landberg et al., 2011; Schöld et al., 2020). The latest hundred year event impact on the Falsterbo peninsula was the so-called Backafloden of 1872, submerging much of the landscape underwater, with water levels temporarily estimated to have reached 2.4 m (Landberg et al., 2011). In 1872, the peninsula was primarily used for grazing livestock while human settlements were located inland and uphill, resulting in no human casualties and minimal structural damage. Contemporary Skanör-Falsterbo is densely populated, reaching 7510 residents in 2019 (Vellinge kommun, 2021). In the Vellinge municipality's Plan of Action (2013), the municipality concludes that hundred year events such as Backafloden could potentially intensify in severity and within shorter time horizons, giving incentives to use hard physical adaptation to protect infrastructure and buildings (Vellinge kommun, 2013).

During the fall of 2017, Vellinge municipality held a public forum where citizens were informed about the plans to construct a seawall (Vellinge kommun, 2018). Ahead of the public forum, information had been presented on various public locations, including the suggested draft and lineout of the seawall. The public was also able to submit written viewpoints, about 150 in total, and more than 300 people attended the public forum (Vellinge kommun, 2018). In the Public Forum Summary (2018), the

municipality notes the conflicting opinions among citizens. The municipality concludes that a majority of written and oral statements from citizens were essentially positive to the seawall. However, many criticised the scope of the suggested draft, viewing the seawall to be disproportionate in relation to the real threat of sea level rise in question (Vellinge kommun, 2018). The Public Forum Summary further lines up some detailed themes that recurred in the forum, mainly revolving around the fact that the seawall is considered too high and unproportionally large.

In 2019, Vellinge municipality applied for a license to build the seawall from the Land and Environment Court (Mark- och miljödomstolen). Since some parts of the suggested outline of the seawall will intrude nature reserves, the County Administrative Board (Länsstyrelsen) appealed. A number of residents also appealed the municipality's request. On the 7th of May 2020, the Land and Environment Court authorized most of the municipality's plans. Both the municipality and the County Administrative Board appealed the verdict to the Supreme Land and Environment Court (Mark- och miljööverdomstolen). The judgment is expected to pass in 2021, though negotiations have been delayed due to the Covid-19 pandemic (Vellinge kommun, 2021).

5.3 Documents

Two documents are analysed in combination with the semi-structured interviews. These are the Public Forum Summary held on the 19th of March 2018, and the verdict by the Land and Environment Court from the 7th of May 2020 (M 3258-18) chapter 4.3, pages 137–160. Documents are selected because they hold valuable information on viewpoints and actions taken by affected residents on the Falsterbo peninsula. The verdict contains valuable arguments presented by citizens opposing the seawall, while the Public Forum Summary presents similar viewpoints from affected residents. Document analysis is included in this study to increase reliability and gain further understanding of the phenomena studied in this thesis, triangulating findings from interviews with further data.

While the selected documents are mainly representing negative sentiments, they function as a supplement to the personal viewpoints collected in interviews. As mentioned before, the aim of this thesis is not to generate a full, comprehensive picture of the views on sea level rise adaptation among the residents, but to yield understanding on why some are opposing it. The documents have been analyzed through qualitative content analysis through the employment of codes, expanded upon in 5.4, to find themes relating to the research questions. While the sample is small, the selected documents contain enough data about the subject studied in this thesis. Another reason for the small sample is that the case is relatively new, with few documents fulfilling the chosen criteria necessary for reliability. These criteria include knowledge on the producer of the document, the producer's authority on the subject, its genuineness, and its purpose (Bryman, 2012).

5.4 Semi-structured interviews

The main method in this study is the use of semi-structured, in-depth interviews. The aim of this study is to put into light some of the experiences and perspectives of the interviewees in relation to their "surrounding world" (Kvale & Brinkmann, 2014). Because of this, semi-structured, in-depth interviews are chosen as the methodological approach in regards to respondents. Interviews are conducted following the phenomenological paradigm, placing emphasis on the understanding of social phenomena as they are manifested within individuals (Kvale & Brinkmann, 2014). The use of in-depth interviews are advantageous for this type of research since it allows for interviewees to reveal general themes and individual opinions (Kapiszewski et al., 2015). During in-depth interviews, the interviewer may take on the role of a "provocateur", (Kapiszewski et al., 2015), challenging or encouraging respondents to elaborate their answers.

The number of interviewees is limited due to the time limit and scope of the study. Sampling is further limited to residents of the Falsterbo peninsula. While a larger number of respondents would have been beneficial for widening the variety of perspectives, the current respondents nonetheless cover a large spectrum of opinions and views. In interview studies, a smaller number of respondents are

recommended to enable the chance to reach depth and nuance in interviews, as well as the “theoretical saturation” (Bryman, 2012: p. 426), meaning the level of information from respondents needed to answer the research questions (Esaiasson et al., 2017). Theoretical saturation was reached after four interviews in combination with the document analysis, giving enough data to answer the research questions. The choice to not include informant-based interviews with privileged knowledge, such as civil servants or project leaders is deliberate, due to the overall focus of citizen’s views in this thesis. The tension and opinions that are sought to be understood in this study are manifested in residents, not in the experiences or views of civil servants.

Outreach was made possible through snowballing, initiated by an advertisement posted in local social media group “Vi som vill ha ett levande Skanör-Falsterbo”. On the 24th of April 2021, the group housed 2 554 members. The place-restricted purpose of the Facebook group thus functioned as a limitation in itself. All respondents received full anonymity to the highest possible extent. An initial respondent voluntarily suggested additional respondents they thought would be interested in taking part in the study.

The use of snowballing to expand the number of respondents may be highly beneficial for a study, but also prove disadvantageous since there is a tendency for “snowballers” to generate clusters of people with similar backgrounds, opinions, class identity or gender identity (Kapiszewski et al., 2015). This can compromise the generalisability of the study (Kvale & Brinkmann, 2014). The aim of this study is not, however, to generate a wide statistical generalisability, but to gain analytic understanding of a phenomena manifesting in a place (Kvale & Brinkmann, 2014). The generation of clusters is thus not a problem in this study. Furthermore, despite evaluating the risks with snowballing, the method in this study has captured views and opinions with significant latitude. When using in-depth interviews as a method, the interviewer also needs to consider any potential bias that may impede reliability (Kvale & Brinkmann, 2014).

The structure of the interviews conducted in this study resulted in open-ended questions, follow-up questions and a variable order of questions (Kapiszewski et al.,

2015), depending on the statements made by the interviewees. As such, it may be difficult to apply a single interview guide to all interviewees. Aside from the interview guide available in the appendix, the guide and operationalization table below can be used to review the general type of questions asked. The table acts as a strategy in how follow-up questions were asked and also shows the connections between the interview guide and conceptual framework.

Table 5.1. Guide to the general questions used in the interviews. By Hilda Bergkvist Andersson (2021).

Theory	Guiding questions
Place attachment and place change	What kind of relation do you have to the Falsterbo peninsula? What makes you interested in this place? <i>Following figure 2 in 3.3</i> : How did you react to this suggestion of place change? How will this place change affect your attachment to the place? Will the change be positive or negative? What was your reaction? Did you choose to act on your reaction? Will the seawall protect your surroundings, or cause disruption?
Experience of climate change	Is the seawall proportional to your own experience and expectations of climate change? What is your perception of climate change?
Adaptation	Is adaptation necessary on the Falsterbo peninsula? What would happen if no adaptive measures at all were taken?

Interviews were conducted from the 27th of April to the 7th of April. Due to the covid-19 pandemic, interviews were conducted digitally. The interviews lasted approximately 30 - 40 minutes. During the course of the interviews, respondents were asked to describe their past and present relationship to the Falsterbo peninsula. They were asked to describe elements in the local milieu strengthening their attachment. Respondents who were engaged in local organizations or political parties were further encouraged to explain the reasons behind their engagement. They were however made aware that interviews were not conducted with them as representatives for organizations, but as residents on the Falsterbo peninsula. Furthermore, respondents were encouraged to elaborate on their experience of local manifestations of climate change, in other words, sea level rise. Respondents were subsequently asked to describe their feelings about the seawall project, if they thought the barrier necessary and how they have chosen to act or not act upon their emotions. In the case of respondents expressing conservatory opinions, they were

requested to explain why. Respondents expressing opinions in favor of the seawall were similarly requested to elaborate on their decision.

Respondents were interviewed as private individuals and were guaranteed anonymity to the extent possible. They should thus be considered completely anonymous. Details such as names, age, gender and other personal circumstances that could allude to a respondent's identity have been removed. This choice was made to allow for respondents to feel as comfortable as possible sharing their personal views.

Interviews were conducted in Swedish, since the language is shared by both interviewer and respondents, allowing for a personal connection. The result is presented in English. Though certain nuances in respondents' answers might be lost in translation, the researcher considers her level of English adequate enough to still convey the intention in the quotes.

5.5 Data analysis

In this section, the methods for analysis are discussed. The intention with coding is to break down and compare various themes discovered in the data, to later group them into categories relating to the research questions. By following a thematic analysis approach, the aim is to provide a thematic framework where general themes in the data are identified (Bryman, 2012). While thematic analysis can be a highly heterogeneous method, there are certain guidelines that can be consulted. Bryman (2012) identifies a number of ways to search for themes in data, such as repetitions of topics throughout the material, metaphors, transitions, similarities and differences between interviewees, linguistic connectors, and missing data (Bryman, 2012). In this thesis, repetitions, transitions and similarities and differences will make out the bulge of thematic analysis. Below, this choice of focus will be further evaluated.

Repetitions of topics are useful in finding themes in the sampled material of this thesis. Interviewees may touch upon the same subject but in different ways depending on their own experience of the subject, but by searching for repetitions

throughout all interviews and documents patterns of themes may emerge through coding (Bryman, 2012). Transitions are further useful because by studying how interviewees shift from a topic to another, it is possible to find patterns in how interviewees relate one subject to another (Bryman, 2012). This is especially valuable in the semi-structured interview method used in this thesis. For example, a question about what the respondent thinks about the municipality’s seawall construction may lead to the respondent further developing their thoughts on other forms of municipal management. The observed transition gives information about how the respondent connects climate change adaptation to the municipality’s governance, which in turn results in additional data for analysis and aids in finding themes. Finally, similarities and differences in how various actors in interviews and documents discuss or react to different subjects gives valuable incentives to how climate change perceptions and place attachment manifests in the various viewpoints studied in this thesis (Bryman, 2012). To avoid iteration, empirical findings are incorporated in the analysis. Interviews and documents were coded as follows:

Table 5.2. Nodes used in coding of interviews. By Hilda Bergkvist Andersson (2021).

Research questions	Categories	Themes	Codes
<i>What is shaping the Falsterbo residents’ perceptions of climate change?</i>	Climate change narratives	Perception of climate change	Urgent/Worry
		Acknowledging local climate change impacts/Addressing sea level rise	
		Dismissing local climate change impacts/Dismissing need for action	Not urgent/No worry
<i>How can residents’ relation to their environment affect adaptation acceptance?</i>	Place attachment	Place change and place disruption	Community/Safety/History/Ancestry/Return
		Expressions of sense of place/Place bonds/Beauty of place, nature and culture	
		Expressions of worry/Change/Disruption	Exploitation worries/Interest in conservation /Acknowledging exploitation and change
	Sea level rise adaptation	Pro-adaptation Acceptance/Encouragement	Acceptance/Encouragement/Sea level rise acknowledgement
		Anti-adaptation Critique/Alternative suggestions/ Non-compliance with municipality plans	Unnecessary/Too ugly/Too high or too long/Wrong placement/Intrusive

6. Results and Analysis

In this section, the analysis of the paper begins. The segment is structured as follows; first, the perceptions of the threat of climate change are introduced. Following this, the framework of place attachment is applied on findings from documents and interview responses. Finally, the section ends with a discussion of how the findings can help understand mechanisms that influence or aggravate adaptation conflict. The conceptual framework is applied on the empirical findings to answer the research questions. Subchapters are divided according to the research questions. Prevalent themes discovered through coding are further addressed within the subchapters.

6.1 What is shaping the Falsterbo residents' perception of climate change?

Using climate change narratives as described in Leichenko and O'Brien (2019) and climate change perceptions described in Ruiz et al. (2020) and Ratter et al. (2012) , this section deals with the perception of climate change risks among residents on the Falsterbo peninsula. This connects to the themes described in table 5.2: empirical data show that residents have little concern for sea level rise threats. No respondents from the interview sample and only isolated individuals discerned in the document analysis express pure climate change denial (Vellinge kommun, 2018, p. 12; respondents A, B, C, D). Instead, findings show that residents disregard the municipality's judgment and consider the seawall to be unproportionate to the expected sea level rise (Vellinge kommun, 2018: p 12).

Empirical findings in protests show a recurring tendency among residents to disregard the future threat of sea level rise, drawing upon past experiences. Some residents "consider the protection (...) completely unnecessary" (Vellinge kommun, 2018, p. 15), arguing that taking such an extreme event as Backafloden into account when planning protection is unreasonable. Similar dubious sentiments can be

discerned in several interviews. One respondent states: “no one on this street has had floods in the last 200 years. I would not say that I am a climate change denialist, but it does not feel serious” (Respondent D, May 7, 2021, personal communication), and later continues: “if you have lived here for generations, you know through experience that it [sea level rise] is not a problem”. The mention of Backafloeden as a reference point occurs in several interviews as well as in the document analysis. Several respondents state that residents generally do not worry about sea level rise, though most express knowledge about flooding as a natural part of the Falsterbo peninsula’s ecology. Another respondent further disregards that sea level rise and floods are the result of climate change, stating: “The peninsula has always been flooded to and fro” (Respondent B, personal communication, April 29, 2021), latter adding in response to questions asked about whether the seawall is proportional: “we have not really seen the need for what” (Respondent B, personal communication, April 29, 2021), connecting with the physical experience of climate change described in Ruiz et al. (2020) that manifests within the dismissive narrative. Other sample comments include:

“When I went to school when I was young, ten or eleven years old, we had a lot of environmental studies on the schedule. (...) They said that in 70 years all of the Falsterbo peninsula will be beneath water. And now it’s gone 35 years and [smiling] how much you would have wanted to see some radical change... many don’t really see it.” - Respondent A (personal communication, April 27, 2021)

“I still do not get what this wall is for, if it is for occasional floods and surge storms or if it is the climatological [sic] impact that makes the water level rise. I cannot really wrap my head around which is which (...) we are a little iffy about whether this is really serious” - Respondent B (personal communication, April 29, 2021)

Respondents generally do not deny that floods are naturally occurring on the Falsterbo peninsula. However, they question the need for the kind of protection the municipality has suggested. Elements of dismissive climate change narratives can thus be observed in some respondents’ answers. No respondents deny the

existence of climate change and sea level rise on a global scale. Instead, findings from both document analysis and interviews suggest that residents oppose the timespan painted out by the municipality, as well as the severity of disasters, should they come to be. As mentioned in Glaas & Juhola (2015), there are prevalent opinions on climate change as being a phenomena distant in time and space, while simultaneously dismissing the need for adaptation in Falsterbo:

“I mean, sometime, somewhere, maybe someone has to do something, but that has to be a lot more thought through than just enclosing the entire Falsterbo peninsula with a wall” - Respondent B (personal communication, April 29, 2021)

Respondents were asked what they thought would happen with the Falsterbo peninsula should no adaptation at all take place. The answers can be guided into a common perception that *if* sea level rise would ever become a risk on the peninsula, it would happen to future generations, as seen in following quotes:

“No one can say exactly when it will happen (...) it might be 150 years into the future, this house will not even be here in 150 years (...) I will not be alive, but you have to think about your grandkids ” - Respondent A (personal communication, April 27, 2021)

These sentiments were a common transition from questions about whether or not respondents thought the seawall to be proportionate. Most interview respondents, and the findings from the document analysis, states no. Some believe that the municipality exaggerates both the timespan of year 2065 and the seawall’s height (M 3258-18). Findings suggest that some residents promote a more gradual construction, such as adding height according to “real” observed sea levels every ten years (Respondent A, personal communication, April 27, 2021), or using a shorter time horizon in the construction, such as 2045 (M 3258-18, p. 138), resulting in a lower seawall with less intrusions to the environment.

Less common themes discovered relate to climate change awareness stretching into the future. Some respondents and residents discovered in the document analysis do express a higher level of concern:

“I’ve been thinking a lot about: should we really stay here? When should we move? Is it better now, when we can still get something for the house or should we just wait for as long as possible and enjoy it while it lasts? (...) I’ve been thinking about it for our kids’ sake. Do we really want to live in a place that will be uninhabitable when they are adults or is it better to let them grow up somewhere else?” - Respondent C (personal communication, April 30, 2021,)

The document analysis shows similar sentiments among other residents. Some applaud the municipality’s work and encourage the construction. The municipal Public Forum concludes that “many residents considered the protection necessary and urgent” (Vellinge kommun, 2018, p. 12).

To summarize this segment, the perceptions of climate change found in the interviews and document analysis follow themes of the dismissive narrative (Leichenko & O’Brien, 2019). It is obvious that interviewed residents are not unaware of climate change, and those expressing doubts about the scope of sea level rise are quick to ensure that they are not climate change denialists. Instead the data collected from interviews and document analysis suggest that some residents follow a climate change narrative relating to the dismissive climate change discourse, evident by the themes presented in table 5.2. Drawing on past experiences of a stable environment, some residents come to the conclusion that the future will remain, if not the same, at least relatively stable. The empirical data thus suggests that a dismissive narrative connects to resistance towards the need for adaptation, since residents dismiss the scope of sea level rise. The perception of climate change among residents on the Falsterbo peninsula is thus found to be mixed, though there is an overall tendency among residents to overlook the scope of climate change and treat adaptive responses with suspicion.

6.2 How can residents' relation to their environment affect adaptation acceptance?

By applying place attachment theory on the empirical findings, this section starts by noting to which extent the material demonstrates place attachment or place attachment. Themes of place attachment were discovered in both interviews and document analysis. The segment then moves on to describe experiences of place change and place disruption in relation to the seawall construction.

When respondents were asked to describe their connection to the Falsterbo peninsula, in an attempt to generate knowledge on the sense of community and sense of place as described in Amundsen (2015), it was apparent among all respondents that nature and proximity to the sea are strong reasons for their relation in the place. Respondents tend to draw upon the beauty of their surroundings. Some recall nostalgic childhood memories and continuous attachment to the place, as seen in sample comments below:

"I've always been out and about down here. We used it as a playground, to put it simply (...) it was all about going out, out on Flommen and the harbour and the beach and so on. So I have gotten to know just about every centimeter of the Falsterbo peninsula." - Respondent A (personal communication, April 27, 2021)

"I would say I am pretty well ingrown here so to speak (...) We left the big city in the 70's and since then we have not lived in any big city. 'Green wavers' you could call us." - Respondent B (personal communication, April 29, 2021)

Several times, respondents mentioned the beauty of their surroundings, and the convenience of living close to nature and the ocean.

"It's mostly because it is so incredibly beautiful, beyond the obvious part with the beaches there are also (...) areas you might not even think about if you do not live down here (...) So that was the reason for us moving here and we use it very much (...) almost every day I go down to the sea or to some other place

here that is beautiful. And it feels really incredible and privileged to live in such a place." - Respondent C (personal communication, April 30, 2021)

Other respondents describe the feeling of home, how many childhood friends have moved back during the years, describing a closely knit community, again connecting to the sense of community described in Amundsen (2015). They describe how visitors and guests sometimes believe that everyone knows each other due to the practice of greeting or making small talk among residents strangers to one another (Respondent D, personal communication, May 7, 2021). One respondent uses the word "almost a little religious" to elaborate on how the sense of place is apparent among residents (Respondent D, personal communication, May 7, 2021), also describing how the long history of human presence on the peninsula might contribute to a strong interest in the place. Another respondent mentions the wish to engage in local organizations and politics to "pay back" to the landscape and community (Respondent A, personal communication, April 27, 2021).

Similar sentiments can be discerned in the document analysis. In the opposition of the proposed seawall, a majority of themes connect to the importance of preserving the "unique" landscape character. Findings also relate to a concern among citizens that access to, views of, or features in what may be interpreted as the sense of place (Tuan, 1974) may be impaired through the construction of the seawall. Of the respondents asked about their opinion on the seawall, only one expresses unstipulated positive sentiments:

"My first reaction was positive, (...) since I already knew about sea level rise (...) I immediately thought: it is needed, start building as soon as possible." - Respondent C (personal communication, April 30, 2021)

The respondent also expresses opinions relating to the dialectic fixity and flow mentioned in Manzo & Devine-Wright (2021), acknowledging place change as a natural and innate part of the relationship with a place:

“I guess I try to think of it pragmatically, I think of course it will change how the landscape looks a bit but then again, that is being done all the time.” -

Respondent C (personal communication, April 30, 2021)

After establishing that empirical findings relate to place attachment theory, the next step is finding experiences of place change and place disruption among residents. During semi-structured interviews, respondents repeatedly return to a discussion of a general experience of place disruption as described in Manzo and Devine-Wright (2021), rather than only place disruption in relation to the seawall. Similar sentiments can be found in the thematic analysis of the documents. Those opposing the current outline of seawall argue that it will threaten the “landscape view” (M 3258-18, 2020, p. 141) as well as inflict damage upon “nature values” (M 3258-18, 2020, p. 141). Several concerned parties in the judgment further argue that the seawall is too high and will act as a disruptive element in the landscape. Similar opinions can be found in the Public Forum Summary, where “many residents argue that it would be better with an external protection along sand dunes than the suggested outline” (Vellinge kommun, 2018, p. 16). These recurring promotions for an alternative outline are backed by arguments connecting to minimizing intrusions into the current landscape.

When asked about how they think the seawall would change the environment they clearly care strongly for, respondents give mixed answers, some of which relate to the general grade of exploitation and urban development:

“That is also pretty interesting (...) with the exploitation, because it is the exploitation that is largely the reason why this seawall has become so urgent.”

- Respondent A (personal communication, April 27, 2021)

One respondent also ponders that if the seawall is being built, people will choose to move from the Falsterbo peninsula. The reason, according to the respondent, is that the seawall would destroy the spirit of the place and the values that make people want to live on the peninsula (Respondent B, personal communication, April 29, 2021). This again connects to Tuan (1974) as well as the place disruption reactionary table in 4.1 and in Figure 2. Respondents touch upon the experience of place disruption, being concerned with “preserving what they still have left”. They

express concern about losing parts of what can be interpreted as the “spirit” of the Falsterbo peninsula if the seawall is built, once again connecting to Tuan’s (1974) definition of a “sense of place”. Further sample quotes describing the preservationist tendencies below:

“You can put it like those who live down here care very much about the past.”

Interviewer: *To keep it like it has always been?*

“Yes, kind of. Let us be careful and preserve what we still have left.” -

Respondent B (personal communication, April 29, 2021).

The respondent moves on to add that the municipality should not look at what is happening in the sea, but rather to start “looking at what is on land”, further explaining that they and others on the peninsula have yet to see the need for any form of adaptation (Respondent B, personal communication, April 29, 2021). These preservationist sentiments among residents can be guided towards the framework presented in Devine-Wright (2009): the place change on the Falsterbo peninsula is contingent on the lack of control residents have in the process, as well as the scope and speed in which the seawall is being realized. The residents of the Falsterbo peninsula thus experience place disruption; opposing the seawall less due to NIMBYism than because of the threat the seawall poses towards place identity and pre-existent emotional bonds to the place.

In summary, this section answers the research question of how resident’s relationship with their environment can affect their adaptation acceptance, using place attachment as the main conceptual framework. It shows that residents showcase great concern for landscape and character of their place, with little worry about whether or not sea level rise and surge floods may function as disruptive elements. The way place attachment and climate change perceptions may interact in protests and opinions about the seawall is further developed below.

6.3 Moving forward: how can place attachment and climate change perceptions worsen or influence lack of acceptance for adaptation ?

This section presents and provides analysis for findings relating to mechanisms that may influence the ongoing conflict among residents and the municipality. As mentioned above, the main concepts applied to the data are place attachment and climate change narratives. By applying these concepts upon the findings from the thematic analysis, the aim is to find whether place attachment and climate change perceptions may function as factors in residential protests against adaptation. In this section, the research questions in chapter 2 are connected to the aim of this thesis - to explore how place attachment and climate change perception may give rise to conflicts in sea level rise adaptation.

The experience of place change and place disruption (Manzo & Devine-Wight, 2021) among respondents reach beyond simply the construction of the seawall.

Respondents continuously connect their place change experiences to other projects conducted by the municipality. As soon as the seawall construction is brought up as a subject, respondents tend to transition (Bryman, 2012) and elaborate on other practices by the municipality that they feel contributes to the disruption of the sense of place on the Falsterbo peninsula, as seen in the sample quotes below:

“You know that if no one does anything, if you don’t engage, then there are other forces that want to exploit, expose and develop and (...) it always comes at the cost of something else.” - Respondent A (personal communication, April 27, 2021).

“They build like crazy down here. And they do that in areas we have always taken for granted as green spaces, as free outdoor spaces. And we do not think that is very fun.” - Respondent B (personal communication, April 29, 2021).

“(...) they have built incredibly much since I was little (...) And that is partly negative if you have chosen to live here because of nature and at the same time it is understandable that many want to live in a place this beautiful. But that is one of the aspects that I am worried about, the development I am worried about (...)” - Respondent C (personal communication, April 30, 2021).

Findings from the interviews connect the experience of place change and disruption to an overall critique of the municipality’s governance expanding beyond the construction of the seawall.

“(...) the most important question is not the seawall itself, it is a much more important question really that they [the municipality] are destroying the Falsterbo peninsula. And because of that the pressure on the seawall increases and you have to build it all right away.” - Respondent A (personal communication, April 27, 2021)

Connecting to the types of conflicts described in Henkel et al (2018), some residents showcase resistance against public money being used in the construction:

“I think it is pathetic, all of it. That they spend so much money and that I have to pay taxes for it, it is so stupid.” - Respondent D (personal communication, May 7, 2021)

Ultimately, several interviewees do not perceive climate change as an issue requiring immediate response, in line with the descriptions of the dismissive approach in Leichenko & O’Brien (2019).

The social barrier types described in Hinkel et al (2018) revolve around financial or distributional conflicts. In this case, residential conflict is less concerned with benefits from the wall or the use of public money. The quote above may connect to the conflict type in how public money is being used for adaptation projects. However, Hinkel et al (2018) describes this type of conflict as occurring among non-risk citizens who criticise having to “pay” for at-risk citizens. This type of conflict among residents of the Falsterbo peninsula is thus not related to geographical distance from

the risk of floods. Instead, it is based on a dismissive or disregarding approach towards the threat of sea level rise, and in extension, the local impact of climate change (Leichenko & O'Brien, 2019). As described in Leichenko & O'Brien (2019), one approach common in the dismissive narrative is related to disregarding climate change as an urgent problem and criticising the use of public finance in response. Opinions within this discourse instead argue that public money and taxes should be used in areas of higher importance, such as education or healthcare.

As seen above, respondents tend to speak in plural form, identifying strongly within a place-based Falsterbo community as seen in Amundsen (2015). In the quote above, the respondent further dismisses the need for sea level rise adaptation and protection, instead placing emphasis on the municipality's mismanagement of the Falsterbo peninsula. Respondents also distance themselves from the municipality, and the "top-down" rule of the Moderate Party in local government, often antagonizing against Vellinge municipality on subjects exceeding the seawall construction:

"(...) What has happened has happened and you cannot change that, but I think the exploitation should be stopped now (...) If they [the municipality] keep going as they have done in the last 50 years and do it for 20 more years, there will be nothing left." - Respondent A (personal communication, April 27, 2021)

Respondents and participants in both the Public Forum Summary (Vellinge kommun, 2018) and the judgment (M 3258-18, 2020) press the fact that there are old kelp hills close to the beaches that were used as flood protection in past centuries. All interviewees touch upon the subject, and it is a recurring argument used in the documents analysed:

"Of course there is nothing wrong with protecting against [sea level rise] but (...) it should be natural protection" - Respondent A (personal communication, April 27, 2021).

It appears that respondents antagonizing against the seawall have previous experiences of substandard management by the municipality. Urban development and exploitation is almost simultaneously brought up as a topic alongside the seawall construction. There is a strong need among respondents to preserve areas and milieus they consider “vital” to the Falsterbo peninsula, such as areas of nature not officially protected as reserves. The “sense of place” (Tuan, 1974) apparent in the abovementioned sample quotes further put light into these preservationist tendencies. While respondents express distress and worry about losing what they consider being the essence of the Falsterbo peninsula, they also accept urban development to some degree.

This further connects to the dismissive narrative mentioned earlier: the municipality is “wasting tax money” on things of little or no urgency, such as sea level rise adaptation. Another respondent touches upon this subject, describing how many who have lived on the peninsula for long periods of time or generations, tend to view the landscape as constant (Respondent C, personal communication, April 30, 2021). Due to continuous beach nourishment and other erosion-preventive measures taken by the municipality in the past, there is a belief that sea levels around the peninsula are even less of a threat than in the past centuries (Respondent C, personal communication, April 30, 2021). This integrates dismissive perceptions of climate change (Leichenko & O’Brien, 2019) with resistance towards place change (Manzo & Devine-Wight, 2021), giving rise to social conflict in response to adaptation (Hinkel et al., 2018).

Citizens’ suggestions apparent in the findings relate to wishes among residents to construct a more gradual protection, relating to the lines of thought evident in 6.1. Several residents argue that the seawall should be built within a shorter timespan, adding to height if it proves to be insufficient, since they consider the sea level rise projections used by the municipality to be too unreliable (M 3258-18, 2020, p. 142). This argument reoccurs in the interview analysis, whereas several respondents mean a gradual seawall construction means less sudden intrusions in the landscape and simultaneously will not prove exaggerated, should the sea level rise projections be misleading. These arguments reflect both dismissive notions of climate change (Leichenko & O’Brien, 2019) as well as a wish among residents to lessen the place

disruption (Manzo & Devine-Wright, 2021). It is also an expression of retroactive adaptation instead of a pre-planned ditto taking height for any variations in sea level rise projections (Cooper & Lemckert, 2012). The difference in the municipality's pre-planning approach and the wishes among some clusters of residents to use a retroactive approach is that the first relates to the risk of projections being too low, whereas the second instead connects to the belief that projections of sea level rise may be exaggerated. As shown in Hieronymus & Kalén (2020), there is little evidence of sea level rise as an exaggerated phenomenon, however. Instead, sea level rise is one of the climatic changes with the largest probability of being understated due to a lack of understanding in processes involved (Hieronymus & Kalén, 2020).

Other opinions are also evident in the findings. Some critique towards the proposed outline of the seawall is not connected to the appearance or makeup of the seawall, but rather the fact that it does not protect some areas deemed important to the residents. Around 30 residents in one part of the peninsula insist that the seawall needs to encase their properties (Vellinge kommun, 2018, p. 13).

To summarize this segment, the mechanism of place attachment and climate change perceptions in this particular case may connect to both dismissive approaches integrated in a strong wish to preserve the sense of place. It is evident that the experience of place disruption and place change among antagonizing residents is not only connected to the seawall itself. A continuous experience of municipal mismanagement leading to losses of the sense of place may have already created an arena for residents to move upon, expressing critique against anything involving place change.

7. Discussion

This thesis aimed at understanding as to why some citizens oppose sea level rise adaptation. The manifestation of such protests has been noted in the case of Falsterbo, Vellinge municipality. Datasets have been collected through a joint thematic analysis of relevant governmental documents and a series of semi-structured interviews with residents. Below follows a discussion of the themes discovered and their relationship to the literature reviews and conceptual frameworks.

After consulting the data, three themes have emerged as especially prevalent. One: empirical findings show that residents express relatively low concern for sea level rise, drawing evidence in their past experiences of a relatively stable environment, or they dismiss the scope of the kind of protection suggested by the municipality. Residents are thus showcasing tendencies related to the extended dismissive climate change discourse as presented in Leichenko and O'Brien (2020). Two: residents express strong place attachment and experience place disruption as described in Manzo and Devine-Wright (2021). Three: respondents with dismissive climate change tendencies, strong place attachment and experiences in place disruption express more antagonism towards the seawall.

The first theme discovered might not be too surprising. Insofar, southern Sweden has been spared from severe disasters related to sea level rise. Mean sea level rise projections of the future are generally uncertain. Citizens may have difficulties assessing the scope of local impacts. Residents on the Falsterbo peninsula are used to moderate floods that are part of the ecology of the peninsula, and some disregard projections that increase the severity of surge floods based on their past experiences. One important note is that residents do not disregard sea level rise in its entirety, and not on a global scale. Instead, findings in this thesis points to a dismissive approach regarding awareness of climate change impacts on a local scale. The dismissive narrative is further prevalent in the critique residents have directed towards the municipality's use of "hundred-year-events" as the basis of adaptive measures. As stated in the analysis, some residents find such an estimate exaggerated. The floods that the municipality is planning for are not in the form of

gradual sea level rise described in 4.2, but surge floods. If sea levels rise, that means the severity of surge floods will increase as well. Since surge floods are also influenced by weather changeability, other mechanisms in climate change such as wind currents and an increased frequency of storms will also affect the future local impacts. These estimates are easy to dismiss, however, due to the aforementioned lack of frequent disasters on the peninsula, and the difficulty among citizens to assess the true scope of the increased frequency in the future. Backafloeden did not affect human lives, since the peninsula was not inhabited. The damage from Backafloeden can not be comparable to the damages a similar disaster would induce today. Importantly: findings have also shown the opposite phenomenon. Residents who approve of the seawall construction also express anxiety and distress in response to sea level rise.

The second theme relates to evidence of place attachment among residents on the Falsterbo peninsula. The importance of this theme should not be understated. Document analysis and interviews provide findings of relevance to how residents react to intrusive changes in their environment. What is most notable in the thematic analysis of interviews is the tendencies among interviewees to transition from speaking only of the seawall as a disruptive element, to discuss the municipal misgovernment of the peninsula as a whole. The criticism expressed among interviewees relates to a communal feeling of unity, a common care for the natural environment. There is a shared experience of the Falsterbo peninsula as a place deserving of protection, but not from sea level rise as much as municipal misgovernment and urban development. Residents showcase a large interest in and attachment to their place, and do express concern regarding place disruption. However, the thematic analysis shows no immediate connection between place attachment and adaptation acceptance. The findings of this case study are not coherent with the dominant paradigm in place attachment and adaptation research. Instead, residents oppose the municipality's plans. Some do because they feel the suggested plans are too intrusive, others because they feel that risk is exaggerated, drawing upon past experiences to add substance to their opinion of sea level rise as a non-threat. However, as discovered in the first theme, there are exceptions in the empirical findings. Some residents do not view the "sense of place" on the Falsterbo

peninsula as constant, but rather acknowledge the constant place change and thus experience less disruption regarding the seawall.

The last theme is of particular interest. In the case of the Falsterbo peninsula, residents do not perceive sea level rise as any immediate risk. The dismissive narrative is prevalent among interview respondents and among individuals in the document analysis, alongside evidence of place attachment with preservationist tendencies. Because of this, the seawall intended to protect infrastructure, buildings and human lives become a disruptive element in the landscape. It is viewed as yet another superfluous and intrusive project by the municipality. Residents oppose the use of private land or public funding for a project viewed as unnecessary, giving rise to a conflict related to but not fully explored in Hinkel et al (2018). Why residents express dismissive views in this case may relate to the perception of sea levels as constant or the opinion that sea level rise projections are unreliable. Furthermore, the dismissive approach appears to be part of a communal perception based on the resident's own experiences in climatic change processes (Ruiz et al., 2020), that is, no or moderate floods posing little threat to infrastructure or abodes. While projections on mean sea level rise are indeed difficult to assess, the general scientific consensus is that sea levels will not remain constant, not even in the case of society returning to pre-industrial greenhouse gas levels (Hieronymus & Kalén, 2020). As mentioned in 6.1, the conflict may thus contain elements in which the municipality attempts to compensate for any variations in the projections available, while opposing residents instead argue for the less place disruptive alternative of gradual seawalls, no seawalls at all, or flood protection integrated in current sand dunes.

The mechanisms discovered in this study, through the lense of place attachment and climate change narratives, may contribute with knowledge to the phenomenon of adaptation resistance. Residents oppose the suggested outline of the seawall for several reasons, but these reasons may be guided towards the three themes mentioned above. The seawall is too high and unproportionate, and it is too disruptive in the landscape. These sentiments are thus linked to the theories used in this thesis. Thus, findings show that those expressing antagonism towards the seawall on the Falsterbo peninsula do so due to a wish to preserve the area's "sense

of place”, thus disregarding the need for sea level rise adaptation. Contrarily, those expressing acceptance of the seawall also acknowledge sea level rise and climate change to a higher degree. Importantly, it is obvious from the findings that Vellinge municipality has failed in communicating the aim with the seawall. The discrepancy between the need for adaptation identified by the municipality and the need acknowledged by residents means communication and understanding of social conflicts in adaptation is inadequate.

8. Conclusion

This thesis has dealt with the role of place attachment and its integration with climate change narratives among individuals reacting to adaptation. Place attachment may not only function as a factor in adaptation acceptance, it may also contribute to resistance towards sea level rise adaptation. Strong evidence of place attachment and a dismissive approach in climate change perception may aggravate adaptation resistance. Ultimately, integrating climate change perceptions in the understanding of place attachment and place change may contribute to knowledge on how citizens may react to sea level rise adaptation. In this case study, findings show that previous experience of physical climate change is more influential in residents' perceptions than projections of the future. This connects back to place attachment and the definition among residents that the flood-prone environment is part of the sense of place they wish to preserve.

The fact that many interviewees connected their critique of the seawall with other municipality projects points towards additional factors in the conflict, not explored in this thesis. One of these factors may be briefly described as connected to politics, with several respondents criticising the "top-down" rule and the dominance of the Moderate Party in local government. Other themes noted in the empirical findings of documents and interviews are more or less guided towards the reluctance among residents to allow the municipality to use private land, as well as a concern among residents that the value of property may be decimated due to the intrusive nature of the seawall. Though they were not the focal point of this thesis, these themes deserve explorations in further research.

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Appendix

Interview guide, semi-structured interviews.

Vi kan börja med att bara diskutera din koppling till Falsterbohalvön.

Let us start with discussing your connection to the Falsterbo peninsula.

Vad är Falsterbohalvön för dig? Vad är det som gör platsen speciell för dig?

What is the Falsterbo peninsula to you? What makes it special?

När du först hörde om kommunens planer på att bygga den här skyddsvallen, vad var det första du tänkte på?

When you first heard of the municipality's plans to build this seawall, what was your first thought?

Vad tänkte du skulle hända med din miljö om den här förändringen skulle hända?

What did you think would happen to your environment if this change was to happen?

Skulle skyddsvallen vara positiv eller negativ för dig och din plats?

Would the seawall be positive or negative for you and your place?

Vad var din första reaktion?

What was your first reaction?

Hur valde du att gå vidare med din reaktion? Kommer det projektet innebära några stora förändringar i ditt liv?

How did you choose to move on with your reaction? Will this project mean any large changes in your life?

Om man har ett starkt band till en plats så kan man ju vara mer villig att beskydda det. Det kan vara genom att vilja förhindra stora ingrepp eller att heja på dem. Vad betyder det för dig? Är det att låta Falsterbohalvön vara som den är eller att klimatanpassa den?

If you have a strong bond to a place you might be more inclined to protect it. It could be by wanting to prevent large intrusive constructions or welcome them. What does it mean to you? Do you protect your place by preserving it or adapt it to climate change?

När du tänker på klimatförändringarna som kommunen utgår ifrån, vad tänker du? Är stigande havsnivåer och översvämningar något som oroar dig?
*When you think of climate change as defined by the municipality, what do you think?
Are you worried about sea level rise and floods?*

Är skyddet proportionerligt? Varför/varför inte?
Is the seawall proportional? Why/Why not?

Om vi föreställer oss att kommunen inte skulle bygga det här skyddet, vad tror du skulle hända då?
Imagine that the municipality did not build this seawall. What would happen?