



**When places change: Impacts of undesirable
environmental change on coastal community's
well-being and adaptive capacity**

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Abstract

Solastalgia describes distress, grief, powerlessness and inability to achieve solace in one's home following disruptive environmental change or place loss. With climate change likely to increase sea level rise and intensify winter storms, coastal communities are particularly vulnerable to impacts of disruptive environmental change. Moreover, transformative adaptation responses to climate change impacts are likely to be increasingly implemented as adaptation becomes more urgent. Therefore, understanding solastalgia will be critical for adaptation planning and building adaptive capacity of coastal communities. This thesis aims to address knowledge gaps related to lived experiences of solastalgia and disruption of place attachment as a result of chronic and undesirable environmental change and loss of place. Specifically this thesis examines i) the extent of solastalgia and place disruption experienced by the communities of Courtown harbour and Riverchapel and how these experiences influence future perceptions of place; ii) how solastalgia, place attachment and place disruption influence community and individual ability to cope with environmental change and loss of place; iii) how lived experiences of place have been altered by negative environmental change and loss of place; iv) how communities of Courtown and Riverchapel are reimagining place, and; iv) how attitudes towards governance and decision-making processes relate to solastalgia and place attachment.

Employing a mixed methodology of quantitative and qualitative approaches this thesis finds that a large proportion of residents in Courtown and Riverchapel Co, Wexford experience solastalgia and place disruption as a result of undesirable place change, showing that slow and chronic environmental change can cause solastalgia within an Irish context. Solastalgia is strongly and positively correlated to place attachment and pessimistic outlooks for the future, it also relates to negative perceptions of place and place disruption. In some cases, undesirable place change has undermined place attachment giving rise to a desire to relocate. However, in many cases, despite experiences of solastalgia people maintain hope for the future. Place is being reimagined by local residents by shifting place attachment to unchanged locations, increasing community cohesiveness, and engaging in climate change programmes. Despite such positive action, solastalgia is related to negative attitudes and perceptions of governance leading to lack of trust and higher resistance to policies and local developments. Weak consultation and inclusion in decision-making as well as a perceived indifference of

governance towards undesirable place change has reduced trust and amplified feelings associated with solastalgia. However, despite experiences of solastalgia and lack of trust in governance, residents believe there are opportunities for re-imagining the future if their voice is meaningfully incorporated in decision-making.

Findings of this thesis provide valuable insights for climate related adaptation strategies concerning the influence that loss of place, solastalgia and governance has on community adaptive capacity. Firstly, solastalgia is experienced by a coastal community in the southeast of Ireland reflecting the lived experiences of millions world-wide who are struggling to cope with coastal erosion. Disruptive place change as a result of climate change and transformative adaptation responses are likely to intensify solastalgia. Therefore, adaptation planning must consider the emotional and psychological impacts of perceived undesirable place change. Secondly, adaptation actions and local authority policy that fail to consider place-based values and meanings can cause disruption, intensifying feelings of loss. Therefore, adaptation planning must consider factors that compound feelings of loss for communities. Finally, collective action, increased consultation and inclusion in local decision-making can help residents come to terms with solastalgia and reduce resistance to adaptation actions. Therefore, decision-makers need to create opportunities that include local voices and co-produce knowledge and local decisions. This research explores the anatomy of place change, highlighting many compounding and interconnecting factors leading to feelings of place loss, thereby increasing understanding of the lived experiences of solastalgia from chronic and disruptive environmental change. These insights will be critical for helping decision-makers and coastal communities navigate climate change. If these issues are not addressed, it is very likely that solastalgia will become a more dominant aspect of lived experiences of place for millions world-wide as climate change and adaptation actions intensify disruptive environmental change.

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1 Introduction

1.1. Background

Everyday experiences of place are increasingly being threatened as familiar or home environments undergo negatively perceived transformations due to environmental, human induced or climate related changes (Warsini et al, 2014). Extreme weather-related events and climate change do not only pose a threat to the physical landscape but can impact individual and community health, physically, emotionally, and psychologically by altering the landscape and disrupting person-place relationships resulting in feelings of grief (Albrecht, 2006; Adger et al, 2009; Ellis and Albrecht, 2017). Under climate change, many natural hazards will increase in intensity such as flooding, winter storms and sea level rise (IPCC, 2022) as well as coastal erosion transforming place. With intensifying impacts from climate change and increasing vulnerability of communities in some places, transformational adaptation will increasingly be needed as a response (Kates et al, 2012). Transformative adaptation or transformational changes to a place are large scale, intense or non-linear changes that are new and transform a place (Kates et al, 2012). The IPCC (2014) defines transformation as *'a fundamental and qualitative change'* that can reconfigure or shift values, norms, social networks, power structures, or perceptions and meaning. Therefore, transformations to place can arise from natural or weather-related hazards intensified by climate change or transformational adaptation actions as a response.

Undesirable transformations to or loss of place have profound impacts on individuals and communities emotional and psychological wellbeing. Transformations of place may also impact sense of identity, place attachment and ability to cope with further environmental changes by undermining these key psychological processes (Albrecht et al, 2007; Fresque-Baxter and Armitage, 2012; Solecki and Friedman, 2020). A person's home environment can become unfamiliar as environmental transformations often lead to the breakdown of place attachment and emergence of solastalgia experiences (grief, place based distress) as the present state of their valued environment no longer resembles the past (Higginbotham et al, 2006; Warsini et al, 2014). However, concepts of grief and mourning are rarely applied to environmental loss research and remain underdeveloped as climate adaptation planning continues to focus on how material aspects of people's lives are impacted by climate change (Barnett et al, 2016; Adger et al, 2017; Marshall et

al, 2019). However, impacts on peoples emotional and psychological wellbeing as a result of environmental or climate related changes are difficult to measure and observe meaning they are often overlooked in adaptation planning and decision-making (Fresque-Baxter and Armitage, 2012). Such non-material losses felt by people, include loss of identity, health and wellbeing, culture, lifestyle, and emotional and psychological wellbeing (Turner et al, 2008; Adger, 2016; Fresque-Baxter and Armitage, 2012).

Environmental change disrupts people's interactions with a valued landscape impacting psychological and emotional processes but also causing negative and traumatic effects on individual and collective wellbeing which can result in feelings of grief (Hess et al, 2008; Ellis and Albrecht, 2017). This field of study is gaining momentum, being recognised by the Intergovernmental Panel on Climate Change (IPCC, 2014, IPCC, 2022) as important for adapting to future climate change (Denis and Moser, 2015). However, scholars have called for further research to understand the impacts experiences of environmental grief have on wellbeing and adaptive capacity (Denis and Moser, 2015). The philosopher Glen Albrecht coined the term solastalgia to describe experiences of distress and sense of loss resulting from transformational change to one's home (Connor et al, 2004; Albrecht, 2005, Solecki and Friedman, 2020). The concept of solastalgia also describes the desolation of a person's sense of identity, feelings of powerlessness and inability to derive solace from one's home environment due to perceived negative transformations to a valued place or location (Connor et al, 2004). Scholars have described solastalgia as a home sickness that's felt while a person's home environment transforms around them resulting in grief and distress (Conor et al, 2004; Albrecht et al, 2007; Eisenman et al, 2015). Undesirable environmental change and solastalgia as an emotional response are increasingly becoming part of lived experiences for individuals and communities, undermining emotional and psychological wellbeing (Cunsolo and Ellis, 2018).

In adaptation planning, psychological and emotional impacts can often be overlooked and present barriers for the implementation of adaptation actions (Klein et al., 2014; Clarke et al, 2018). Adaptation research has shown that unfavourable adaptive measures and policies can undermine wellbeing, become resisted and reduce adaptive capacity (Biesbroek et al, 2013). In many cases adaptation constraints originate from lack of self-efficacy, reduced locus of control and adaptation actions running counter to individual's world views, values, and perceptions of place (Adger, 2007; Adger, 2009; Biesbroek et al, 2013). Such constraints on individuals or a community reduce their ability to overcome climate related challenges and pressures (Adger, 2007; Biesbroek et al, 2013, IPCC,

2022). There is also some debate whether place attachment acts as a constraint for the implementation of adaptation actions that fail to consider place-based values or whether place attachment can be utilised to increase place protective actions (Cheng and Chou, 2015; Adger, 2016). In some cases, place attachment has been shown to act as a constraint to the implementation of beneficial policies and adaptation strategies (Cheng and Chou, 2015; Adger, 2016; Lemée et al, 2019). Environmental change or hazards can often be perceived as threatening to an individual's place attachment and identity also constraining adaptation (Abrahamson et al, 2008). Therefore, as place continues to change under intensified climate change impacts and adaptation responses it is increasingly important to understand in more detail the anatomy of place change and what may constrain people's ability to build adaptive capacity.

Importantly, a lot of adaptation planning occurs at a local scale, considering place attachment and place specific contexts will be important for assessing adaptation constraints (Marshall and Stokes, 2014; Clarke et al, 2018). Scholars have shown that when adaptation responses to undesirable environmental change run counter to place attachment, perceptions of place and world views, people's adaptive capacity at the local level can be undermined (Esterhuysen, 2003; Nelson et al., 2007; Folke et al., 2010; Clarke et al, 2018). In Ireland adaptation responses to flooding in Clontarf, County Dublin, were perceived by locals as negatively altering place and land uses (Clarke et al, 2018). In this case the adaptation response to flooding was perceived as being an undesirable transformation. As previously noted, undesirable transformations can result in distress or emotions associated with solastalgia.

1.2 Case study selection

County Wexford in the southeast of Ireland suffers from some of the most severe incidences of coastal erosion in Ireland. It's also home to some of the country's most important tourist beaches. Courtown beach County Wexford in particular has been drastically depleted over the last few decades as a result of severe coastal erosion. This case study was identified due to the close historical, economic, social, and personal ties the community has with a place that has undergone many undesirable transformations. In recent years strong storm events have continuously eroded the soft shoreline (Gorey Guardian, 2016; Wexford County Council 2015). The beach has recently lost its blue flag, an award for beaches with high environmental quality, due to the significant depletion of sand and loss of the beach.

Numerous residents/stakeholders within Courtown are concerned for their houses and properties as well as the roads and natural amenities (Gorey Guardian, 2016). There is a concern amongst the local councillors and residents that significant loss of land will continue if more immediate action is not taken, which may not only affect the residents but impact tourism which Courtown relies on (Gorey Guardian, 2016). The gradual disappearance of the beach in Courtown County Wexford makes it an important case study to examine such concepts as solastalgia and place attachment. This empirical case study will reflect experiences in other locations within Ireland that are experiencing severe coastal erosion. This case study also holds international importance as many coastal communities worldwide may have similar experiences as they struggle to withstand and cope with place disruption due to coastal erosion, sea level rise and other environmental pressures. This thesis examines Courtown and Riverchapel as a case study to draw direct links between the impacts of slow and ongoing environmental loss, place attachment and solastalgia, their impacts on willingness to adapt to future change and ability to reimagine Courtown without a beach.

1.3. Research questions

The principal aims of this thesis are as follows:

- To assess lived experiences of place disruption and loss as a result of negative environmental change occurring in Courtown County Wexford.
- To explore the impact adaptation strategies, have on experiences of place loss and community adaptive capacity.

With respect to these research aims, five research questions will be addressed:

1. Does the experience of loss and disruption result in the experience of solastalgia among community members?
2. Does place attachment moderate the experience of place loss/disruption and the experience of solastalgia?
3. How is place being reimagined following disruption?
4. What impacts does place loss/disruption have on outlook for the future?
5. What role do governance and decision-making processes play in the experience of place loss/disruption?

This thesis aims to contribute to scientific knowledge across multiple disciplines as discussed below. There have been many attempts to empirically evaluate solastalgia (Higginbotham et al, 2006; Warsini et al, 2014; Eisenman et al, 2015; Phillips and Murphy, 2021). However, most research empirically measuring solastalgia has focused on environmental changes related to resource extraction and natural disasters (Connor et al, 2004). Few studies investigate solastalgia and place disruption in relation to coastal erosion for communities in Ireland or elsewhere. This thesis aims to assess the extent that a coastal community in Ireland experience solastalgia and place disruption due to coastal erosion.

There is a significant body of place attachment and place disruption research, however, few studies assess the relationship between solastalgia and place attachment (Cunsolo and Ellis, 2018; Galway et al, 2019). This thesis will therefore explore the influence that solastalgia and place disruption resulting from coastal erosion has on people's ability to cope with place loss. Place disruption resulting from coastal erosion is an experience that millions worldwide must contend with.

Undesirable place change has been shown by scholars to impact people emotionally and influence place relations (Silver and Grek-Martin, 2015, Albrecht, 2007; Phillips and Murphy, 2021, Phillips et al, 2022). With 2 million people expected to live within 5km of the Irish coastline by 2050, exposure to risks and impacts to people's emotional wellbeing and place relations are likely to increase under climate change. These experiences are now becoming increasingly common for coastal communities influencing everyday lived experiences of place (Solecki and Friedman, 2020). This thesis will explore how undesirable place change has influenced place relations and experiences.

Some studies have highlighted the influence that place disruption may have on concerns and uncertainty for the future (Galway et al, 2019). However, the role that disruption plays in how communities and individuals view the future and reimagine place is understudied. This thesis will explore how communities and individuals re-imagine place following disruption and experiences of solastalgia.

Perceptions of governance and trust are important factors that can lead to adaptation actions succeeding or failing. Embedded within adaptation decisions are variables of trust, effectiveness of governance and perceptions of risk (Solecki and Friedman, 2020).

Adaptation actions that bring about transformations of place may heighten stress and anxiety if miss-managed by governance structures (Solecki and Friedman, 2020). However, if effectively managed from the outset, considering residents' concerns, values, and socio-economic contexts these emotions maybe avoided. However, the relationships between perceptions of governance, decision-making processes, and experiences of solastalgia are understudied. This thesis will investigate how attitudes and perceptions of governance/decision-making processes are related to experiences of solastalgia and place attachment.

Finally, this thesis seeks to develop insights for policymakers and communities to help create adaptation strategies that reduce undesirable place change and emergence of solastalgia. More specifically this research aims to provide adaptation and policy insights beneficial for the Environmental Protection Agency (EPA) climate research strategy 2014-2020. Outputs from this research will help inform adaptation decisions for the EPA's research pillar "Climate" and research theme: Ireland's Future Climate, its Impacts, and Adaptation Options. This research is being conducted as part of a jointly funded Irish Research Council and EPA project.

1.4. Methods and data collection

A mixed methodology was used which incorporated the use of a questionnaire survey, interviews, desk work and data triangulation. The mixed methods approach has been employed by many scholars in social science and incorporates a combination of data collection and analytical techniques (Devine-Wright and Howes, 2010; Clarke et al, 2018). The use of mixed methods within social science has been highlighted as an efficient approach to investigating a particular phenomenon and reduce limitations associated with individual methods (Creswell, 2013; Clarke et al, 2018). The approach can effectively validate findings while improving the robustness and richness of data (Driscoll et al, 2007; Creswell 2013; Clarke et al, 2018). The following methods were employed under this approach consisting of a questionnaire survey, photo-elicitation and walking interviews and desk research including sentiment analysis:

Questionnaire: The questionnaire was implemented over two field campaigns (See Appendix A), in summer and winter with residents of Courtown/Riverchapel County Wexford. The questionnaire was designed to measure solastalgia, place attachment, place disruption and outlook for the future in relation to loss of Courtown's north beach (See

Chapter 4). The questionnaire also measured attitudes towards governance which forms part of the analysis for Chapter 6. Questionnaire findings are reported in chapters 4 and 6.

Photo-elicitation and walking interviews: Photographs were used as a conversation aid to explore key concepts in depth and elicit emotions. Participants were encouraged to bring their own photographs to interviews for discussion. Photographs chosen by interviewees represented their connection to place and allowed comparisons of place to be made between the past and present. Walking interviews were employed to compliment photo-elicitation, engaging with sensory aspects of place such as sounds and smells that may elicit memories and emotions. This method also allowed for comparisons of place to be made with photo-elicitation outputs. Interviewees adopted the role of a guide, designating the interview route. Interviews for both methods were conducted using a largely informal conversational structure led by the interviewee with five key stakeholders in the community. Due to government restrictions as a result of the Covid-19 pandemic these methods were also conducted remotely. Interview procedures are discussed in more detail in Chapter 5.

Desk research and data triangulation: this method consisted of a detailed analysis of newspaper archives, social media comments, policy documents and County Council meeting minutes for the chosen case study. Desk analysis is a core feature of chapter 6 and involves identifying and extracting themes from the aforementioned secondary sources (Bryman, 2012; Clarke et al, 2018). It also includes the thematic analysis of social media comments (See Chapter 6) and combination of all data sources for data triangulation. Social media comments were extracted from popular Courtown social media pages (See Chapter 6) such as Courtown Community Council and Protect Courtown Woods. Thematic analysis was applied to the social media comments using a similar approach carried out in chapter 5 on interview transcripts. Themes from secondary sources were compared to findings from primary sources using a data triangulation approach included in chapter 6.

1.4.1 Ethical considerations

Ethical approval for this research was granted by the Maynooth University Social Research Ethics Sub-Committee. The ethical ethos and guidelines followed in this thesis were laid out by Maynooth University and the Irish Qualitative Data Archive (IQDA).

These guidelines were followed to ensure the highest ethical standards and anonymization of participants. Every participant was treated with respect and as an expert concerning their lived experiences and knowledge of the case study location.

For interviews all participants were given codes pertaining to when their interview occurred and the number of interviews, they took part in. No names were included in the study. Comments that could possibly identify individuals or others in the community were not utilised in the research or paraphrased where possible to maintain anonymity of participants. All participants were asked and given the opportunity to retract any statement that they did not want included in publication. All participants were given the opportunity to withdraw from the study at any point. Before interviews commenced the participants were informed of the study aims, objectives and requirements. Information included in the participant information sheet for surveys as well as information from walking diary guidance (See Appendix B and C) was communicated via zoom call. Participants were then asked if they consented to the interview and recording of the interview for purposes of data collection. The interviews were participant led and conversational, meaning participants controlled when the interview started, stopped and when breaks were needed. The researchers contact details and background information were provided to participants. All participants gave consent to both partaking in the interview process and its recording. The identities of participants have not been used within this thesis. The anonymization of public figures in secondary sources (e.g., newspapers) is often not carried out as information is publicly available. Identities of public figures included in this thesis are done so with care.

In relation to the two field campaigns conducted for the questionnaire survey in Courtown/Riverchapel participants were informed that the study would be anonymised. Participants were asked to provide addresses. However, these were only used to identify later whether the participants live in Courtown or Riverchapel. Addresses were later coded to ensure anonymization. Participants were also provided with an information letter (Appendix B) detailing the background to the study and a consent form (Appendix D) allowing the participants to withdraw from the study at any time. Anonymization of participants was carried out, all addresses and names were removed and replaced with codes.

1.5. Thesis structure

Each research question discussed in section 1.2 relates to a core chapter of this thesis (Chapters 4-6). An overview of the thesis structure and how chapters relate is presented in Figure 1.1. Within each core chapter, additional and more specific research questions are included to address important research gaps. Chapter 2 consists of a literature review which explains conceptual and theoretical frameworks, provides context for the thesis, and justifies the reasoning behind the chosen research questions. Insights from Chapter 2 are used to inform the core chapters (See Figure 1.1). Chapter 3 outlines the case study and methods for the thesis. The chapter provides justification for each of the methods employed in core chapters 4-6. Chapter 4 uses the loss of a beach in County Wexford, Ireland to empirically measure solastalgia, place attachment, place disruption and outlook for the future experienced by a coastal community and assess the relationships between them. Building on the findings from chapter 4 and using the same case study. Chapter 5 investigates individual lived experiences of place change, solastalgia and place relations due to loss of place from coastal erosion. This chapter also investigates how other compounding factors (e.g., rapid development, government policy) impact individual/community place relations and contributes to the emergence of solastalgia emotions. Chapter 6 builds upon the findings of both chapters 4 and 5 in greater detail (See Figure 1.1). This chapter focuses on the relationships between governance, solastalgia and place attachment as well as perceptions of and attitudes towards governance and decision-making processes. The thesis concludes with Chapter 7 the discussion and conclusion, which synthesises the themes, insights, and contributions to knowledge from all core chapters (Chapters 4-6). Chapter 7 also discusses limitations associated with this thesis and future research directions, finishing with concluding remarks.

Note: Chapters 4 and 5 are published scientific articles using the same case study and Chapter 6 incorporates methods and data from both chapters. Overlap between chapters has been minimised as much as possible, however some overlaps are unavoidable.

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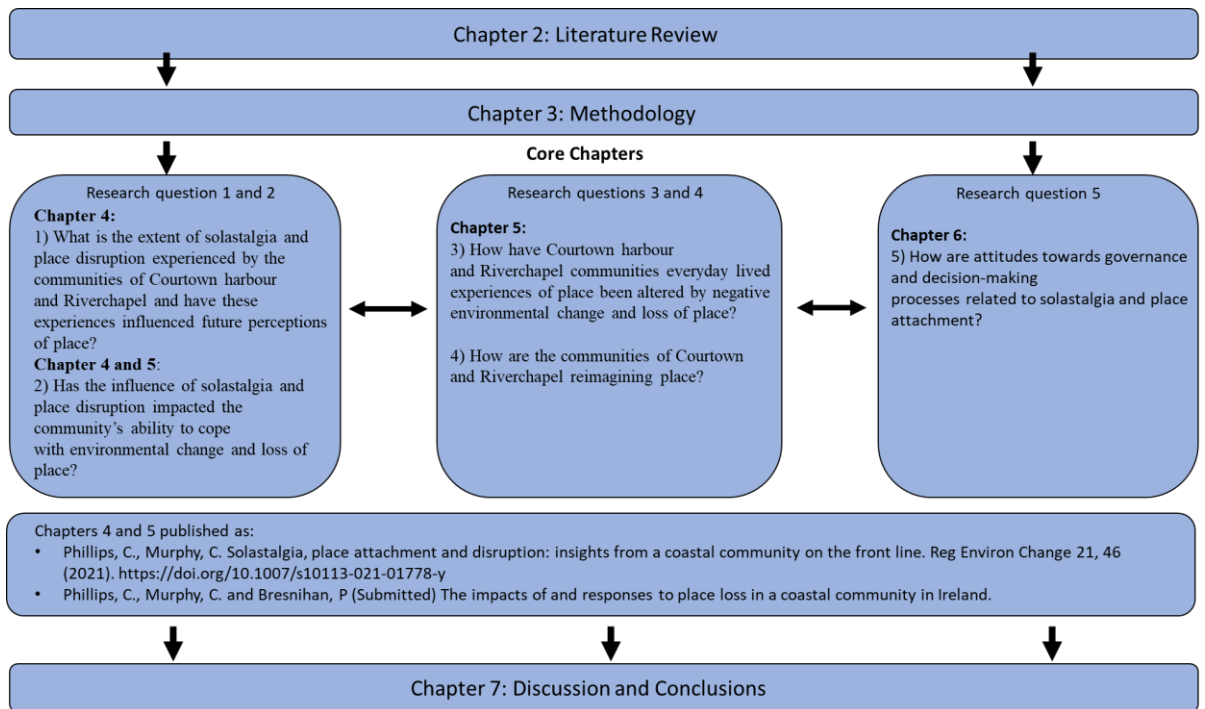


Figure 1.1. Structure of the thesis

2 Literature Review

2.1 Introduction

This chapter aims to discuss and outline the importance of understanding how loss of place and resultant feelings of solastalgia impact community and individual wellbeing and influence outlook for the future and adaptive capacity. Specifically, this chapter reviews literature relevant for each of the core chapters to answer the research questions. The first section 2.2 will deal with the concept of place attachment and its components place identity and place dependence. This section seeks to understand how place attachment emerges and how it has been studied in past research. Section 2.3 will focus on defining place disruption and review literature discussing place attachment and disruption relationships. Section 2.4 will explore the concept of solastalgia, how it emerges and its relationship with place attachment. Section 2.6 will explore barriers to adaptation and finally section 2.7 will summarise the findings of the literature review and restate the core research questions.

2.2 Place attachment

2.2.1 Place and place attachment

As far back as Sauer (1925) it was recognised that culture and human practices were ingrained in the landscape that the physical and cultural are bound together in state of change. Places are constantly changing and the meaning of place changes as it is made, maintained, and contested while particular interests, social power relations are embedded within them (Rose, 1994; Massey, 1995; Creswell, 2014). Places are constructed by people through their particular actions towards and everyday lived experiences within that place. Many scholars within geography have pointed out that place and place attachment are socially constructed and form multi-layered meanings and symbolism through interactions with place (Sauer, 1925; Tuan, 1991; Quinn, 2015; Milligan, 1998; Alkon and Traugot, 2008). It has been commonly discussed within geography literature that the affective and cognitive relationships and meanings of place are socially constructed (Sauer, 1925; Milligan, 1998; Alkon and Traugot, 2008; Quinn, 2015).

Tuan (1977) in his seminal work “Space and place” argued that places can be described as spaces that people are attached to in one way or another. As people move through a

space habitually it becomes a place as they gain familiarity with it (Tuan, 1977, Cresswell, 2008). Cresswell outlines the most straight forward way of defining place as a meaningful location (Cresswell, 2014; Agnew 1987). Place is a very broad, hard to define concept but in its basic form is comprised of attachments, connections between people and place and ways of understanding the world (Tuan, 1977; Massey, 2010; Cresswell 2014; Bornioli et al, 2018). There have been many different interpretations of what place is. This is a fundamental point that the discipline of geography tries to make sense of as place is a complex and contested concept. Place meanings are often contested as places do not have one single identity associated with them and different groups of people assign different meaning to a place or hold different interpretations of its past which can result in conflicts over what a place is (Massey, 1995; Massey, 2010; Cresswell, 2014). Through differing political views, difference in identity, representation, or participation in place competing discourses of what place is can arise leading to contestation (Martin, 2003; Pierce et al, 2011).

Matarrita-Cascante et al (2010) discussed how people become attached to local natural amenities/resources (e.g., parks, mountain peaks) through their interactions with them. Often local communities can find coping and managing with development (e.g., population growth and increased seasonal home development) of these resources difficult. This is particularly relevant to the case of Courtown beach as it functions as an important resource and amenity with emotion and meaning attached to it with rapid population growth and seasonal home development. Resources can also be linked to social interaction, culture, language, and place making activities which may be seen as basic and mundane tasks carried out repeatedly every day, building place meaning through an iterative or habitual process (Tuan, 1977; Cresswell, 2014).

There have been many different interpretations of what place is across different disciplines such as geography (Tuan, 1977; Massey, 2010), anthropology (Escobar, 2001), and psychology (Fullilove, 1996; Stedman, 2002). This thesis mainly draws upon the definitions and methodological approaches employed in both geography and environmental psychology. Definitions of place within geography in the 1970s proposed that places area locations with meaning (Tuan 1977; Agnew, 1987; Cresswell, 2008). Even within the discipline of geography the concept of place has evolved as places themselves are not fixed and are constantly made and re-made or contested (Tuan, 1977; Cresswell, 2008). Geography describes a sense of place as consisting of meanings that individual's share which are associated with a location. However, environmental

psychology tends to be concerned with the psychological processes of place (e.g., familiarity, attachment, and identity) and how a place must be a 'good enough' environment to live in for intimate connections to form (Fullilove, 1996). Stedman (2002) describes place as consisting of a physical location, psychological processes, and human activities. Whereas sense of place as described by Stedman (2008) incorporates the level of satisfaction a person experiences in a location, their attachment and place meanings. Commonalities between geography and psychology literature related to place exist. Environmental psychology literature often incorporates Tuan's theories of place, where place is a centre of meaning (Stedman, 2008). Both strands of scholarship show that places are about personal and social connections, memories, sense of identity and positive experiences which are repeated and lived through each day for years creating intimate connections (Tuan, 1977; Fullilove, 1996; Stedman, 2008; Bornioli et al, 2018). These positive experiences then result in psychological wellbeing and promote positive emotions while also alleviating stress (Bornioli et al 2018). Many scholars suggest that because of this, places and attachment to place are necessary parts of the human condition (Creswell 2014; Massey, 2010; Hess et al, 2008).

Human beings show a strong tendency to exhibit place attachment and acquire a sense of belonging to place (Hess et al, 2008). Place attachment can be explained through examining the strong connections or emotional bonds that individuals and communities form with an environment (Clarke et al, 2018). People assign meaning to places they are familiar with and subsequently form intimate bonds and feelings of belonging towards that place (Hess et al, 2008). Sense of place emerges through many personal experiences and interactions with the environment such as natural aesthetics, length of residence, cultural values, familiarity, recreation, belongingness and combines memories, emotions, beliefs, and experiences in relation to an environmental setting (Proshansky et al, 1983; Korpela, 1989; Silver and Grek-Martin, 2015; Beery and Jönsson, 2017). Psychological processes such as familiarity, attachment and self-identity, or the ability to extract a sense of self from the environment also foster attachment to place (Fullilove, 1996; Hess et al, 2008). Familiarity with the environment is an important process that strengthens place attachment as people develop detailed knowledge of that environment (Fullilove, 1996; Hess et al, 2008). Within the field of environmental psychology, emotional bonds that people form with a place become intertwined with their sense of identity (Lewicka, 2011). How people identify with a place then becomes an important aspect of both their personal and social self (Twigger-Ross and Uzzell, 1996).

Individuals and communities who are highly attached to place are often less likely to engage in activities that will change that place but are likely to engage in place protective or pro-environmental activities (Marshall et al, 2012). Therefore, place attachment is relevant for adaptation research as place identities are important for understanding the responses people have to environmental change such as coastal erosion or sea-level rise (Marshall et al, 2012).

2.2.2 Place identity and place dependence

Numerous different definitions and measures of place attachment exist across multiple disciplines (Williams & Roggenbuck, 1989; Anton and Lawrence, 2016) as discussed previously. This section mainly draws on environmental psychology literature to describe dimensions of place attachment. Within environmental psychology literature place attachment is often described as containing two related dimensions: place identity and place dependence (Moore and Graefe, 1994; Kaltenborn and Bjerke, 2002; Clarke et al, 2018). These two dimensions have been utilised by many scholars to empirically measure place attachment such as Kaltenborn and Bjerke (2002), Anton and Lawrence (2016) and Clarke et al (2018). Place dependence can be thought of as a resource driven relationship which describes the functional bond between people and place (Moore and Graefe, 1994). It is often determined by how well a place can facilitate people's goals and desired activities such as recreational, occupational or social activities compared to other places (Stokols and Schumaker, 1981; Williams and Vaske, 2003; Quinn et al, 2015). In order for place dependence to develop and to be maintained, a place must meet a person's needs and provide the capacity to fulfil a person's goals better than any other place (Anton and Lawrence, 2016; Lemée et al, 2019). For a person to become dependent on a place, certain activities and emotional connections must be facilitated, this is often increased by frequency of visitation or length of residence in a place (Anton and Lawrence, 2016). Certain environmental settings balance experiences of pain and pleasure and maintain a sense of self, a person's sense of place dependence is threatened when a place fails to meet their needs and provide a sense of self (Korpela, 1989; Devine-Wright, 2009).

Place identity is often referred to as being the symbolic, emotional and social links to a place (Korpela, 1989; Devine-Wright, 2013; Lemée et al, 2019). An individual's sense of identity represents their emotions, values, memories, attitudes and behaviour related to the environment in which they live which defines their daily experiences (Proshansky et al, 1983). This develops through personal experiences and interactions with a

geographical setting, in a long-term, complex process where an individual or community becomes psychologically invested in a place and acquires a sense of belonging (Proshansky et al, 1983; Lewicka, 2011; Anton and Lawrence, 2016; Lemée et al, 2019). Strong emotional bonds are formed to the place where they live when that place is perceived to positively benefit their identity and satisfy their social, psychological, cultural and biological needs (Proshansky et al, 1983; Belanche, 2017; Lemée et al, 2019). A strong sense of place identity at local levels has been linked to a greater desire to protect one's environment (Meloni, 2019). Often when a place is threatened or becomes unavailable to a person, their awareness of the benefits it once provided increases and their sense of place becomes more apparent (Proshansky et al, 1983; Cheng and Chou, 2015; Clarke et al, 2018). Intense landscape modifications are likely to threaten an individuals' attachment to a particular place and influence their place related decisions (Quinn et al, 2015; Clarke et al, 2018; Adger et al, 2009). However, scholars have also pointed to how for some place is about social connections, memories and cultural practices which are not necessarily entrenched in one particular location having the ability to become mobile when faced with threats to place (Farbotko, 2010; Farbotko and Lazarus, 2012; Barnett et al, 2016). Therefore, research on place attachment should be conducted on a case-by-case basis depending on the local context.

2.2.3 Important aspects of place attachment

As mentioned in section 2.2.1 and 2.2.2 place attachment can be examined through a list of social predictors such as length of residence, age, recreational opportunities, natural beauty and environmental quality which all prove to be reliable predictors (Lewicka, 2011; Cheng and Chou, 2015; Larson, 2017; Beery and Jönsson, 2017; Clarke et al, 2018;). Within environmental psychology literature, Lewicka (2011) discusses how length of residence has been the most consistent predictor of place attachment for both places of residence and places of recreation. The relationship can simply be described as the longer a person lives in a location the more attached that person becomes to that location (Lalli, 1992; Lewicka, 2011). Age appears to be a more erratic predictor and less consistent than length of residence (Lewicka, 2011). In some cases, a weak positive relationship has been found between age and place attachment (Bonaiuto et al, 1999, Lewicka, 2005) and in other cases, age is a strong predictor (Lewicka, 2010). This appears to occur due to differing sources of attachment and lengths of residence (Lewicka, 2010).

Larson (2017) showed that there is a clear link between involvement in recreational activities and levels of place attachment which is particularly relevant to the beach in Courtown used for recreation. Recreational practitioners engage in pro-environmental or place protective behaviour more when they exhibit high levels of place attachment. Place attachment can also be higher among those that engage in nature-based tourism. It also arises through human experiences and interactions with the landscape often through recreation involvement. Beery and Jönsson (2017) and Moore and Graef (1994) also confirm the link between recreational practitioners and place attachment, where recreation is connected to biodiversity conservation and pro-environmental behaviours. Beery and Jönsson (2017) indicate that the facilitation of recreational opportunities by an environmental setting is very important for satisfying a person's needs and maintaining their sense of identity (Moore and Graefe, 1994). High levels of attachment to place can inspire environmental activism and place protective actions which usually occur following a threat to the place or natural resource. Place attachment also arises from social networks, neighbourhood connections, generational rootedness and length of residence (Fullilove, 1996; Lewicka, 2011).

People can often ascribe more value and attachment to natural variables such as aesthetics, recreational opportunities, and biological diversity than social factors. This is very true for those who live by the coast as they form strong emotional bonds to their environment (Lewicka, 2011; Lemée et al, 2019). Places that induce significantly high place attachment are often natural landscapes, parks, forests, beaches and coastal environments specifically which are very important for contributing to the health and wellbeing of communities (Lewicka, 2011; Benham, 2016). Social ties to a place also influence place attachment as they increase the meaning of that place. Meaning can be assigned to a place through memory or religious symbol or through experiences of being in that place as they relate to familiarity. This body of work highlights the importance of memory, interactions and perceptions that shape people's experiences and connection to place.

These aspects of place are particularly relevant to Courtown beach the importance of such aspects of place may differ with indigenous people's experiences of transformations of place and impacts to their subsistence livelihoods. Westman and Joly (2019) discuss how indigenous people's livelihoods and rights are continuously impacted by landscape transformations from oil extraction activities in Canada. Resource extraction causing forced landscape transformations draws parallels with open cut mining discussed by

Albrecht (2006) in terms of feelings of powerlessness towards this form of change that also lead to negative health impacts (Westman and Joly, 2019). Such landscape changes for indigenous groups also impact spiritual practices and intergenerational cultural knowledge transfer which leads to loss of knowledge of that place (Westman and Joly, 2019). The authors also highlight how marginalised, powerless and most at risk groups are usually the most impacted. The literature shows that there are extensive and differing interactions/relationships with place that can be impacted in unique ways for different groups of people. Some of these interactions are relevant to the case study of Courtown beach such as recreation, tradition/history, and livelihoods but also the cause of change which is perceived as being both natural and human induced.

Place attachment can be described as a positive emotional connection to places or landscapes and often inspires place protective actions by individuals and communities when they perceive a threat to place (Lewicka, 2011; Devine-Wright, 2013). This includes direct changes as a result of environmental transformations and indirect changes from policies such as resource management or flood defences which are perceived as negative changes that undermine place attachment (Clarke et al, 2018). The relationships and bonds that individuals and communities form with a place can often be very fragile. When these bonds are disrupted, the effects are felt emotionally and psychologically often leading to distress.

Quinn (2014) analysed the social processes linked to climate change and the important relationship between place constraints and adaptation. Manzo et al (2008) examined the lived experiences of place, how place attachments are formed and the experiences of displacement as a result of gentrification. In this work experiences of place, neighbourhood bonds and functioning of the community are socially constructed. Disruptions do not need to be as large scale or natural hazards such as earthquakes but even small disruptions to everyday routines and environments that disrupt “taken-for-granted” aspects of an individual’s life can have similar consequences (Giddens, 1979). Eakin et al (2019) discussed how the loss of group identity is linked to ecological loss and how stakeholders construct narratives to describe these losses. Rapid change to a social-ecological system that is perceived as being a negative transformation can undermine group identity and the systems function (Eakin et al, 2019). It may also impede people’s ability to accept transformative adaptation (Eakin et al, 2019). What is important, is not how large the change is but how deeply the loss impacts people emotionally and socially (Giddens, 1979; Eakin et al, 2019).

Hulme et al (2009) points out that scientific observations and models used to construct what is considered a 'normal' climate or environmental state is part of culture, politics and preferences. Therefore, Hulme et al argue that statistics and perspectives of what normal climate is are socially constructed. Societies use narratives born from culture, politics, memories, preferences, and psychology to construct perceptions of a normal climate and expectations of what future climate should be (Hulme et al, 2009). Expectations of what place meanings will be in the future, or future place attachment are also socially influenced. As place changes, interactions with that place change and so to do place meanings which are socially influenced. The narratives linked to the social construction of climates by communities are often communicated through paintings or photographs, these past representations of meteorological events influence expectations of future climate and are also socially constructed (Rebetez, 1996; Hulme et al, 2009). In Courtown County Wexford, images of the beach in past when it was larger are on display in the public eye as well as comparisons to the beach's state today. Images of the beaches dramatic change are consistently shared over social media reminding people of how the beach used to be reinforcing memories, emotions, and meanings of place. What is considered normal or abnormal for a place experienced by a community is ingrained in the collective memory and lived experiences (Hulme et al, 2009). Therefore, what can be observed in Courtown, is a collective memory of an undesirable change to place that is reinforced through photographs on display in the public eye and shared over social media.

2.3 Place disruption

2.3.1 What is place disruption?

Cheng and Chou (2015) describe place disruption as emotional and behavioural responses to a modified or destroyed place. The position that disruption of place can occur when a place is modified or destroyed, leading to emotional responses by individuals such as grief has been made by many scholars in both geography and environmental psychology (Fried, 1963; Devine-Wright, 2013; Cheng and Chou, 2015). The size and time frame attributed to the change is also important to take into consideration and results in different responses and adaptive actions adopted by individuals or communities (Devine-Wright, 2013). When an environment is perceived to have negatively changed it can cause a disruption of the emotional connections and bonds that a person has formed with it. Minor and incremental changes can be dealt with by people through adjusting or adapting,

however more sudden and dramatic changes such as transformative change can result in greater disruption of emotional and psychological bonds. The same can therefore be said for the loss of place, when a place transforms or is degraded and changed while the inhabitants still live there (Albrecht, 2006).

Place disruption often occurs following relocation, forced migration or physical landscape change as a place becomes undesirable, which all have negative psychological, emotional and sociological impacts associated with them that undermine the processes which foster place attachment, this is also true for perceived or potential place changes (Devine-Wright, 2013; Cheng and Chou, 2015; Richards et al, 2018). Such experienced place changes, including proposed or anticipated changes are more likely to be viewed as negative and seen as threatening by those who have stronger place attachment which may be due to the realisation of their place attachment once the place becomes threatened (Devine-Wright, 2013; Anton and Lawrence, 2016; Marshall et al, 2019). Communities affected by natural sources of change, large scale disasters such as tornados or hurricanes often experience dislocation and place disruption (Silver and Grek-Martin, 2015). This is also true for human induced changes to the landscape such as open cut mining in the Upper Hunter valley (Connor et al, 2004) and oil extraction in Canada (Westman and Joly Elser et al, 2020), however these examples have the added political imbalances of power. Communities that experience smaller scale changes but must remain in their home environment also face similar emotional and psychological challenges (Silver and Grek-Martin, 2015).

This is apparent in the concept of ‘slow violence’ where ‘slow forms of harm’ to the environment impact people gradually over time (Nixon, 2011; Davies, 2019). Work by Davies (2019) shows how people witness slow and gradual impacts to their everyday lives as the environment they live in gradually changes. This can cause ‘lived experiences of slow suffering’. This form of slow suffering from gradual place change relates to what is happening in Courtown County Wexford. People have realised over time that undesirable place change has occurred and there is little they can do to prevent further change. Aside from experiencing the loss of the beach firsthand, many pictures of the beach are displayed to the public in local places such as the Tara Vie hotel. These photographs along with stories from relatives and older residents remind people of the past and the shared experience of losing the beach. Furthermore, Devine-Wright (2009) argues that attached residents will oppose changes they feel are disruptive to place attachment such as the construction of wind farms, even though they support renewable

energy. This kind of opposition can be viewed as place protective as highly attached residents negatively perceive the proposed changes as being threatening to their place attachment and resist change. Clarke et al (2018) discovered a similar result in Clontarf, County Dublin Ireland as highly attached residents opposed the proposal of a flood wall which they perceived as being negative and threatening to the place meanings they had ascribed to that place, even though the proposal was intended to reduce flood risk.

2.3.2 Place attachment following disruption of place

The work of Devine-Wright (2009) has been significant in the field of geography he argues that the loss of place can result in distress and the rupture of person-place relationships. Disruption of emotional connections associated with place attachment happens as feelings of displacement arise following either forced relocation, loss of traditional culture, loss of place through environmental transformations, losses to sense of identity and belonging (Relph, 1976; Fullilove, 1996; Devine wright, 2009). This often results in mental health challenges and feelings of “placelessness” as a threat to the environment is understood as a threat to self (Relph, 1976; Fullilove, 1996; Devine wright, 2009). “Placelessness” is seen as the weakening of place identity as place becomes unfamiliar, non-unique and offering the same experiences as any other place (Relph, 1976). Linking these ideas with Abrahamson et al (2008) indicates that perceptions of place are often governed by experiences, memories and place attachment and when threatened can often become a barrier to adaptation (Adger, 2016). Bonaiuto (2016) states that more often than not high place attachment individuals will avoid trying to cope with environmental risk. Rapid and uncontrollable changes to a significant place or loss of an important resource can have detrimental impacts on health, wellbeing and their capacity to adapt as this loss disrupts their place attachment and sense of identity (Fullilove, 1996; Brown and Perkins, 1992; Fried, 2000; Twigger-Ross et al, 2003). These changes will also have negative social and psychological consequences, including trauma and grief (Fullilove, 1996; Brown and Perkins, 1992; Fried, 2000; Twigger-Ross et al, 2003).

Billig et al (2006) discussed the effects that disruption to place and displacement have on place attachment in relation to refugees from Gaza. When psychological processes are disrupted, nostalgia, familiarity and attachment are affected. Therefore, disruption of place can undermine the level of place attachment and affect individual and collective wellbeing. However, the combination of highly experienced place attachment and environmental stress has also been shown to have an alternative affect leading to

increased place attachment becoming one of the many drivers for adaptation as opposed to a barrier (Lemée et al, 2019). This may show that high or low place attachment alone is not enough to explain the complexity of the decisions made following perceived negative environmental change. Individuals experiencing environmental stress exhibit pro-environmental behaviour's when they also experience high levels of place attachment (Lemée et al, 2019).

2.4 Solastalgia

2.4.1 What is solastalgia?

Solastalgia describes how a person's sense of identity, belonging and control is undermined by the desolation of their home environment and negative environmental transformations (Connor et al, 2004). Perceived negative environmental change and regional ecological decline is increasingly becoming part of individual and communities everyday experience of place which evokes strong emotional and psychological responses (Cunsolo and Ellis, 2018). The term solastalgia which was coined in 2003 by the philosopher Glen Albrecht aims at explaining the experiences of distress resulting from a negative environmental change (Connor et al, 2004; Albrecht, 2005). This concept builds upon the original application of the word nostalgia which described feelings of home sickness or melancholy while you are absent from your home (Albrecht, 2005; Albrecht, 2006). Albrecht proposed that a person can experience the same negative emotions while remaining within their home as negative environmental changes transformed their home environment resulting in the inability to achieve solace (Albrecht et al, 2007). Therefore, solastalgia is the feeling that results from loss or inability to derive solace from one's home environment (Conor et al, 2004; Eisenman et al, 2015). Landscapes and places that people have ascribed meaning to have the ability to provide them with solace and when that place is threatened it can result in distress, grief and trauma (Conor et al, 2004; Eisenman et al, 2015;). People can often experience solastalgia before forced migration or dislocation occurs as they begin to experience disruption. Climate change will exacerbate environmental factors that could potentially lead to solastalgia such as droughts, floods or severe storms that negatively change an environment (Richards et al, 2018). Cunsolo-Willox et al (2012) showed that the removal of indigenous people from their home environment elicited experiences of physical and mental illnesses similar to those caused by environmentally induced stress.

Higginbotham is a psychologist who worked with Glen Albrecht and Linda Connor who is an anthropologist to develop a scale for measuring solastalgia (Albrecht, 2020). Multi-

disciplinary work by Higginbotham et al (2006) and other scholars in anthropology (Conor et al, 2004) and psychology (Eisenman et al, 2015) have shown solastalgia to be a potential human psychological response to threats and changes to one's home environment which undermines their sense of identity, locus of control and overall wellbeing. Solastalgia as a concept is similar to that of 'slow violence' and 'place disruption' however it specifically relates to pain and distress felt as a person's home is changed around them while they remain at home (Albrecht, 2020). While other concepts related to place discussed previously have explored emotional responses of place destruction and modification. Albrecht (2020) discusses how the concept of solastalgia importantly explains and defines the sickness and emotional and psychological distress caused from environmental destruction. The concept is also place based. This focus on emotional and psychological distress caused by undesirable place change is an important contribution of solastalgia. The forced transformations of a place either through natural or human induced changes impact a person's ability to acquire solace from their home environment leading to the emergence of solastalgia (Higginbotham et al, 2006). This is a painful experience that results in place-based distress and a breakdown in place identity following radical transformations to or loss of the environment (Albrecht, 2006; Askland and Bunn, 2018). Therefore, this concept is useful for describing a person's experiences of melancholia caused by the recognition that one's home and place they love is undergoing negative transformations (Connor et al, 2004).

2.4.2 Ecological and environmental grief

A variety of negative mental health experiences have been linked to both environmental changes and climate-related weather events such as strong emotional responses, distress, despair, depression, anxiety and also disruptions to sense of place (Barnett et al, 2016; Cunsolo and Ellis, 2018). Grief is a natural human response to loss and the term environmental grief is felt when losses to the environment are either experienced or anticipated (Cunsolo and Ellis, 2018; Marshal et al, 2019). Cunsolo and Ellis (2018) show that grief for the environment can be expressed following ecological losses, loss of land, ecosystems and species as well as loss of identity associated with a landscape, environmental knowledge and anticipation of future losses. They also found that grief can arise following weather-related disasters (extreme weather-related events) and the disappearance of landscapes. This shows that environmental grief or stress can be experienced following cumulative losses of the physical environment that have various

individual and collective meanings attached to them. Features of landscapes that are destroyed which are steeped in history and offer people a definition for their way of life such as family homes, farms and creeks open emotional wounds and create experiences of grief (Connor et al, 2004). The terms environmental and ecological grief resonate with solastalgia as they describe the distress that is experienced when home environments are negatively transformed (Albrecht, 2020). Macy (1995) discussed how society was experiencing sorrow, sadness, fear, and anger towards environmental loss, but suggested these words alone are not adequate to describe the depth of emotion felt. Albrecht also suggested that a new word was needed to describe the depth of emotion felt when he coined the concept of solastalgia in 2003 which encompasses the feelings described by Macy (1995). The desolation of a loved place leads to feelings of distress, grief and anxiety as one's formerly valued environment is lost and they remain unable to seek solace (Connor et al, 2004; Higginbotham et al, 2006; Warsini et al, 2014). Dealing with the loss of valued environments (or over all destruction of the planet) causes suffering and distress which Macy (1995) says creates a '*psychic numbing*' that stems from a fear of the pain environmental loss will cause. Macy's work points to the psychological impact, pain and suffering that environmental loss has which is echoed in the concept of solastalgia. The claim made by Albrecht in 2003 that homesickness can be experienced while remaining in your home environment as it significantly changes around you and has been confirmed by many studies since such as Higginbotham et al, 2006, Warsini et al, 2014, Connor et al, 2004, Ellis and Albrecht, 2017.

2.4.3 Solastalgia and place attachment

Nostalgia is not just a longing to return to a past time, but the original meaning relates to a sickness or melancholy experienced by those who are away from home (Albrecht, 2006; Askland and Bunn, 2018). The concept of solastalgia holds nostalgia at its core and describes distress and anguish experienced from loss of place (Askland and Bunn, 2018). The places that Albrecht talks about are not being completely lost but are places being transformed. The people are not being forcibly removed from their homes but experience place-based distress while still being in that place. They experience a sense of powerlessness, environmental injustice and a breakdown between their identity and their home (Askland and Bunn, 2018). People recognise that their identity and wellbeing are being threatened as they lose their home environment. Solastalgia and place attachment are linked as place attachment has been shown in section 2.3.2 to increase with

environmental stress. Connor and Albrecht (2004) discussed how destruction of important natural environments impacts residents place attachment and emotional bonds to place resulting in feelings of solastalgia. Their work in the Upper Hunter Valley Australia showed that open cut mining impacted the sense of place and identity of its residents. Solastalgia plays an important role because individuals who are impacted by negative environmental change often do not have the means to leave the landscape that once provided solace but now causes them distress. It is clear from their research that participant's experienced place-based distress when their sense of identity, place, belonging and locus of control were challenged, which in turn had negative impacts on their health and wellbeing. Therefore, solastalgia has been described by Connor et al (2004) as an attack on an individuals and communities' sense of place which weakens their sense of identity and leads to distress that undermines wellbeing. People's everyday experiences of place are increasingly being threatened as their familiar environments undergo transformations leading to the breakdown of place attachment resulting in people experiencing feelings of unfamiliarity with their home environment even though they continue to live there (Higginbotham et al, 2006; Warsini et al, 2014).

2.4.4 Seasonal differences in solastalgia

The impact of seasonal changes on place, place attachment and solastalgia remains underdeveloped within geography and psychology. Changes in seasons are rarely investigated in terms of the impacts on place attachment, emotions and psychology and were not included in Galway et al (2019) review of solastalgia (Cunsolo and Ellis et al, 2018). Seasonal changes in the weather have been shown by Cunsolo and Ellis (2018) to present many challenges to farmers of the Australian wheat belt. Positive emotions were linked to the arrival of rainfall, however many family farmers reported feeling anxiety during this period in case their crop was destroyed by the weather. This research shows that certain environments hold great significance for people and seasonal changes in weather and to the physical landscape can impact their wellbeing. Johnsen et al (2012) found that there was no significant difference in mental distress of residents living in the sub-arctic during winter and reported no differences in the reporting of mental distress with changing seasons. However, they did report that some residents did show signs of mental distress when winters grew darker, but the results were non-conclusive, and more research is needed. Other scholars have also researched the seasonality of mental health issues, Rosenthal et al 1984 discussed how winter depression or Seasonal Affective

Disorder (SAD) affected people's mental health. Morrissey and Reser (2007) described how residents of coastal north Australia have developed myths around how weather affects resident's behaviour and distress. They suggested that natural disasters and climate change can impact mental health. However more work is needed to address the links between mental health, wellbeing and distress caused by seasonality of weather and environmental change.

2.5 Importance of place for health and wellbeing

Discussions and decision-making regarding climate change and adaptation often focus on the material and economic impacts or biophysical changes associated with extreme events. As a result, research focusing on the impacts experienced by individuals and communities on cultural, symbolic, emotional and psychological impacts is underdeveloped but growing (Fresque-Baxter and Armitage, 2012; Adger, 2016; Marshall et al, 2019). People become attached to landscapes that meet their psychological and emotional needs, providing a feeling of solace, sense of belonging and becoming part of their identity (Ellis and Albrecht, 2017). Losses to place have profound impacts on emotional and psychological wellbeing as well as their sense of identity and adaptive capacity (Fresque-Baxter and Armitage, 2012; Marshall et al, 2019). These are termed as invisible losses which are not often widely recognised in adaptation literature and decision-making such as loss of identity, health and wellbeing, culture, lifestyle, emotional and psychological loss and are often difficult to measure (Barnett et al, 2016; Turner et al, 2008). The disruption of place, place attachment and place identity have negative and traumatic effects on individual and collective health and wellbeing that result in feelings of grief, homesickness and anxiety (Hess et al, 2008; Ellis and Albrecht et al, 2017).

Climate change and extreme weather-related events can impact individual and community health emotionally and psychologically after altering the physical landscape which disrupts the relationships that people have formed with that landscape (Albrecht, 2006; Adger et al, 2009; Ellis and Albrecht, 2017). Often gradual changes in the environment can lead to intangible and cumulative impacts to health and wellbeing which can be more difficult to measure and directly observe and have invisible but devastating consequences (Turner et al, 2008; Adger et al, 2009). These types of losses are detrimental to the overall health of an individual or community and influences their abilities to cope

with and adapt to future environmental changes (Turner et al, 2008). When a landscape changes it can impact the image a person holds of a place and how they perceive that place, influencing their actions and emotions. A negative perception of place can decrease an individual or communities overall wellbeing causing stress, feelings of loss and displacement (Kaltenborn et al, 1998; Horwitz et al, 2001; Albrecht, 2006; Fresque-Baxter and Armitage, 2012). Often highly attached individuals are more emotionally impacted by changes to a place (Kaltenborn et al, 1998). One of the problems that arises from these negative emotional impacts are feelings of hopelessness and helplessness which lower a person's ability to adapt to future changes (Fresque-Baxter and Armitage, 2012; Horwitz et al, 2001).

Landscapes and environments of attachment have been found to promote feelings of healing, provide solace, promote and maintain physical and mental wellbeing (Williams et al, 1998; Albrecht, 2006). When a place no longer provides solace feelings of solastalgia, frustration, helplessness, and low self-esteem can be experienced (Turner et al, 2008). Rapid or even gradual and slow-moving changes in the environment induce stress when the individual or community can no longer receive solace from that environment, in this way solastalgia can undermine wellbeing, sense of identity, belonging and control (Connor et al, 2004). Individuals who are still highly attached to and hold close personal relationships with their home environment may experience a significant undermining of their mental health and wellbeing as a result of changes that occur in the environment (Ellis and Albrecht, 2017). The loss of activities and interactions with the landscapes that are important to the individual and community leads to impacts on physical and psychological health, decreases in self-esteem, severed social ties and reduce feelings of belonging (Horwitz et al, 2001; Turner et al, 2008; Fresque-Baxter and Armitage, 2012).

It was shown by Silver and Grek-Martin (2015) that when communities survived large scale events such as tornados and hurricanes, they expressed feelings of grief and distress whether or not they experienced physical loss or personal injury, the authors concluded that loss of familiar places is a good predictor of psychological impacts of disasters. The relationship between place attachment and environmental change has been shown to be useful for predicting people's reactions to negative environmental impacts. Assessing the level of place attachment and experiences of environmental degradation could help to identify who suffers the most from negative environmental change and who is most likely to accept adaptation measures (Kaltenborn et al, 1998). Using this framework to draw

direct links between the impacts on place identity, health and wellbeing and experiences of solastalgia from environmental degradation and the influence this has on adaptive capacity can identify new opportunities for developing adaptation strategies. Such strategies may acknowledge and promote community wellbeing moving beyond the economic impacts of extreme events and environmental change.

2.6 Barriers to adaptation

The IPCC fifth assessment has called for a more detailed understanding of what constrains adaptation, often overlooked are psychological and emotional barriers. (Clarke et al, 2018; Klein et al., 2014). Whereas the IPCC sixth assessment has determined with very high confidence that climate change will adversely impact people's mental health. Various barriers can emerge which hinder successfully developing and implementing climate adaptation strategies that are robust, acceptable to the public and meet public needs (Biesbroek et al, 2013). Barriers can be viewed more as limits and constraints on a population to adequately overcome challenges and pressures related to climate change or environmental change (Adger et al, 2007; Biesbroek et al, 2013, IPCC, 2014). The IPCC sixth assessment determined with high confidence that many governments and institutions worldwide have difficulties addressing climate change impacts in coastal areas. Some of these barriers may have psychological, behavioural, and societal origins or stem from a lack of self-efficacy, locus of control, negative environmental perceptions or differing world views (Adger et al, 2009). Barriers to adaptation may also stem from lack of funding, inadequate policy and financial policy or short-term thinking (IPCC, 2022).

Adaptation literature has identified many barriers which prevent communities building adaptive capacity and lead to resistance when unfavourable adaptive measures or policies are being implemented (Biesbroek et al, 2013). Adger et al (2009) discussed the social limitations to taking up adaptive action and highlighted how threats to place and culture can produce limits to adaptation. These limits are also governed by many diverse values and goals held by various stakeholders which influence adaptive outcomes (Adger et al, 2009). Significant place or environmental loss has been shown to constrain adaptive capacity through the disruption of individual and collective place attachment, sense of identity and wellbeing (Brown and Perkins, 1992; Fullilove, 1996; Fried, 2000; Twigger Ross et al, 2003).

Some scholars have shown that disruption of place attachment can often become a barrier to adaptation and limit a community's adaptive capacity resulting in resistance to the implementation of beneficial adaptation measures and policies (Cheng and Chou, 2015; Adger, 2016;). Engagement in adaptation and adaptive actions can be constrained by feelings of environmental and ecological grief associated with solastalgia leading to paralysis in the face of ongoing environmental changes (Connor et al, 2004; Higginbotham et al, 2006; Warsini et al, 2014). Abrahamson et al (2009) show that individual's perceptions of environmental threats are often governed by their experience, memories, place attachment and place identity and when threatened constrain their ability to build adaptive capacity (Adger, 2016). Rush (2018) through her interviews around the coastline of the United States in relation to place threatened by sea level rise, showed that there can be very different responses by people who are highly attached to place. She highlights that the challenge of living in place under threat (e.g., rebuilding after floods and storms) can cause people to leave even if they are attached to place, while others decide to stay. The people that choose to stay also find themselves shifting their attachment to other places that offer social connection. Rush also showed that many factors such as scepticism of government policies, lack of resources/funding and lowering social cohesion (e.g., friends/families leaving) can influence the actions a person takes when place is threatened. These issues are also reflected in the stance that Koslov (2016) takes that many reactions such as 'managed retreat' in response to environmental threats are not taken due to political willingness and economic factors where resident's decisions are not supported. However, recent work has also indicated that people who are strongly attached to place and experience high amounts of environmental stress may also decide to engage in place protective behaviours (Lemée et al, 2019).

Place attachment can play a part in increasing psychological wellbeing and promote positive emotions while alleviating stress and increasing willingness to engage in adaptive actions (Bornioli et al 2018). Whyte (2016) refers to a community's capacity to adapt to environmental change and external pressures as a collective continuance. This concept acknowledges how communities rely on past traditions to make adaptive decisions but are also able to transform to better cope in the future, increasing their capacity to adapt. Even though numerous barriers exist to adaptation that stem from institutional, governmental, societal, and individual issues, scholars in both geography and environmental psychology have shown adaptation to climate change is often limited by societal values, perceptions, power structures and world views.

Work by McNamara and Farbotko (2017) has shown that Pacific Island communities accept that migration is the worst-case scenario for climate adaptation and continuously fight to maintain their culture and livelihoods. While this may be seen as a barrier to adaptation by some, their goal is to instead change the narrative of inevitable migration and hold major polluters accountable. In the context of Tuvalu migration or ordinary mobility is a normal everyday practice that is often discounted in the climate change narrative (Farbotko and Lazrus, 2012). Instead desire to move is seen as evidence of displacement due to climate impacts and used to fuel a climate refugee narrative using Tuvaluans as the climate ‘canary’ (Farbotko and Lazrus, 2012; Farbotko, 2010). In this particular situation islanders are treated as “victims of the climate crisis” (Farbotko and Lazrus, 2012) without their perspectives of mobility being taken into consideration. Barriers in this case stem from islanders being denied their own agency in the adaptation process (Farbotko, 2010). Farbotko and Lazrus (2012) suggest that to overcome barriers presented to Tuvaluan society from “land-based adaptation strategies” and Western narratives, adaptation debates should take into consideration their indigenous knowledge, economics, politics and movements as their identity incorporates migration. Again, this body of literature highlights the need for bottom-up adaptation strategies created in a local context.

It is important for adaptation strategies to consider environmental impacts at the local level (Clarke et al, 2018). Therefore, considering place attachment is important to assess barriers to adaptation that are place specific, psychological, social or cultural (Marshall and Stokes, 2014; Clarke et al, 2018). However, community preferences and worldviews are often socially constructed and reinforced within the community. Where adaptation options or actions undermine beliefs, worldviews or place attachment individuals may resist those decisions (Esterhuysen, 2003; Clarke et al, 2018). This usually occurs following very significant changes to an environment which can produce a reactionary approach to adaptation leading to insufficient adaptive capacity being achieved (Nelson et al., 2007; Folke et al., 2010; Clarke et al, 2018). The IPCC fifth assessment has indicated that such dramatic changes to an environment result in a shift to what is perceived as normal and reconfigures social networks and patterns of interaction with an environment (Clark et al, 2018; IPCC, 2012: 465). While the IPCC sixth assessment shows that climate change impacts can result in negatively perceived changes to the environment, and this can have negative mental health implications. As shown by Clarke et al (2018), the manner in which the construction of a sea wall negatively alters land

uses, interactions with the environment and the construction of place meanings can be viewed as an undesirable transformation.

2.7 Summary and research questions

This thesis mainly draws on literature from geography and environmental psychology for definitions of place, place attachment and place disruption. Solastalgia literature is multi-disciplinary and draws upon disciplines such as psychology, philosophy, and anthropology. The literature discussed in this chapter highlights links and relationships between place attachment, place disruption and solastalgia (See Figure 2.1).

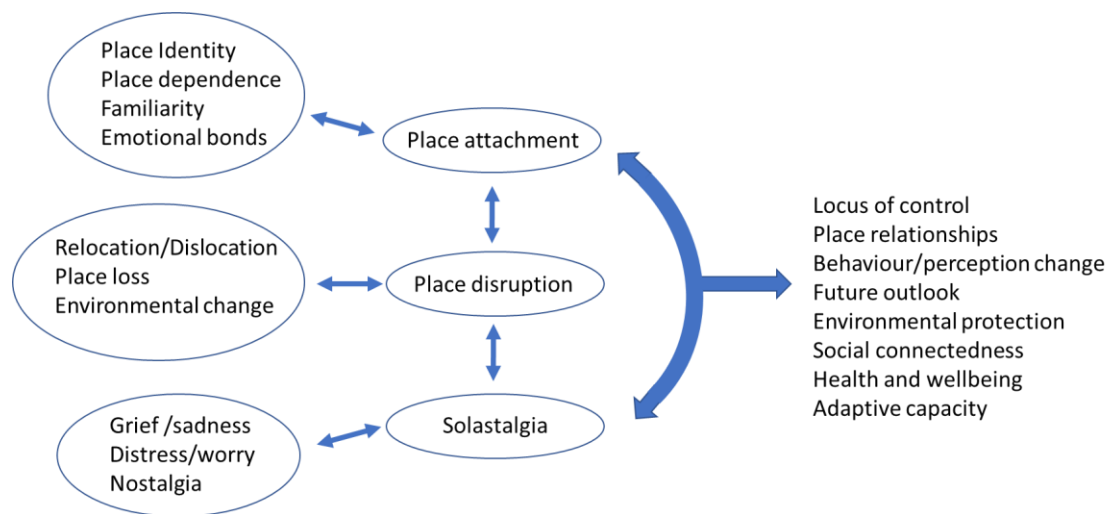


Figure 2.1. links between concepts presented in the literature chapter

Drawing on environmental psychology literature, place attachment can be explained through examining the strong connections or emotional bonds that individuals and communities form with an environment (Clarke et al, 2018) (See Figure 2.1). The process of becoming attached to a place is influenced through many personal and collective experiences and interactions with the environment such as recreational activities, length of residence and natural environmental qualities (Beery and Jönsson, 2017).

Scholars have defined place attachment as comprising of two related dimensions: place identity and place dependence (Clarke et al, 2018; Anton and Lawrence, 2016). Place dependence can be thought of as a resource driven relationship and describes the functional bonds that people have with places (Anton and Lawrence, 2016). It is often determined by how well a place can facilitate people's goals and desired activities such as recreational, occupational or social activities compared to other places (Stokols and Schumaker, 1981; Williams and Vaske, 2003; Quinn et al, 2015). Place identity on the other hand, refers to the symbolic, emotional and social links to a place that become

intertwined with a person's sense of identity (Devine-Wright, 2013; Lemée et al, 2019). Geographers have often argued that place is not just a local phenomenon made up of personal and individual experiences but is influenced by the wider, often global political, economic and structural forces (Massey, 2010, Creswell and Creswell, 2017). Massey points to how places are continually constructed through social relations with place which are not always internal (e.g., trade, tourism). The 'Local uniqueness' is often a product of 'global forces' beyond the boundaries of that place. However, many scholars who have quantified place attachment have identified a list of social predictors such as length of residence, activity involvement such as recreational activities, property ownership, age, and length of residence, cultural values as well as natural beauty and environmental qualities which prove to be reliable predictors (Lewicka, 2011; Cheng and Chou, 2015; Larson, 2017; Beery and Jönsson, 2017; Clarke et al, 2018). Taking both of these positions on board will provide useful insights when applying a mixed methodological approach to place attachment.

Summarising literature drawn from geography, place disruption can occur when a place is modified or destroyed, and this usually leads to negative emotions and negative behaviours (Cheng and Chou, 2015) (See Figure 2.1). When an environment is perceived to have negatively changed it can cause a disruption of the emotional connections and bonds that a community has formed with it (See Figure 2.1). Place disruption often occurs through relocation or physical landscape change which have negative psychological, emotional and sociological impacts that undermine the processes affecting place attachment, perceived or potential place changes can also result in these affects (Devine-Wright, 2013; Cheng and Chou, 2015).

A threat to the environment is understood as a threat to self, resulting in mental distress and a rupture of person place relationships (Devine-Wright, 2013). A loss of an important resource or significant place can have detrimental impacts on community health, wellbeing and their capacity to adapt (See Figure 2.1). Rapid and uncontrollable changes to a significant place or loss of an important resource or can have detrimental impacts on community health, well-being and their capacity to adapt as this loss disrupts their place attachment and sense of identity and can have negative social and psychological consequences, including trauma and grief (Brown and Perkins, 1992; Fullilove, 1996; Fried, 2000; Twigger Ross et al, 2003) (See Figure 2.1). When psychological processes are disrupted, nostalgia, familiarity and attachment which are important aspects for people place relationships are impacted. However high levels of place attachment

combined with high levels of environmental stress have been shown to have an alternative affect leading to increased place attachment becoming one of many drivers of adaptation as opposed to a barrier (Lemée et al, 2019). When individuals and communities exhibit high levels of place attachment, they are often less likely to engage in activities that will change the place they are attached to. These people are therefore more likely to engage in place protective or pro-environmental activities (Marshall et al, 2012). The links between these concepts have been highlighted in Figure 2.1.

Therefore, this thesis will draw direct links between the impacts on place identity, health and wellbeing and experiences of solastalgia from environmental degradation and the influence this has on adaptive capacity which can lead to the identification of new opportunities for developing adaptation strategies that acknowledge and promote community wellbeing (See Figure 2.1). With this in mind the research aims, and objectives are as follows:

As noted in chapter 1 the primary research aims of this thesis are:

- To assess lived experiences of place disruption and loss as a result of negative environmental change occurring in Courtown County Wexford.

- To explore the impact adaptation strategies, have on experiences of place loss and community adaptive capacity.

With respect to these research aims, five research questions will be addressed:

1. Does the experience of loss and disruption result in the experience of solastalgia among community members?
2. Does place attachment moderate the experience of place loss/disruption and the experience of solastalgia?
3. How is place being reimagined following disruption?
4. What impacts does place loss/disruption have on outlook for the future?
5. What role do governance and decision-making processes play in the experience of place loss/disruption?

Chapter 3 will discuss the case study background and methods employed in each of the core chapter 4-6. These methods will consist of a questionnaire survey, photo-elicitation, walking interviews, data triangulation and desk research employing digital sources.

3 Case study and methods

3.1 Introduction

Emotional and psychological distress may be experienced by millions worldwide due to coastal erosion and disruption of place. Cumulative and intangible impacts to wellbeing as a result of slowly unfolding environmental changes can be difficult to measure (Adger et al, 2009; Turner et al, 2008). It can also be difficult to adequately measure emotional and psychological impacts of place change either through questionnaire surveys or interviews without conducting longitudinal research. Decision-making for adaptation occurs at varying scales so methods of evaluating how experiences of solastalgia influence community ability to adapt to future place change should be appropriate at local scales. Surveys maybe useful for evaluating community experiences of place change and examining surface level connections between solastalgia and place attachment, whereas more in-depth qualitative methods may be useful for engaging with individuals to gather more personal and emotional responses. Both approaches provide useful insights for policy makers but evaluating the connections between solastalgia, place loss and adaptation across multiple scales may benefit more from a combination of methods.

A mixed methodology is often highlighted by scholars as being advantageous for better understanding and validating findings in social sciences. There has been a call in research to incorporate a mixed methodology when investigating difficult to measure concepts such as place attachment and even solastalgia (Devine wright and Howes, 2010; Creswell, 2014; Ryan, 2009; Clarke et al 2018). This chosen approach is relatively new in social research and helps to counteract the limitations of using only one method and better understand key concepts being explored in social research (Creswell and Creswell, 2017; Creswell, 2014). The use of both qualitative and quantitative methods together ensures that complex social concepts (e.g., solastalgia, place attachment) can be more effectively explored at varying scales for policy makers as well as acquiring deeper insights at individual levels as employing them separately may be inadequate to address their complexities (Creswell and Creswell, 2017). Studies on solastalgia have provided useful results while employing these methods individually (Connor et al, 2004; Higginbotham et al 2006).

Studies related to sense of place have employed a variety of research methods such as surveys and in-depth interviews but photo-based methods and walking methods are becoming increasingly used as a qualitative method to get closer to the lived experiences of individuals and may offer value in exploring how place attachment is impacted by negatively perceived environmental change resulting in experiences of solastalgia (Oldrup and Carstensen, 2012). Photo-elicitation has been successfully employed in studies that concern the environment and attachment to natural beauty and physical environment while visual methods have successfully been employed to extend thoughts regarding a certain event into the past (Tonge et al 2013; Briggs et al, 2014; Collier, 1957; Bluedorn, 2000).

Walking interviews are being increasingly employed within social research to explore connections between people, place and their everyday lived experiences (Kinney, 2017). However, it is difficult to observe how slowly unfolding environmental changes impact place attachment over time and when exactly solastalgia becomes a lived experience of place without conducting longitudinal studies. Therefore, in order to effectively assess place attachment, solastalgia and outlook for the future at the local scale a multi-method approach may be required. This chapter aims to discuss a novel and effective methodology for investigating experiences of place attachment, solastalgia and future outlook from the community to individual level. A mixed methodology comprised of questionnaire surveys, photo-elicitation and walking interviews will be employed. Section 3.3 will discuss the procedure adopted for conducting quantitative methods (employed in chapter 4 and 6), sections 3.4-3.5 will discuss the procedure adopted for qualitative methods (employed in chapters 5 and 6) whereas section 3.6 will discuss data triangulation (employed in chapter 6).

3.2 Case study: an overview

3.2.1 History of Courtown harbour and Riverchapel

Courtown harbour-Riverchapel is located in County Wexford in the southeast of Ireland, 6 km east of Gorey, County Wexford and 16 km south of Arklow, County Wicklow (WCC, 2014) see plate 3.1.



Plate 3.1 Left- Courtown and Riverchapel location. Red line denotes the case study area and the red box the case study location.

There is little documentation for the origins of Courtown and Riverchapel however, Courtown originated as a small fishing village in the southeast corner of Ireland. Early evidence indicates that St Aidan the first bishop of ferns established a church in Kiltennel in 598A.D. A small settlement developed in Riverchapel and a small fishing village in Courtown. The harbour was constructed in 1825 to aid fishermen in launching boats. Courtown thrived as a fishing village in the 1800s and became a popular tourist destination. The railway was introduced in the 1860s allowing tourists to travel from Dublin and the midlands. The arrival of the Dublin to Gorey railway in 1863 further boosted the town's role as a significant tourist destination.

Tourism has continued to be the main economic activity in Courtown as it thrived as a tourist destination, however Riverchapel was slow to develop in the 1990s with housing mainly being dispersed. Courtown and Riverchapel remained separate villages up until the 1990s, but residential development rapidly increased following the introduction by national government of the "Renewal Scheme for Traditional Seaside Resorts" in 1995 (Wexford County Council, 2014). This scheme brought about the development of tourist related trades and residential areas in Riverchapel. This encouraged extensive

development of housing estates, with limited facilities/services provided and resulted in a dramatic transformation of Courtown and Riverchapel (Irish Times, 2000; Mottiar and Quinn, 2003). Courtown harbour has a unique seaside resort aesthetic boasting very distinctive features such as the stone harbour, ice cream parlours and amusements. Tourism assets are focused around the harbour and natural amenities, including a blue flag beach and extensive woodlands and coastal walks (WCC, 2014).

Another important natural amenity in the locale is Courtown woods which extends through the historic estate of Lord Courtown, along the Ounavarra river to the sea front. Ownership of the woods is a point of contention. Having originally belonged to the estate of Lord Courtown, they were taken over by Coillte (state owned commercial forestry company) and eventually sold to Courtown Waterworld (leisure centre and swimming pool) (Walsh, 2021). However, recent liquidation of Waterworld has placed the woods in a precarious situation after being sold to a private consortium. Given the importance of the wood to the local community there has been strong resistance to sale of the woods, with a local petition to stop the sale gaining 8,000 signatures.

3.2.2 Population make up and economy

The population of Courtown and Riverchapel has expanded rapidly in the last decade and had one of the fast-growing populations in County Wexford during 2006-2011. In 2006 the population was 1421, increasing to 2857 in 2011 (CSO, 2011; Wexford County Council, 2014). In 2016 the Census covered Courtown harbour-Riverchapel and nearby Ardamine as a single settlement with a population of 3591. The largest age group are children >15, the second highest age profile is 25-45 which suggests that there are high numbers of families living in the area and lower numbers in the older age categories which changed little between 2006 and 2016. The lowest age categories are 20-29 and 55+ (fig). Children aged 0-12 years are slightly above the national average with one of the highest rates of 5-12-year-olds (13.8%) compared to the county average in 2016. The age group 13-17 is slightly below average and the population above 65 is well under average (12.1%) (Wexford County Council, 2018). The population sample is further explored in chapter 5.

The main economic functions of Courtown and Riverchapel are leisure, recreation and tourism. The area has an established residential community and permanent dwellings but also many holiday homes serving a temporary community during the holiday season. Tourism is considered by the Wexford County Council to hold the greatest potential to

increase economic growth and employment in the area (Wexford County Council, 2014). Tourism assets are focused on the harbour and natural amenities, including a former blue flag beach and extensive woodlands and coastal walks (Wexford County Council, 2014). The area is home to many established and permanent residential sites, as well as holiday homes and caravan parks, which serve temporary residents (Wexford County Council, 2015). Unemployment rates are high (26.2%) and above the average for County Wexford (16.6%) (Wexford County Council, 2018). In 2006 9.8% of Courtown harbours population were listed as unemployed which indicates a rise of unemployment in the area (Wexford County Council, 2018). There has been a large population expansion in both Courtown and Riverchapel over the past decade and despite this the community aim to reimagine Courtown without a beach, through building a marina, constructing forest walks and protecting the historical, natural heritage and environment.

3.2.2 Coastal erosion and other environmental pressures in Courtown

The coastline around Courtown harbour/ Riverchapel and Ardamine is soft sediment mainly consisting of ‘marine sediment and sand’, ‘aeolian windblown sand (sand dunes)’, ‘alluvium’ and ‘limestone tills’ (EPA, 2018). In recent years loss of the beach has been amplified by strong storm events requiring extensive coastal protection works in the form of rock armour to be installed, which further transformed the area (See Plate 3.2). Stretches of coastline around Courtown, extending from Ardamine to the north beach in Courtown, are at significant risk of ongoing coastal erosion. Residents are concerned for their properties, roads, natural amenities, and that significant loss of land will continue if action is not taken to better protect the area from rising sea levels, increased storminess and further coastal erosion (Lambe, 2016). Rock armour has been placed to protect the coastline and coastal works programmes include rehabilitation of existing protections, dredging and maintenance of the harbour. There has been a proposal for the construction of four break waters situated approximately 150m from the shoreline, but this has not been carried out to date (Wexford County Council, 2015). The construction of a marina was also proposed but planning and funding acquisition was delayed by the economic downturn in 2008. A marina feasibility study was carried out in 2010, with a public consultation phase opened in November 2019. However, to date no funding has been acquired. Extensive coastal protection works were carried out across County Wexford specifically in Rosslare, Cullenstown, Ballyconnigar and Courtown for the period 1998-2000. At Courtown these coastal protection measures were mainly in the form of rock revetments.



Plate 3.2. Left: North beach at Courtown 1967. Right: North beach at Courtown 2015, including rock armour. Sources: Doyle, E. (1967). TIFF file; Comerford, P. (2015). TIFF file

Courtown harbour and Riverchapel are likely to experience increased risk from sea level rise, increased storminess and coastal erosion in the future as well as other pressures intensified by climate change (IPCC, 2022). Over the last decade or so the area has been badly affected by coastal erosion and the north and south piers in Courtown harbour suffered extensive damage in the storms of 2013/2014 needing urgent repairs (Gorey guardian, 2015). Winter storms have heavily impacted the soft coastline. In particular, the main beach in Courtown (the north beach) has been impacted and undergone extensive coastal protection works through the installation of rock armour, which has drastically transformed the area (Wexford County Council, 2014). Rather than the expansive beach of previous years, the north beach is now very narrow with rock armour covering most of the area and extending for around 750m (Plate 3.2). Moreover, additional stretches of coastline extending from Ardamine to the north beach in Courtown have been deemed to be at significant risk of future coastal erosion. Wexford County Council plans to maintain current coastal defences but also to erect four breakwaters to further protect and attempt to replenish the beaches (Wexford County Council, 2014).

3.2.3 Coastal erosion, flooding and climate vulnerability in Ireland

Ireland will be impacted by climate change as sea levels rise, storms intensify, rainfall increases, and weather conditions become more erratic (Cantwell, 2020). Sea levels for Ireland have risen by around 3.18mm per year with global extreme wave heights increasing by 1cm per year between 1985 and 2018 (Cantwell, 2020). According to a report carried out by Gamma Location Intelligence, 60,000 residents in Ireland are at risk

from flooding, with counties Clare, Dublin, Cork and Galway being significantly impacted (Gamma, 2019). In the coming decades climate change will have significant adverse effects on coastal communities around Ireland, with 70,000 addresses being vulnerable to climate related impacts by 2050. To date there is no coastal protection strategy for the island of Ireland, however a strategy is currently being examined by ministers. A whole of government coastal strategy is being considered by the Department of Housing, Planning and Local Government and the OPW.

Various locations around Ireland are vulnerable to climate impacts and coastal erosion, however, impacts of negative environmental change have already been felt in Courtown County Wexford. The loss of its sandy beach has resulted in its blue flag status being withheld due to the severe coastal erosion that has occurred. The Green Party MEP Grace O’Sullivan pointed out that Courtown is a very dramatic and severe example of coastal erosion in Ireland, she has also highlighted the severity of erosion in many other locations along the coast and the urgent need for a coastal erosion strategy (Green Party, 2020). Courtown is a striking example of the negative impacts of coastal erosion and vulnerability to future climate impacts faced by coastal communities in many other locations around Ireland and can provide lessons for adaptation planning.

3.2.4 Coastal protection policies in Courtown Co. Wexford

Courtown harbour was constructed in 1825 and by the mid-1800s following its construction the sediment supply to the beach had been significantly interrupted starving the north beach of replenishing sediment. For a long time after, the beach was replenished by sand drawn from the dunes however with the sediment supply being disrupted and the beach being replenished by the dunes instead, a 60m retreat of the beach was witnessed between 1921 and 1991. To protect the dunes from further erosion, rock armour was placed in 1980s which completely cut off sediment supply to the beach. The rock revetments now extend for 750m.

Up until the mid-1900s Courtown harbours north beach was extensive, however in recent decades it has undergone severe erosion and is almost non-existent today. Numerous beach studies have been conducted and a coastal protection scheme was devised to help combat the ongoing erosion and possibly reinstate the beach. The Wexford County Councils coastal works programme mainly consists of maintaining existing defences and

dredging, a decade long plan for the construction of four break waters, a marina and beach replenishment has been considered. However, there is no established coastal protection strategy in place and instead the council have opted to designate certain areas non-development zones.

The proposed break waters will be constructed in the form of four offshore groynes situated approximately 150m from the shoreline as part of a coastal protection scheme devised by RPS consultant engineers. As part of the coastal protection scheme, RPS recommended beach replenishment to reinstate the north beach, with sand being dredged from an offshore location close to Arklow. The scheme would see 500,000 cubic metres for sand be pumped to the north beach behind the breakwaters. During the proposal of the scheme a plan to build a marina was developed and the Courtown Community Development group was established to help plan its construction which slightly altered the plan for implementing the coastal protection scheme. However, with economic downturn post 2008, planning and funding acquisition were delayed. A marina feasibility study was carried out around 2010 with the earliest planned completion of the marina to be 2014. The project carried on slowly and councillors were updated on the progress of the Marina Feasibility Scheme in 2019. A public consultation phase was opened in November 2019, with the feasibility scheme being displayed in the Tara Vie hotel Courtown harbour for comments and suggestions. However, the success of the project was subject to funding which had not been obtained and it was unlikely that funding would be provided by the national government, even so, local councillors expressed optimism that funding could be obtained by the end of 2020. To date, no funding has been acquired and the construction of the break waters or the marina has not begun. The longer the project takes to get off the ground the more likely the schemes results will become redundant as the coastline continues to rapidly change.

3.2.5 Social/economic development of Courtown

In 1995 the Renewal Scheme for Traditional Seaside Resorts was introduced which led to a significant increase in building activity giving rise to many developments such as beachside and Seamount village. One argument put forward in the Seanad in 1995 was that cheap and very available sun holidays and package holidays during the 1960s and 1970s led to a decline in tourism for many traditional seaside resorts causing them to become run down. A Pilot Renewal Scheme for Traditional Seaside Resorts was announced with the aim to improve tourist amenities and facilities. The scheme offered

many tax incentives with the aim of reinvigorating seaside resorts. Even though the scheme was intended to renew amenities and facilities it instead allowed for the excessive building of houses and commercial development and did not include an incentive to provide facilities for the community and created a sprawl of holiday homes. This economic decline and tax incentive scheme were occurring around the same time as dramatic environmental change in Courtown harbour.

3.3 The Utility of quantitative methods

3.3.1 Positive and negative attributes associated with questionnaires

Quantitative methods such as surveys are very popular in social sciences, medicine, pharmacology and geography (Edwards et al, 2005). The drop and collect method of delivering questionnaire surveys was deemed the most suitable to test our hypothesis and investigate solastalgia at the community scale. However quantitative methods do have downsides and it's important to address these in the study design. The strengths of quantitative methods come from the numerical nature of the data collected which makes comparisons and analysis easier, however researchers often argue that its downside lies in its inability to assess the depth of human experience and merely scratches the surface of complex social concepts (Hart, 1987; Bryman, 2016). Some researchers argue that describing complex concepts such as place attachment or solastalgia using quantitative measures is flawed whereas others have successfully employed this technique to provide useful insights at the community level (Bryman, 2016; Clarke et al, 2018; Higginbotham et al, 2006). The question is, how well do surveys capture the everyday experience of participants and do the answers given accurately reflect their behaviour? (Bryman, 2016). Cooper and Branthwaite (1977) argued that some criticisms of quantitative methods do not lie with the study design but the ability of the data to describe the complexities of motivation and behaviour especially at an individual level. This however is one of the strengths of qualitative research and perhaps a mixed methods approach could fill these gaps providing the necessary tools to assess experiences of solastalgia. Quantitative methods are therefore beneficial for hypothesis testing, developing generalisability, determining the strength of associations and have been used to provide useful insights for policy makers at the community scale for adaptation (Hart, 1987, Clarke et al, 2018).

3.3.2 Participants and sample method

A questionnaire survey was developed containing empirical measurements of solastalgia, place attachment, perceptions of place disruption and outlooks for the future of Courtown and Riverchapel. Piloting was conducted with 15 inhabitants of Courtown in November 2018. A week was spent in Courtown harbour and Riverchapel talking and listening to locals which included some participants from the pilot questionnaire, in unstructured and casual conversations. This work was conducted to help understand their use of language when describing changes to the beach. The word “loss” was repeatedly used by local residents to describe these changes, which informed the language used during question design for piloting. Discussions with residents also informed us that resident from Riverchapel should be included, as many would have moved from Courtown to the neighbouring area of Riverchapel. Piloting allowed us to refine how questions were asked, survey presentation and length, sampling strategy and delivery method.

Following piloting and refinement, the questionnaire survey was distributed to randomly selected households in Courtown and Riverchapel over two field campaigns: in January 2019 (winter sample) and July 2019 (summer sample). Consent for participation was obtained through the inclusion of an information letter and consent form attached to the front of the questionnaire. Questionnaires were used only if consent had been provided. The inclusion of two campaigns allowed us to sample residents of the same community twice to investigate if there are seasonal differences in key concepts tested. Surveying was undertaken using a drop and collect method similar to Allred & Ross-Davis (2011) and Clarke et al (2018) whereby questionnaires were delivered one day and collected the next. Census data indicates that the population of Courtown harbour-Riverchapel and Ardamine was 3591 in 2016 (CSO, 2016). Disregarding residents of this settlement under the age of 18 leaves a viable population of 2561. The number of permanent private households within the settlement of Courtown harbour-Riverchapel and Ardamine on the night of the census was 1348. Using postcodes for the area, every third household was sampled from randomly selected streets/estates within the confines of the study area for the first field campaign in January, similar to the sampling strategy employed by Clarke et al (2018). Every first household was sampled from the previously selected three during the second field campaign in July in order to sample the same community twice. A total of 800 questionnaires were delivered, one questionnaire was distributed per household, with responses sought from one adult. There was no overlap in households sampled

between winter and summer campaigns. Sampling with no overlap over two field campaigns within the same community/area ensured meaningful results were obtained about that particular community's views while also limiting participant fatigue and biased responses. There were 271 surveys collected in total (99 winter plus 172 summer surveys), with an overall response rate of 33.9 percent.

3.3.3 Measures and analytical procedures

Survey items were designed to elicit empirical measurements of solastalgia, place attachment, place disruption and resident's outlook for the future. In all cases, items were measured using a 5-point Likert scale ranging from 1 = strongly agree, to 5 = strongly disagree, with 3 = neither agree nor disagree. Where an individual response was missing, pairwise deletion was performed (Pallant, 2013; Clarke et al, 2018). Non-parametric statistical tests are used throughout due to data being non-normally distributed. The Mann-Kendal-U test was employed to discern differences between groups, including gender, seasonal differences and residents impacted and not impacted by the loss of the beach. The Kruskal-Wallis test was used to discern differences between age groups, length of residence and place attachment levels. Spearman's correlations were calculated to ascertain the relationships between solastalgia, place attachment and outlook for the future (Pallant and Manual, 2013).

3.3.3.1 Solastalgia scale

An analysis of the literature on solastalgia indicated which items are most reliable to construct a single uni-dimensional scale to measure solastalgia. In particular this chapter draws on statements from Higginbotham et al (2006) who developed and validated an environmental distress scale, which includes items measuring solastalgia. The single uni-dimensional scale was constructed to measure solastalgia by combining seven relevant items adapted from the Higginbotham et al. (2006) scale "*Feelings of Solastalgia from Environmental Change*", tailored to local context. The items measure emotions which are considered by Higginbotham et al. (2006) to relate to solastalgia as a result of environmental change, including; sadness '*I feel saddened by the loss of the beach at Courtown*'; worry '*I am worried that the valued aspects of Courtown are being lost*'; shame/disappointment '*I feel disappointed in the way Courtown looks now*'; belonging undermined '*My sense of belonging to this place has been undermined by the loss of the beach*'; nostalgia '*Sometimes I find myself thinking about times when the beach was*

larger', *'I feel that the beach suited my way of life more in the past'* and; unique environmental aspects lost *'I am upset over the loss of the beach because it is part of my heritage'* (See Table 4.2). A Cronbach Alpha test was carried out on these seven statements which demonstrated good internal reliability ($\alpha = 0.85$). High Cronbach alpha values were also returned for individual items within the scale, indicating that internal validity of the solastalgia scale is satisfactory. The sample was split into three equal groups representing high, medium and low levels of solastalgia according to the method Kaltenborn and Bjerke (2002) applied to their place attachment scale. The mean solastalgia score of each group was extracted to assess differences between groups.

3.3.3.2 Place disruption

Participants were asked one yes/no question *'is your life impacted by the loss of the beach'* to determine if place disruption has impacted residents' lives. This was accompanied by two open ended questions encouraging respondents to detail how their life has been impacted and if their feelings towards Courtown have changed. Thematic analysis was used to identify the most common impacts and feelings as a result of disruption and include relevant quotes. To determine differences in solastalgia and place attachment experienced by those who are impacted by loss of the beach and those who are not, Mann-Whitney-U statistical tests were conducted using the entire dataset (i.e., winter and summer samples). To investigate how people with different levels of place attachment are impacted by loss of the beach, a Kruskal-Wallis statistical test was employed using the impacted group data.

3.3.3.3 Place attachment scale

Drawing on previous research that attempts to empirically quantify place attachment, items related to place identity and place dependence were employed, tailored to the specific context of this study, to measure place attachment (e.g., Clarke et al, 2018; Kaltenborn and Bjerke, 2002). A 3-item scale was employed to measure place identity consisting of the statements *'I have good memories of Courtown beach'*, *'I feel part of the community in Courtown'*, *'Courtown beach is part of my identity'* (Clarke et al, 2018; Kaltenborn and Bjerke, 2002) (See Table 4.2). A 3-item scale was also used to measure place dependence consisting of the statements *'Development of the area is important to me'*, *'No other place can compare to Courtown beach'* and *'I get more satisfaction out of visiting Courtown beach than any other'* also tailored from Clarke et al (2018) and

Kaltenborn and Bjerke (2002) (See Table 4.2). Finally, a single uni-dimensional scale was constructed to measure place attachment by combining all six items. A Cronbach alpha test confirmed the place attachment scale to have good internal reliability ($\alpha = 0.80$) (Von Wirth et al., 2016). High Cronbach alpha scores were also returned for individual items within the scale, indicating that internal validity is satisfactory. The sample was split into three equal groups representing high, medium and low levels of place attachment according to the method employed by Kaltenborn and Bjerke (2002). Following this, the mean place attachment score of each group was extracted to assess differences between groups.

3.3.3.4 Outlook for the future

The term ‘future outlook’ is used to encapsulate viewpoints associated with concerns for the future. Three 5-point Likert statements were used consisting of ‘*I am concerned that future generations will not be able to enjoy the natural environment at Courtown*’, ‘*There is not much of a future for me in Courtown*’ and ‘*I feel that Courtown has a positive future*’. The relationship between these statements and the constructed scales for solastalgia and place attachment was used to determine if loss of place due to environmental change and resultant experiences of solastalgia impacted an individual’s outlook for the future.

3.4. How do we elicit past emotions and connections to place?

3.4.1 The utility of visual methods

A simple definition of photo elicitation is the act of inserting photographs into the interview (Harper, 2002). Photography methods have been employed in the past as a technique to better understand permanent resident’s sense of place attachment and to elicit memories and emotions from the past meaning they are well situated to assess place attachment and solastalgia at an individual scale but also impacts of environmental loss. This method is usually carried out by the researcher instructing the participant to take photographs of elements that attach them to their community, environment or place which is used to trigger the participant’s memories and feelings. This is then followed up by an in-depth semi-structured interview (Stedman et al, 2004; Tonge et al 2013; Briggs et al, 2014). Visual methods have also been employed to access depth of thought into the past or “past temporal depth” (Bluedorn, 2000). As visual methods can also employ paintings,

drawings, maps and charts and can either be provided by the researcher or by the participant (Matteucci, 2013; Harper, 2002). An important reason for participants choosing the medium, is it adds a layer of inquiry as to why they chose that specific item. Jenkins et al (2008) used photographs to elicit past memories and emotions of military personnel. This work demonstrated that photographs depicting participants past experiences allow the interviewer to engage with their past.

This method can also help to distinguish between the different sources of attachment that residents may have and the varying impacts of negatively perceived environmental change on their wellbeing by eliciting deeper emotions participants may struggle to communicate. Stedman et al (2004) effectively used photo-elicitation to understand the different sources of attachment residents have to Jasper national park in Alberta Canada, the method proved effective for better understanding attachment to place. However, these methods can be implemented in various ways and photographs covered in the photo-elicitation literature presented to interviewees depending on the researcher's purpose. This is promising for applications related to solastalgia. Stedman et al (2014) suggest participants should take the photos themselves rather than just analyse photos taken by the researcher. However, this may not address specific topics that the researcher may be concerned with and providing photos is a good way to conduct research driven by theory (Clark-Ibáñez, 2004). Briggs et al (2014) suggests that the photo data is secondary to the rich data gathered through the interview process. Tonge et al (2013) suggests that photos can be used as stimuli in interviews and elicit responses with more in-depth emotions. Clark-Ibáñez (2004) proposed that photos do not represent empirical truths, instead they can be viewed as a medium of communication between a participant and researcher, used as a tool to explore deeper meanings within people's lives.

Researchers can introduce photos into the process to use as stimuli to trigger strong memories and emotions and help the participant to engage with specific topics that the researcher is interested in, such as solastalgia (Ryan, 2009; Clark-Ibáñez, 2004). Photos are used as a tool or prompt for interviews so the researcher can explore concepts of interest in more depth, but researchers should also give the participant the opportunity to comment on aspects and dimensions of their life which the researcher may not have considered (Ryan, 2009; Clark-Ibáñez, 2004). It is acceptable for photos to originate from either the participant or the researcher (Clark-Ibáñez, 2004). Using this approach, photos are seen as a tool or a means to an end to encourage more in-depth conversations around certain aspects of the participant's experiences of place loss which may be otherwise more difficult to verbalise. This method of gathering/taking photos and analysing photos

would be followed by an in-depth interview process to discuss the participant's interpretations in greater detail (Beilin, 2005). Therefore, photos can be used as a stimulus to explore deeper meanings behind lived experiences of place and disruption which can be of use to policy makers.

The advantage of this method is to assist the participant to view aspects of their everyday life in new ways and help to sharpen reflections of certain events and provide easier discussions with minimal direction from the researcher while also providing new insights that traditional interviews may not capture (Moore, 1997; Lombard, 2013; Tonge et al 2013; Briggs et al, 2014). Photos have also been referred to as capturing greater detail than the participant can remember and help to trigger certain memories and help to evoke deeper elements of people's experiences far more easily than they would without them while just using words (Rose, 2008; Ryan, 2009). Rose (2007) suggests that photo methods enable respondents to express experiences that may be difficult to verbalise as photographs become a very powerful tool for the participant to view their world. Solastalgia is a newly emerging concept so it may be difficult for participants to verbalize their experiences, photo-elicitation provides the necessary tools to aid participants in expressing their deeply held experiences. This method can also remove pressure on the participant as more focus is placed upon the images as opposed to the participant which may make talking easier. In-depth interviews generally follow either the photo taking process or photo analysing to follow up on interesting aspects of the participant's interpretation.

Photo-elicitation has some limitations such as the exclusion of sounds, smells and emotions felt in place which cannot be captured through this method which is why the coupling with walking interviews is important to gain an understanding of other stimuli and daily experiences of solastalgia. It would also be useful to encourage participants to bring their own photos that capture aspects of the place that they are attached to or that have particular emotions towards as old photo collections can help individuals to reflect on place meanings that may have been lost (Briggs et al, 2014). Various studies have successfully proven that photos are useful for investigating how people make sense of their environment and place (Moore, 1997; Tonge et al 2013). The combination of photos and walking interview can provide the researcher with insights that a single data source or traditional methods may not highlight which can be of interest to policy makers (Briggs et al, 2014, Lombard, 2013). The application of the method is discussed in more detail in Chapter 5.

3.4.2 The utility of mobile methods

Walking interviews and participant observation are often employed to gather rich and detailed understandings of individual's everyday lives which will be important for assessing the impacts of perceived negative environmental change (Anderson, 2004; Kinney, 2017). Most questions in this format are open-ended with a flexible structure to allow for unanticipated responses from the participants which may elicit a deeper understanding of solastalgia (Clark and Emmel, 2010). This form of interviewing technique allows individuals to engage with their physical environment and community through walking and express their lived experiences of solastalgia and place disruption as they move through it providing insights that would not be apparent in traditional sit-down interviews. This technique will also build upon and compliment the photo-elicitation method as it allows the researcher to view aspects of place that photos fail to capture such as the smells, sounds and expressions tied to the place the interview is conducted in. It will also highlight the stark environmental changes that have occurred and allow for participants to express the impacts these changes have had on their lives and attachment place while allowing the researcher to make comparisons with the established baseline and across scales.

Walking interviews are very well suited for exploring the relationships between people, place, identity and should be suitable in understanding how people are impacted by loss of place due environmental changes such as coastal erosion. This method can be conducted in many formats but almost all require the researcher to accompany participants through a location preselected either by the participant or researcher while conducting the interview (Kinney, 2017). The researcher is guided around locations which are often significant to the participant who is considered an expert, the role of the researcher is to listen and prompt discussion where needed often through the use of ad hoc questions. This method has its advantages by providing new insights and opportunities to observe the interactions that individuals have with their physical and social environments allowing for comparisons across temporal, spatial and social scales which may be of interest to policy makers for adaptation.

3.5 Combining photo-elicitation and walking interviews to establish temporal and spatial contexts

Flaherty et al (2001) discussed how human interpretations of past and future are influenced by the present, similar to the perspective of time described by Hitlin et al (2007) who suggests that anticipation for the future and memories are shaped by the current moment. This line of thought would be beneficial for adding a temporal focus to the methodology. Walking interviews in a given moment provide a stimulus that can help the participant to interpret the past, compare their memories to present experiences and project their thoughts into the future to consider the benefits of adaptation strategies. Time is crucial for how people understand and make sense of their changing environments.

In this way the photo-elicitation method is well suited to elicit participant's memories and emotions of the past by drawing upon photographs and materials that represent their connection to place before negative environmental changes have occurred. Walking interviews can then be employed to take elicited understandings associated with the baseline and place it in the current context related to loss of place and solastalgia. Walking interviews can be used in the present so that participants can interpret the present state of their environment and their experiences of solastalgia in a temporal and spatial context. Finally walking interviews can also be employed while providing the correct stimulus once past temporal depths and historical baseline have been established to extend their interpretation of environmental change and solastalgia into the future and consider how their place attachment has evolved over time. This methodology and perspective of time would be useful for helping participants consider the benefits of climate adaptation strategies by allowing them to interpret the past, present and future climate related risks and assess their vulnerability with and without such measures.

The final stage of this methodology is concerned with extending participants focus into the future to better understand future outlook, how place attachment evolves and how they will cope with further environmental change. This aspect of the methodology could be of interest to policy makers as it encourages individuals to evaluate their environment before, during and after negatively perceived environmental changes as well as possible benefits that adaptation strategies may provide. The participants chose other places that they feel they have a growing attachment to and guided the researcher through them. This stage was carried out with a similar procedure to the previous stage, consisting of an

unstructured interview process and walking interview. Discussions were participant led and highlighted how their attachment is evolving and what vision they hold for the future of the place. The structure of the methodology allowed for topics of concern to be addressed such as place attachment and solastalgia, present interpretations of place loss, future outlook and the re-imaging of place.

3.5.1 Photo-elicitation and walking interview sampling method and data collection

A small number of people with detailed knowledge of the area were chosen for interviews over an extended period in 2020 (Breakwell, 2006; Mears, 2012). Five participants were recruited through discussions with community members and earlier questionnaire surveys conducted by Phillips and Murphy (2021). The individuals selected reflect a variety of experiences and perspectives on community life, their knowledge and experience of beach erosion, local development plans, governance, local economy and day to day life experiences of Courtown/Riverchapel. The final set of respondents consisted of a local councillor, a business owner, a local lifeboat volunteer, a permanent resident of the community and a seasonal resident (originally from the locality). Attention was given to ensuring gender balance among respondents. This deliberately small sample allows for deeper engagement with individuals over a longer period of time (Thompson, 2010) and is used to explore issues of interest to individuals, draw upon commonalities and differences, and to build upon insights developed from a much larger sample of the community (270 respondents) through questionnaires deployed by Phillips and Murphy (2021).

Each participant took part in two interviews, each spanning 1-2 hours, with some providing extra information outside of interviews in the form of written documents and pictures related to recent developments and the beach. The first interview employed photo elicitation. Photos are a tool to aid exploration of key concepts in more depth, while allowing participants to comment on aspects and dimensions of their life portrayed in photographs which researchers may not have considered (Clark-Ibáñez, 2004; Ryan, 2009). We adopted a similar method to Clark-Ibáñez (2004), using photographs as a communication medium between the researcher and participant to prompt more in-depth discussions. All interviewees were shown the same two images, the first showing an expansive beach in 1967 and the second showing an eroded beach and rock armour in 2015 (See Plate 3.2). In addition, interviewees were encouraged to present their own photographs which represent their connection to place (see supplementary information).

This was followed by an in-depth semi structured interview where photographs were used to elicit memories and emotions (Stedman et al, 2004; Tonge et al 2013; Briggs et al, 2014).

The second engagement involved walking interviews, allowing participants to engage with their physical environment and express their lived experiences while moving through it. This technique complements photo-elicitation, creating discussion of physical/sensory aspects of place that photographs fail to capture. As walking interviews are conducted in place, participants have the opportunity to narrate their lived experiences of and interactions with place (Porter et al. 2010) while considering identity, community and place attachment. Interviews followed a route designated by the participant, beginning in Courtown harbour, continuing to the beach and through the woods. The route chosen by interviewees was similar and incorporated the beach, the harbour and the woods. Slight variations in the route occurred such as starting point and the direction walked; however, all routes incorporated the same locations at some point in the interview. One interviewee slightly extended their route further south. The participant adopted the position of a guide while the researcher listened to their account of lived experiences of place, similar to the format discussed by Kinney (2017). The interview structure was flexible to afford participants a greater sense of control allowing for responses otherwise unanticipated by the researcher (Clark and Emmel, 2010).

Due to public health restrictions associated with the Covid-19 pandemic photo-elicitation and walking methods could not all be conducted in person. Both methods were revised for safety reasons and mostly completed online. Walking interviews were conducted with two participants in person when public health restrictions eased. Alternatively, interviewees walked alone, and an online interview took place afterwards to discuss their experiences. Public health restrictions prolonged the completion of interviews and resulted in the reduction of data the researchers intended on collecting, such as sensory data. However, restrictions had little impact of the integrity of the methods and results.

3.5.2 Analysis.

Interview transcription was carried out verbatim with each interview transcript read individually in an iterative process to gain familiarity with the text. Following transcription key quotes relevant to the research questions were extracted (Braun and Clarke, 2006). Transcripts and key quotes were re-read to ensure the interpretation was

accurate and consistent to form themes and sub-themes. Based on these themes a narrative was developed exploring deeper emotional impacts and perceptions of place change. Results are presented around the key themes to emerge.

3.6 Data triangulation and online desk research

Data triangulation is the use of multi-methods (e.g., quantitative, qualitative), data sources, documents, observations and interviews (Creswell, 2013). It can be employed to obtain valuable insights across many perspectives and groups which may not be available using a single source and has gained prominence in adaptation research (Johnson et al, 2007; Bryan et al, 2013; Clarke et al, 2018). Some scholars have pointed out that data triangulation provides a large volume of data which may present problems for researchers leading to false interpretations (Creswell, 2013). However, using both qualitative and quantitative approaches with many methodological approaches, data sources and theoretical perspectives can strengthen results and provide richer more robust and complimentary findings which is a key strength of data triangulation (Banik, 1993; Creswell, 2013). The use of multiple data sources is an advantage of data triangulation so information obtained from newspaper archives and social media comments can be verified and findings validated (Creswell, 2013; Clarke et al, 2018). Therefore, the use of data triangulation and desk research (analysing digital sources) as a method has been a key strength of this research, overcoming the limitations associated with the use of a single method or data source while improving the richness and robustness of findings.

Desk research was conducted by acquiring data from secondary digital sources such as social media pages, newspaper archives and Wexford County Council online archives and applying thematic analysis. Firstly, broad categories of interest were chosen such as Courtown woods, Courtown beach, Courtown marina/breakwaters, Courtown coastal erosion and local development. Social media comments were obtained from prominent Courtown social media pages such as Courtown Community Council, Protect Courtown Woods, Courtown Revival and Courtown harbour using the chosen search categories. Newspaper archives such as Wexford People, Irish Times, Irish Independent and Gorey Guardian (New Ross, Enniscorthy) were searched using the same search categories. The Wexford County Council online archives were searched for minutes of meetings related to the Gorey municipal area. The thematic analysis of these sources was conducted in a similar manor to interview transcripts employed in Chapter 5.

One minor limitation identified relates to the record length of County Council minutes of meetings which were only accessible between 2014 and 2021. Investigation of impacts related to developments in Courtown pre-2014 mainly relied on newspaper archives, social media comments and interviews which may present a minor limitation for details of pre-2014 developments. Furthermore, information available within newspapers can be sensational and present bias due to interviewee selection process for controversial stories. Social media comments may also be heavily biased presenting a self-selection process whereby people with controversial opinions post often. Public submissions of queries to the County Council in relation to LAPs, local developments, sale of the woods and rock armour installation is another data source that would have been beneficial to gauge public attitudes and perceptions of governance. Using this data in conjunction with newspapers, social media comments and County Council meeting minutes would help validate findings and increase richness of data. However, this data source has not been made readily available by the council and efforts to retrieve the data were unsuccessful. The use of multiple data sources is an advantage of data triangulation and desk research so information obtained from newspaper archives and social media comments can be verified and findings validated (Creswell, 2013; Clarke et al, 2018).

The utility of text analysis packages was explored to analyse social media comments. It was originally intended that text analysis would be conducted through R using sentiment R to analyse positive and negative attitudes of social media users towards Courtown beach and woods. However, after exploring the use of several text analysis packages (e.g., SentimentR, SentimentAnalysis) and word lexicons (e.g., bing, nrc, afinn) it was determined that such software could not fully capture the complexity of emotions people expressed in their comments or the nuances held in the text. Text analysis packages often struggled to adequately identify negation and failed to assign the proper positive or negative attribute to the sentence. Therefore, social media comments and other text-based data sources discussed in this section were analysed manually by the researcher using a thematic analysis. Currently a person is better equipped to identify nuance and negation within social media posts. However, future research should still consider the application of text analysis packages as they improve over time.

3.6.1 Analytical procedure and data collection

Quantitative and qualitative data analysed in this chapter were obtained during field campaigns discussed in Chapter 4 and interviews discussed in Chapter 5, therefore data collection, participants and sampling methods are identical. The methods and analytical procedures used in this chapter are also identical. However, different measures are used for quantitative analysis and data sources included in data triangulation are also different (See Section 3.3). Results will be discussed in the context of attitudes towards governance, communication, and participation in decision-making as well as attitudes towards local developments. This chapter also makes use of digital methods by incorporating the analysis of social media comments, newspaper archives and County Council meeting minutes.

Data triangulation was used to assess community attitudes towards governance, current development plans and decision-making processes. Secondary data from digital sources were collected from prominent public Courtown social media accounts (See Table 3.1), newspaper archives (Gorey Guardian, Wexford People Paper, Irish Times, Irish Independent, New Ross Standard) and Wexford County Council meeting minutes.

Table 3.1: Popular Courtown social media pages.

Social media page	URL
Courtown Community Council	https://www.facebook.com/RCN20043414
Courtown Harbour	https://www.facebook.com/Courtownharbour/
RNLI Courtown	https://www.facebook.com/CourtownRnliLifeboat
Courtown Revival	https://www.facebook.com/Courtown-Revival-113404997243130
Protect Courtown Woods	https://www.facebook.com/protectCourtownwoods

A sample of 470 social media comments were analysed using thematic analysis similar to the approach applied to interview transcripts in Chapter 5. Social media and blogs are a rich and varied source of data where people post their opinions and emotions on a topic in real time (Agarwal et al, 2011). Analysis of social media comments were used to add greater context and understanding of attitudes held by the community towards governance and decision-making processes. Social media comments were divided into three categories ‘*current state of the beach*’ comprised of 106 comments, ‘*sale of the woods*’ comprised of 277 comments and ‘*local development*’ comprised of 87 comments. Categories of social media comments were analysed through an iterative fashion by

reading each comment individually. Comments were labelled as ‘positive’ or ‘negative’ depending on the attitude towards the assigned category expressed within each comment and a reason for the designation was provided. The comments being analysed are mainly posted by residents following the social media pages seen in table 3.1. The comments have been posted for the period 2004 to May 2021, in response to the topics discussed in this section.

3.6.2 Measures for quantitative analysis

Items measured in the questionnaire survey (see following sub-sections) employed a 5-point Likert scale ranging from 1 = strongly agree, to 5 = strongly disagree, with 3 = neither agree nor disagree used in Chapter 4. Pairwise deletion was performed where individual responses were missing (Pallant, 2013; Clarke et al, 2018). The Kruskal-Wallis test was employed to discern differences between solastalgia and place attachment levels with the measures shown in section 2.2.1.

3.6.3 Perceptions of governance

Public perceptions of inclusion and consultation in decision-making processes were measured through two 5-point Likert statements consisting of *“I feel my views about the planning decisions in Courtown are being taken into consideration”* and *“I feel I would be capable of convincing the local council to better manage Courtown beach”*. Trust in governance was measured using three 5-point Likert statements *“I feel a sense of trust in the local governance”*, *“local/ national government will deliver on promises made to manage coastal erosion”*, *“I trust in the local governance to make adequate decisions regarding the management of the beach”*. Community perceptions of political representatives’ connection to the community and area was measured using two 5-point Likert statements *“The political representatives for Courtown care about its people”* and *“The political representatives for Courtown care about the loss of the beach”*.

3.7 Ethical issues

The Covid-19 pandemic and resulting government restrictions prevented interviews to be carried out in person. Therefore, changes had to be made to how the methods were conducted, and consent was obtained. Where possible interviews were conducted online to comply with government restrictions and ensure the safety of interviewees. This presented ethical concerns regarding consent (e.g., video recording and written consent).

To overcome these issues, interviewees were contacted through email, text message and phone calls in advance of the interview. The purpose of the interview as well as information contained in the information and consent forms (Appendix C) were communicated to interviewees. This information was also communicated to interviewees before the interview started and they were also asked if they consented to the interview being recorded. In cases where interviews had to be conducted remotely consent was obtained verbally at the beginning of the interview. Remote interviews were conducted first with interviewees who had the means to participate (i.e., computer, technical skills) or those who were comfortable to do so.

Once government restrictions were lifted face to face interviews were conducted with interviewees who could not or wished not to participate online. These interviews were conducted outside and followed social distancing and health and safety guidelines. Ethical concerns arose regarding members of the public overhearing the interview or talking to the interviewee during the interview. The first issue was resolved by ensuring that interviews were conducted in more secluded areas or at a distance from members of the public. Courtown beach is a good example of a quiet location with few people where interviews were conducted. The second issue was resolved by pausing the recording when people who had not consented to being interviewed were present and then informing them that an interview was taking place. No non-consenting members of the public were included in the interviews.

Finally, ethical concerns arose regarding the relationships and trust that was built between the interviewees and interviewer over the course of the interview process. Firstly, this was navigated by affording the interviewee more control over the interview process and allowing them to lead the interview. This action allowed the interviewee to control how the interview was conducted and reduced ethical concerns regarding interviewee/interviewer power dynamics. Secondly, the interviewer always remained professional and was clear when they were and were not adopting the role of an interviewer.

3.7 Conclusion

The aim of this chapter was to discuss a novel and effective methodology combining questionnaire surveys, photo-elicitation and walking interviews to assess experiences of place disruption following undesirable place change. The strengths and weaknesses of each method are summarised in the table below.

Table 3.2 Summary of strengths and weaknesses of methods employed in core chapters 4-6 (continues next page)

<i>Method</i>	<i>Strengths</i>	<i>Weaknesses</i>	<i>Data generated</i>	<i>Research Goals</i>
Questionnaire surveys (Chapter 4 and 6)	Comparisons and analysis of is more direct Developing generalisability Beneficial for hypothesis testing Determining the strength of associations between numerical scales Analysis at a community scale.	Limited ability to assess the depth of human experience Limited ability to describe the complexities of emotions and behaviours	271 paper-based Questionnaire surveys examining solastalgia, place attachment and disruption. The surveys also examine future outlook and perceptions of governance at a community level	Evaluates experiences of loss, disruption, solastalgia, place attachment, outlook for the future and the relationships between them. Evaluates the role governance and decision-making processes play in the experience of place loss/disruption
Photo-Elicitation (PE) Walking interviews (WI) (Chapter 5)	Describe the complexities of motivation and behaviour especially at an individual level Describe complex social concepts in-depth Distinguish between the different sources of attachment Act as a stimuli and elicit responses with more in-depth emotions Reduces power imbalances in the interview Capture greater detail than the participant may remember Gather rich and detailed understandings of individual's everyday lives Remove pressure on the participant by applying focus on the photograph WI Includes sounds, smells and emotions felt in place Provides new insights and opportunities to observe people-place interactions	Some scholars believe it is a flawed method for assessing complex social concepts Weaker ability to determine the strength of associations Limitations of PE to include sounds, smells and emotions felt in place Interviewee selected materials or routes may not be relevant to concepts of concern Developing generalisability Very long interviews associated with WI Recording issues for WI	10 interviews: 7 recorded online through video and audio 3 recorded with audio only. Each interview last 1-2 hours. 1 journal including an account of place attachment and images. 4 images provided by an interviewee.	Delves deeper into individual experiences of loss, disruption, and place attachment. Explores how place is being reimagined. Assesses the role governance and decision-making processes play in the experience of place loss/disruption
Data Triangulation and Multi methods approach (Chapter 6)	Overcomes limitations associated with using a single method Provides insights across many perspectives and groups which may not be available using a single source Verify and validate findings Improve the richness and robustness of findings Verify and validate findings	Provides a large volume of data which may cause researchers to arrive at false interpretations Bias in sampling	Combination of questionnaire surveys, interview transcripts, social media comments, council meeting minutes, local authority are plans and newspaper archives.	Explores how place is being reimagined. Assesses the role governance and decision-making processes play in the experience of place loss/disruption

Desk Research (Digital sources) (Chapter 6)	Overcome the limitations associated with the use of a single data source Improves the richness and robustness of findings	Limited data range Limited access to some archives or availability of data	A table of 470 social media comments was produced with positive and negative perceptions assigned. List of council meeting minutes spanning 2014-2021 and list of 100 newspapers	Explores how place is being reimagined. Assesses the role governance and decision-making processes play in the experience of place loss/disruption
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Chapter 4 will explore how solastalgia is experienced by the community of Courtown and Riverchapel in the southeast of Ireland due to place loss from coastal erosion (Phillips and Murphy, 2021). It analysed relationships between empirical measurements of solastalgia, place attachment, place disruption and community outlook for the future. Chapter 4 employed quantitative methods discussed in section 3.3.

4 Solastalgia, place attachment and disruption: insights from a coastal community on the front line

4.1. Introduction

Loss of place can have profound impacts on individual and community emotional and psychological wellbeing, sense of identity and ability to cope with further environmental change (Connor et al, 2004; Albrecht, 2005; Fresque-Baxter and Armitage, 2012; Barnett et al, 2016; Adger et al, 2017; Marshall et al, 2019). Solastalgia is an inability to derive solace from the present state of one's environment (Albrecht, 2006; McNamara and Westoby, 2011) and describes how personal and community sense of identity, belonging and control is undermined by negative environmental change. (Connor et al, 2004; Albrecht, 2005; Higginbotham et al, 2006). Solastalgia has been related to a breakdown between an individual's identity and their environment (Askland and Bunn, 2018), negative emotional responses that can influence engagement with effective coping responses and paralysis or inaction towards negatively perceived environmental change (Ojala, 2013; Ruiz et al, 2014; Clayton and Karazsia, 2020). Cunsolo and Ellis (2018) show that solastalgia can be expressed following ecological losses, weather extremes and landscape disappearance due to loss of identity and environmental knowledge.

A scoping review of solastalgia by Galway et al (2019) showed that research has focused on environmental change caused by resource extraction (Connor et al, 2004), climate change (Ellis and Albrecht, 2017) and extreme weather events/natural disasters (e.g., drought, wildfires) (Albrecht et al, 2007; Eisenman et al, 2015). Albrecht (2019) discusses how chronic changes to landscape (e.g., persistent flooding) may have cumulative impacts that gradually erode identity, sense of belonging and lead to distress. Except for research by Tran et al (2020), chronic, slowly unfolding degradation caused by coastal erosion as a source of solastalgia has been little studied. Previous research has also tended to focus on landscape icons such as the Great Barrier Reef or economically driven change, such as open cut mining (Connor et al, 2004; Marshall et al, 2019). Overlooked have been more mundane examples, such as coastal degradation and erosion, which may reflect the lived experiences of millions world-wide as they struggle to withstand and cope with place disruption due to coastal erosion, sea level rise and other pressures resulting from climate change. Research also suggests that a gendered experience of solastalgia may be emerging with climate change (McNamara and Westoby, 2011). Furthermore, some

studies show that solastalgia may lead to concern and uncertainty about the future, stemming from a perceived powerlessness to prevent future losses, thereby exacerbating negative emotions (Galway et al, 2019). However, the role that concern and uncertainty about the future play in how solastalgia is experienced is also under-examined (Galway et al, 2019).

Many scholars have attempted to empirically evaluate solastalgia and confirmed Albrecht's original argument that the concept relates to a deeply held sadness and grief regarding destruction of valued environments (Higginbotham et al, 2006; Warsini et al, 2014; Eisenman et al, 2015). Connor et al (2004) detailed the emergence of solastalgia experienced by residents of Upper Hunter Valley in New South Wales, Australia, because of open cut mining. Later, Higginbotham et al (2006) developed an Environmental Distress Scale (EDS) for the Upper Hunter Valley and discovered that unwanted transformation such as open cut mining in valued environments leads to the experience of solastalgia. Similarly, Warsini et al (2014) used a modified Environmental Distress Scale in Indonesia (IEDS) to examine solastalgia following natural disasters. These studies have found that place attachment may be an important mediating factor in the experience of solastalgia. Although there is a significant history of research on place attachment and disruption, there have been calls for enhanced understanding of the relationship between place attachment and solastalgia in different contexts (Cunsolo and Ellis, 2018; Galway et al, 2019).

Place attachment has been explored by scholars in many different disciplines such as geography (Von Wirth et al, 2016), environment psychology (Clarke et al. 2018) and sociology (McKnight et al. 2017). These disciplines have arrived at various definitions, measures and models (Greer et al, 2020). A common description of place attachment is a positive emotional connection to places or landscapes that often inspires individuals and communities to engage in place protective actions when the place they are attached to comes under threat (Lewicka, 2011; Devine-Wright, 2013). Place attachment can be explained through examining the connections or emotional bonds that individuals and communities form with an environment (Clarke et al, 2018). Strength of place attachment has been shown to vary with age, length of residence and homeownership (Lewicka, 2011). People assign meaning to places they are familiar with and subsequently form intimate bonds and feelings of belonging towards that place (Hess et al, 2008). It is commonly argued that how people identify with a place is an important aspect of place

attachment as well as their sense of personal and social self (Greer et al, 2020; Lewicka, 2011; Twigger-Ross and Uzzell, 1996).

Many scholars consider place attachment as having two related dimensions: place identity and place dependence (Moore and Graefe, 1994; Anton and Lawrence, 2016; Clarke et al, 2018). Place dependence can be thought of as a resource/materially driven relationship, described as the functional bonds people form with a place (Moore and Graefe, 1994, Greer et al; 2020). It is often determined by how well a place can facilitate people's goals, desired activities such as recreational, occupational or social activities, and physical characteristics such as public transport or natural resources (Stokols and Schumaker, 1981; Williams and Vaske, 2003; Quinn et al, 2015, Greer et al, 2020). For place dependence to develop and be maintained, a place must meet a person's needs, be functionally desirable and provide the capacity to fulfil a person's goals better than any other place (Anton and Lawrence, 2016; Greer et al, 2020; Lemée et al, 2019).

Place identity is the symbolic, emotional and social links to a place which are intertwined with the ability to maintain a sense of self in one's environment (Korpela, 1989; Devine-Wright, 2013; Lemée et al, 2019). An individual's sense of place identity represents their emotions, values, memories, attitudes and behaviour related to the environment in which they live, which defines their daily experiences (Proshansky et al, 1983). Place identity develops through personal experiences and interactions within a geographical setting over time and is a complex process where a person becomes psychologically invested in a place and acquires a sense of belonging (Proshansky et al, 1983; Lewicka, 2011; Anton and Lawrence, 2016; Lemée et al, 2019). Strong emotional bonds to place are often formed when that place is perceived to positively benefit identity and satisfy social, psychological, cultural and biological needs (Lemée et al, 2019; Belanche, 2017; Proshansky et al, 1983). Identity is important for withstanding place change (Fresque-Baxter and Armitage, 2012). Impacts to self-identity from environmental degradation can lower an individual's ability to cope with further place changes (Fresque-Baxter and Armitage, 2012)

Place disruption is experienced when a place is modified, degraded or destroyed and is often associated with negative emotions and grief (Cheng and Chou, 2015). Relocation forced migration or physical changes can lead to the disruption of place attachment (Cheng and Chou, 2015; Devine-Wright and Howes, 2010; Fried, 2000). The size and speed of change can also result in different responses and adaptive actions (Devine-Wright, 2013). Incremental changes can potentially be dealt with by adjusting or

adapting, however more sudden and/or dramatic changes can result in greater disruption of material and psychological bonds. Disruption of such connections can arise following displacement, loss of traditional culture, loss of place through environmental transformations, losses to sense of identity and belonging and can often result in mental health challenges as a threat to the environment is understood as a threat to self (Fullilove, 1996; Devine-Wright, 2009). Such place changes, including proposed or anticipated changes, are more likely to be viewed as negative and seen as threatening by those who have stronger place attachment (Devine-Wright, 2013; Anton and Lawrence, 2016; Marshall et al, 2019).

Using the gradual disappearance of a beach in Ireland as a case study, this chapter examines the relationships between impacts of slow and ongoing environmental loss on the experience of solastalgia in a coastal community. This chapter assesses such experiences at a community scale. Using questionnaire surveys, this chapter investigates the inter-relationships between solastalgia, place attachment and place disruption and their relationship with community outlook for the future as a result of coastal erosion. In particular, the chapter examines: i). the extent to which the community experiences solastalgia as a result of place disruption; ii). the relationship between place attachment and feelings of solastalgia, and iii) the association between solastalgia, place attachment and resident's future outlook.

4.2 Results

4.2.1 Socio-demographics

Socio-demographics on age, length of residence and gender were collected. The questionnaire was distributed to adults only. The largest age groups in the sample are 35-44 (25.1%) and 45-54 (18%). The smallest groups are 18-24-year-olds (5.3%) and 75+ (7.7%). The majority of participants in the survey have lived within Courtown harbour and Riverchapel for over 11 years (56.6%) and 3.3% of respondents have lived there less than a year. A gender bias exists within the sample relative to the 2016 census data (See Table 4.1), with the proportion of females (56.5%) within the survey sample significantly greater than in the census and the proportion of males (36.6%) significantly lower ($p < 0.05$). No other statistically significant biases in the sample, relative to census data, were found.

Table 4.1 Socio-demographic statistics (age, gender and length of residence) displayed as percentages and compared to the Census 2016 data for Courtown/ Riverchapel/Ardamine (Central Statistics Office 2016)

<i>Demographic factors</i>		<i>Courtown/Riverchapel Survey</i>	<i>Census data (Courtown/Riverchapel/Ardamine)</i>
Age (%)	18-24	8.5	5.3
	25-34	16.9	13.2
	35-44	25.1	21.5
	45-54	18.0	21.1
	55-64	14.4	15.5
	65-74	10.2	13.6
	75+	6.8	7.5
Gender (%)	Male	36.6**	47.5
	Female	58.5*	52.5
	Prefer not to disclose	1.9	
	NA	3.0	
Length of Residence (%)	<1 year	3.3	
	1-5 years	18.1	
	6-10 years	18.5	
	11-15 years	26.6	
	16-20 years	11.8	
	20+ years	17.7	

4.2.2 The extent to which the community experiences solastalgia

Respondents for the entire (i.e., winter and summer) sample reported a mean (M) score of 2.12 (Standard Deviation (SD) =0.82), equivalent to agree on the five-point Likert scale adopted, for the unidimensional solastalgia scale (See Table 4.2). The sample was split into three groups representing high (M=1.28), medium (M=2.02) and low (M=3.04) levels of solastalgia. Both high and medium groups tend towards strongly agree and agree for the unidimensional scale, respectively, indicating the strength of feelings of solastalgia, whereas the low group tend towards ‘neither agree nor disagree’ (See Table 4.2). The only one of the seven solastalgia items within the scale not to tend towards agree or strongly agree is ‘*my sense of belonging to this place has been undermined by the loss of the beach*’ (M=3.00, SD=1.18). The items ‘*I feel saddened by the loss of the beach at Courtown*’ (M=1.52, SD=0.84), ‘*I am worried that valued aspects of Courtown are being lost*’ (M=1.72, SD=.95) and ‘*I am disappointed in how Courtown looks now as a result of losing the beach*’ (M=1.71, SD=.98) show the strongest reported scores. There is a sense of nostalgia as many respondents reported that the beach suited their way of life better in the past (M=2.27, SD=1.21), with most agreeing with the statement ‘*Sometimes I find myself thinking about times when the beach was larger*’ (M=2.03, SD=1.12).

Kruskal-Wallis tests show that there are no statistically significant differences in the strength of solastalgia between various age groups for the single unidimensional

solastalgia scale. However statistically significant differences do exist between age groups for the scale items '*I am disappointed in how Courtown looks now as a result of losing the beach*' (H= 17.347, p<.01) and '*I am worried that valued aspects of Courtown are being lost*' (H= 18.072, p<.01) with the 55-64 (mean ranks= 100.11, 98.11) and 65-74 (mean rank= 114.50, 107.47) age groups having the strongest feelings. No statistically significant differences were found for other scale items (See Table 4.3). Statistically significant differences were found between length of residence and strength of solastalgia (H= 30.294, p<.01) for the solastalgia scale, with the highest mean rank being 74.70 for 20+ years group (See Table 4.3). Every scale item besides '*my sense of belonging to this place has been undermined by the loss of the beach*' (H= 5.014, p= 0.414) showed similar statistically significant differences (See Table 4.3). Results indicate that those who have lived in the area for a longer period of time experience stronger feelings of solastalgia. No significant difference was found in the solastalgia scale by gender or season (winter/summer).

To investigate further, the sample was split into three groups representing high, medium and low levels of solastalgia and Mann-Whitney-U tests were conducted with gender and season to determine differences between solastalgia groups by level. No statistically significant differences were found for high, medium or low-level groups for gender or medium and low groups for seasons. Statistically significant differences exist within the high solastalgia group between seasons (U= 687.00, p=.05) showing stronger solastalgia in the summer with a mean rank of 41.06 and 52.02 for winter

Table 4.2 Descriptive statistics and Cronbach alpha reliability scores for place attachment and solastalgia. Also shown are the six scale items for place attachment and seven scale items for solastalgia, statements concerning future outlook, place attachment and solastalgia by level. The 5-point Likert scale responses range from 1 = Strongly agree, 2 = Agree, 3 = Neither agree nor disagree, 4 = Disagree, 5 = Strongly disagree

<i>Scales and Items</i>	<i>High</i>	<i>Medium</i>	<i>Low</i>	<i>Cronbach's Alpha</i>	<i>Mean (M)</i>	<i>Std. Deviation (SD)</i>
Place attachment (One single composite item) n= 265	1.55	2.26	3.15	.77	2.32	.74
I have good memories of Courtown beach				.77	1.63	.92
I feel part of the community in Courtown				.74	2.05	1.00
Courtown beach is part of my identity				.72	2.89	1.20
Development of the area is important to me				.77	1.39	.58
No other place can compare to Courtown beach				.70	3.06	1.23
I get more satisfaction out of visiting Courtown beach than any other				.71	2.97	1.24
Solastalgia (One composite item) n= 265	1.28	2.02	3.04	.87	2.12	.82
I feel saddened by the loss of the beach at Courtown				.86	1.52	.84
I feel disappointed in the way Courtown looks now				.86	1.71	.98
I am worried that the valued aspects of Courtown are being lost				.85	1.72	.95
My sense of belonging to this place has been undermined by the loss of the beach.				.86	3.00	1.18
Sometimes I find myself thinking about times when the beach was larger				.85	2.00	1.10
I feel that the beach suited my way of life more in the past				.84	2.27	1.21
I am upset over the loss of the beach because it is part of my heritage				.86	2.58	1.22
Future outlook single Likert statements						
I am concerned that future generations will not be able to enjoy the natural environment at Courtown					1.52	.77
There is not much of a future for me in Courtown					3.34	1.22
I feel that Courtown has a positive future					2.51	1.09

4.2.3 Life impacted and solastalgia

The results show that 42.7% of residents in the entire sample responded yes to the question ‘*Is your life impacted by the loss of the beach?*’. The sub-sample of respondents that indicated their lives have been impacted were analysed to ascertain the extent of disruption that they are experiencing as well as the open-ended responses indicating the reasons residents' lives have been impacted. All responses detailed negative impacts. The most common impacts reported by loss of the beach include recreational activities (walking and swimming), meeting family, view/aesthetics (beach and town), community, tourism, memories and therapeutic opportunities. Residents who reported reasons for why their lives have been impacted said the following (See supplementary material for all responses):

Recreation: ‘*It was a beach and I enjoyed swimming and was easily accessible for family. I would sea swim most of the year. I’ve stopped using the beach altogether now and swim somewhere else. No longer are a place I will frequent....*’

Meeting family: *'Less time spent with family and friends at the beach means I see them less. Main meeting point was the beach'*.

View/aesthetics: *'A feeling that such natural beauty has been lost and a strong reminder of climate change and the rate that change is happening'*.

Community: *'Courtown in the 1950s was not just a seaside resort. But a place to meet and communicate with friends old and new. Such meetings were the highlight of the week and looked forward to with great anticipation. Of course many of the people involved were from local surrounding areas but not solely. There was also a fair sprinkling of visitors'. 'The beach was the focal point of the community. Now that is lost'*.

Tourism: *'Courtown was once a thriving holiday destination and now due to loss of the beach businesses have closed and been left to rot and local people have lost their jobs. There are so many things that can be done by the government to bring the beach back. It really is a shame'*.

Memories: *'Saddened as have fond memories of my dad walking on the beach. My dad is no longer here and neither is the beach'*.

Therapeutic opportunities: *'The beach was where I liked to go when I feel stressed, the waves coming and going'*.

The Mann-Whitney-U test indicated that people who self-reported that their lives are impacted by loss of the beach experience solastalgia significantly stronger than those who did not ($U= 3889.00$, $p< 0.01$), with a mean rank of 90.19 for those impacted and 150.80 for those not impacted (See Table 4.4). Similar statistically significant differences exist for each item within the solastalgia scale (See Table 4.4 and Figure 4.1a). Statistically significant differences exist between groups representing high ($U= 573.00$, $p=.04$) and low ($U= 405.50$, $p<.01$) levels of solastalgia for life impacted, with those experiencing high levels of solastalgia more likely to answer that their lives had been impacted by loss of the beach.

Table 4.3 Kruskal-Wallis H statistics between solastalgia (one composite item and scale items, see Table 4.2), place attachment (one composite item and scale items, see Table 4.2), age and length of residence. H is the test statistic used

<i>Kruskal-Wallis H</i>	<i>Place attachment level (H)</i>	<i>p value</i>	<i>Age (H)</i>	<i>p value</i>	<i>Length of Residence (H)</i>	<i>p value</i>
Solastalgia	64.49	<.01	12.02	.41	30.29	<.01
I feel saddened by the loss of the beach at Courtown	33.13	<.01	11.86	.07	15.11	.01
I feel disappointed in the way Courtown looks now	12.38	<.01	17.35	.01	22.82	<.01
I am worried that the valued aspects of Courtown are being lost	29.74	<.01	18.07	.01	18.16	<.01
My sense of belonging to this place has been undermined by the loss of the beach.	49.13	<.01	3.67	.72	5.01	.41
Sometimes I find myself thinking about times when the beach was larger	35.23	<.01	11.33	.08	30.19	<.01
I feel that the beach suited my way of life more in the past	35.64	<.01	8.90	.18	17.21	<.01
I am upset over the loss of the beach because it is part of my heritage	70.76	<.01	4.77	.87	38.86	<.01
Place attachment			11.48	.07	23.09	<.01
I have good memories of Courtown beach			7.22	.30	34.17	<.01
I feel part of the community in Courtown			5.89	.47	16.78	<.01
Courtown beach is part of my identity			5.33	.50	30.77	<.01
Development of the area is important to me			6.14	.41	14.28	.01
No other place can compare to Courtown beach			12.03	.06	5.19	.39
I get more satisfaction out of visiting Courtown beach than any other			17.04	.01	3.15	.68

4.2.4 Place attachment and relationship with solastalgia

Respondents for the entire sample reported a mean score of 2.32 (SD =0.74), tending towards agree on the five-point Likert scale adopted, for the uni-dimensional place attachment scale (Table 4.2). Most items within the place attachment scale also tend towards agree, except for ‘*No other place can compare to Courtown beach*’ (M=3.06, SD=1.23) and ‘*I get more satisfaction out of visiting Courtown beach than any other*’ (M=2.97, SD=1.24), however the large standard deviations in these responses have been noted (Table 4.2). Both statements comprise the place dependence aspect of place attachment, which indicates that place dependence is low. Place identity statements tend towards agree, the weakest being ‘*Courtown beach is part of my identity*’ (M=2.89, SD=1.20), which also has a large standard deviation (Table 4.2).

Place attachment is significantly positively correlated with length of residence ($\rho=0.19$, $n=269$, $p<0.01$), but not with age (See Table 4.5). Kruskal-Wallis tests showed statistically significant differences between length of residence and strength of place

attachment ($H= 23.09$, $p<=.01$) with the highest mean rank being 75.66 for the 20+ years group (See Table 4.3). Every scale item except for “*No other place can compare to Courtown beach*” ($H= 5.186$, $p= .39$) and “*I get more satisfaction out of visiting Courtown beach than any other*” ($H= 3.148$, $p= .68$) showed similar statistically significant differences by length of residence (See Table 4.3). There were no statistically significant differences between age groups and strength of place attachment for the uni-dimensional scale.

The Mann-Whitney-U test indicated that people whose lives have been impacted by the loss of the beach had significantly stronger place attachment than those who have not been impacted by loss of the beach ($U= 3889.00$, $p< .01$), with a mean rank of 92.86 for those impacted and 139.48 for those not impacted (See Table 4.4). Similar statistically significant differences were found for each item within the place attachment scale (See Table 4.4 and Figure 4.1b). No statistically significant differences were found between winter and summer samples for the place attachment scale or scale items. There were also no statistically significant differences between gender and strength of place attachment. However, males are statistically significantly more likely to agree with the item ‘*Development of the area is important to me*’ ($U= 5665.50$, $p= .04$) with a mean rank of 109.12 for males and 124.73 for females (Table 4.4).

Table 4.4 Mann-Whitney U statistics between solastalgia (one composite item and scale items, see Table 4.2), place attachment (one composite item and scale items, see Table 4.2), life impacted (yes/no), gender (male/female) and season (winter/ summer). U is the test statistic used

<i>Mann-Whitney-U</i>	<i>Life impacted (U)</i>	<i>p value</i>	<i>Gender (U)</i>	<i>p value</i>	<i>Season (U)</i>	<i>p value</i>
Solastalgia	4836.00	<.01	6765.00	.41	7390.50	.41
I feel saddened by the loss of the beach at Courtown	3889.00	<.01	7105.00	.85	7753.00	.86
I feel disappointed in the way Courtown looks now	5183.50	<.01	6968.50	.61	7832.50	.96
I am worried that the valued aspects of Courtown are being lost	6049.00	<.01	7049.50	.75	7488.50	.48
My sense of belonging to this place has been undermined by the loss of the beach.	5170.50	<.01	6998.00	.67	7305.00	.30
Sometimes I find myself thinking about times when the beach was larger	4198.00	<.01	6583.00	.24	7644.00	.71
I feel that the beach suited my way of life more in the past	5142.50	<.01	7149.00	.91	7527.00	.55
I am upset over the loss of the beach because it is part of my heritage	4095.50	<.01	7119.00	.87	7557.00	.59
Place attachment	4219.00	<.01	5837.50	.18	6259.50	.10
I have good memories of Courtown beach	5094.50	<.01	5879.00	.15	7046.50	.84
I feel part of the community in Courtown	5288.50	<.01	6749.50	.21	7690.00	.62
Courtown beach is part of my identity	4953.00	<.01	5816.00	.15	6521.50	.24
Development of the area is important to me	4862.50	<.01	5665.50	.04	6588.00	.22
No other place can compare to Courtown beach	5531.00	<.01	6508.00	.97	6512.50	.23
I get more satisfaction out of visiting Courtown beach than any other	5472.50	<.01	6137.00	.43	6283.50	.11

Significant positive correlations between solastalgia and place attachment ($\rho = 0.49$, $n = 268$, $p < 0.01$) were found (Table 4.5). To investigate further, the sample was split into three groups representing high ($M = 2.39$), medium ($M = 2.67$) and low ($M = 3.00$) levels of place attachment. The results from the Kruskal-Wallis test indicate statistically significant differences between levels of place attachment and strength of solastalgia using the uni-dimensional scale ($H = 64.49$, $P < .01$), with a mean rank of 84.50 for high, 127.98 for medium and 176.53 for low levels of place attachment. Similar statistically significant results were found for all place attachment scale items. Results indicate that people with high levels of place attachment tend to experience stronger feelings of solastalgia (See Figure 4.1c).

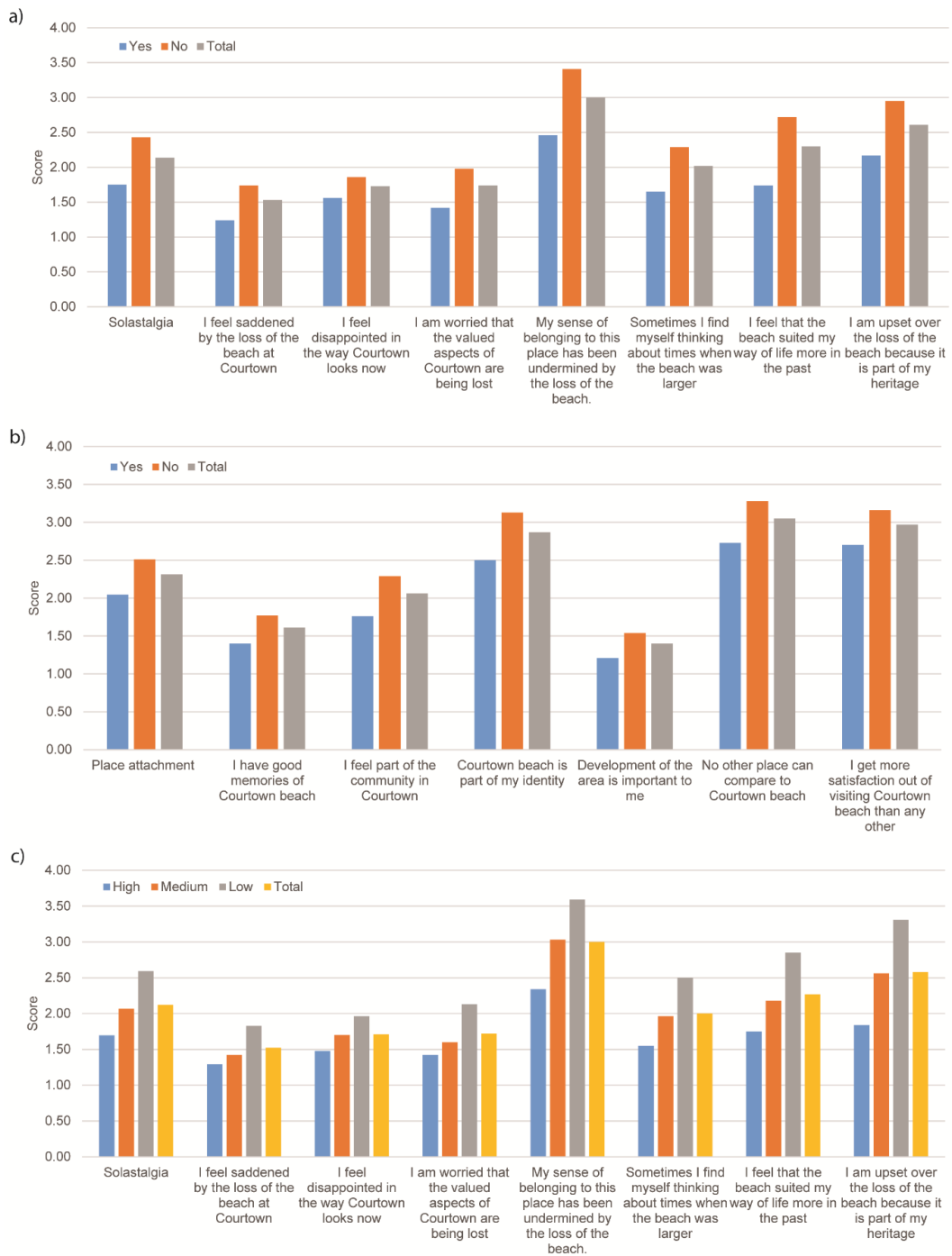


Figure 4. 1 a) Strength of solastalgia (single composite item and scale items, see Table 4.2) for residents impacted (yes), not impacted (no) and total sample. b) Strength of place attachment (single composite item and scale items, see Table 4.2) for residents impacted not impacted and total sample. c) Strength of solastalgia (single composite item and scale items, see Table 4.2) by level of place attachment (high, medium, low). The 5-point Likert scale responses range from 1 = Strongly agree, 2 = Agree, 3 = Neither agree nor disagree, 4 = Disagree, 5 = Strongly disagree. Lower scores indicate a stronger sentiment.

4.2.5 Association between solastalgia, place attachment and outlook for the future

Respondents tended to strongly agree with the statement *‘I am concerned that future generations will not be able to enjoy the natural environment at Courtown’* (M=1.52, SD=0.77) (Table 4.2). However, when asked about their own future, responses were more uncertain, with most neither agreeing nor disagreeing with the statement *‘there is not much of a future for me in Courtown’* (M=3.34, SD=1.22). Indeed, respondents were somewhat optimistic when responding to the statement *‘I feel that Courtown has a positive future’* (M=2.51, SD=1.10).

Significant positive correlations are found between solastalgia and single item statements measuring a pessimistic outlook for the future, including *‘there is not much of a future for me in Courtown’* (rho= 0.36, n=264, p< 0.01) and *‘I am concerned that future generations will not be able to enjoy the natural environment at Courtown’* (rho=0.60, n=266, p< 0.01). Solastalgia has a stronger relationship with resident’s feelings of concern for future generations and personal future outlook than place attachment (See Table 4.5). However, place attachment shows a stronger positive relationship with *‘I feel that Courtown has a positive future’* and may be linked to more positive place emotions.

Table 4.5 Bivariate correlations between solastalgia (one composite item, see Table 4.2), place attachment (one composite item, see Table 4.2), socio-demographics (Age, Length of residence), and statements concerning future outlook from the annual sample. The five-point Likert scale responses range from: 1 = Strongly agree, 2 = Agree, 3 = Neither agree nor disagree, 4 = Disagree, 5 = Strongly disagree, * Significant at 0.05 level ** significant at 0.01 level

<i>Scales and Items</i>	Place attachment	Solastalgia
Place attachment (One single composite item) n= 265		.49**
Future outlook Likert statements		
I am concerned that future generations will not be able to enjoy the natural environment at Courtown	.34**	.60**
There is not much of a future for me in Courtown	.1	.36**
I feel that Courtown has a positive future	.20**	-.03
Age	.04	.19**
Length of residence	.19**	.25**

4.3 Discussion

This chapter explored how solastalgia caused by environmental change is currently being experienced by a community in the southeast of Ireland. It investigated relationships between solastalgia, place attachment and place disruption, together with the association between solastalgia, place attachment and outlook for the future. Solastalgia resulting from loss of place is experienced by a large proportion of residents. Forty two percent of respondents indicated their lives had been negatively impacted by loss of the beach through impacts on recreation, meeting family, views/aesthetics, community, tourism, memories and therapeutic opportunities. Results show that solastalgia in Courtown/Riverchapel is being expressed most strongly through feelings of sadness, worry and disappointment. This is consistent with the findings of McNamara and Westoby (2011) who also indicate the importance of these emotions in the experience of solastalgia. Length of residence is the demographic variable most strongly correlated with solastalgia. In particular, it was found that those living in the area more than 20 years expressed the strongest levels of solastalgia in this sample.

Given the sampling of residents across winter and summer periods it was possible to explore seasonal variations in the experience of solastalgia. Notably, those experiencing the highest levels of solastalgia show evidence of seasonal differences in expression, with negative emotions being stronger in summer. This makes sense given the beach and associated tourism is also strongly seasonal with loss and its impact likely to be most acute in summer months. Unlike the study of McNamara and Westoby (2011) on Australia's Erub Island, there was no gendered aspect to the experience of solastalgia found for this case study. However, McNamara and Westoby (2011) did highlight uncertainty in whether experiences of solastalgia expressed in their study were more strongly due to gender or participants being elders.

The questionnaire employed survey items representing solastalgia tailored from the environmental distress scale developed by Higginbotham et al. (2006). Findings indicate the utility of these measures given the strong internal reliability of the solastalgia scale, together with the close coherence between the experience of solastalgia and respondents that indicated their lives were impacted by loss of the beach. Findings therefore support the deployment of these measures in other settings.

In line with previous research, findings show a significant positive correlation between solastalgia and place attachment, despite using different measures of place attachment (Higginbotham et al, 2006; Eisenman et al, 2015; Albrecht, 2007). Higginbotham et al (2006) stated that higher place attachment results in more intense feelings of solastalgia following disruption, results presented here concur. Despite extensive and ongoing place disruption, residents of Courtown and Riverchapel still show moderate levels of place attachment. Like solastalgia, place attachment increases with length of residence. Notably, when considering the dependence and identity components of place attachment, place dependence has a weaker expression than place identity. This may reflect adaptation among residents in their relationship with place. While some of the respondents indicate how they have adapted to the loss of the beach by undertaking recreational and other activities elsewhere, including other beaches and nearby forests. Whether place dependence has significantly shifted as the beach has disappeared or not, will be further explored using in-depth interviews with residents in future research.

Interesting differences exist in the relationships between solastalgia and place attachment with outlook for the future. Connor et al (2004) highlight the link between solastalgia and concern for the future. Solastalgia is positively correlated with a more pessimistic outlook, both for respondents themselves and for future generations. However, place attachment, even for those experiencing solastalgia, has a positive correlation with more optimistic outlooks and the statement that Courtown has a positive future. Previous studies have indicated that when highly attached individuals experience loss of place, solastalgia can lead to increased engagement in place protective behaviours (Higginbotham et al, 2006; Eisenman et al, 2015; Albrecht, 2007; Lemée et al, 2019). Follow up work through in-depth interviews will further unpack this finding.

Despite positive outlooks associated with place attachment, on-going negative changes to the case study location will likely intensify with inevitable sea level rise and possible changes in storminess associated with climate change (IPCC, 2022). Therefore, it is likely that experiences of solastalgia will become a more dominant part of resident's everyday lived experience of place. Disruption of people-place relations and associated impacts on wellbeing have a long history of study, however grief from place loss is rarely included (Cunsolo and Ellis, 2018), and while recent research shows that solastalgia can be linked to mental health problems (Rehling and Sigston, 2020). Solastalgia and place change is not only an issue related to landscape icons. This chapter has shown that solastalgia is experienced by local communities due to more mundane, chronic and slowly

unfolding issues such as coastal erosion (Connor et al, 2004; Marshall et al, 2019). Given the widespread experience of such change worldwide, together with exposure to sea level rise with climate change, it is important to further understand the impacts of solastalgia and potential interactions with place attachment in different contexts.

Finally, some limitations are noted. Critiques of quantitative approaches suggest that complex concepts such as place attachment and solastalgia cannot be explored in depth with empirical measures. However, scholars have attempted to quantify such concepts at community level and achieved meaningful results (Kaltenborn and Bjerke, 2002; Higginbotham et al, 2006; Clarke et al 2018). The results of all surveys are sensitive to the way in which questions are asked, with correct language usage important to avoid biased wording which can promote a particular perspective (Salant and Dillman, 1994). To avoid this issue, the researcher spent time in the community talking with residents about the beach and listening to how they described changes to their environment to help formulate the survey. Use of the survey developed for this thesis beyond this case study should be sensitive to the language used and calibrate questions to local context.

4.4 Conclusion

Place loss has profound impacts on individual and community wellbeing and can influence ability to cope with further environmental change (Fresque-Baxter and Armitage, 2012). Using the gradual disappearance of a beach in Courtown/Riverchapel, Ireland as a case study, this chapter analysed survey results to assess links between the impacts of slow and ongoing place loss, place attachment, solastalgia and outlook for the future in a coastal community. Ample evidence has been found showing experiences of solastalgia in the community, with emotions of sadness, worry and disappointment most strongly expressed. Solastalgia was most strongly correlated with length of residence in the community and expression strongest for those who have lived in Courtown/Riverchapel for more than 20 years. The chapter found that place attachment and the experience of solastalgia are strongly positively correlated. Place attachment was most weakly expressed through place dependence, suggesting ongoing adaptation of relationships with place in the community. Moreover, solastalgia was strongly correlated with a negative outlook for the future, both for individuals and future generations. Residents who experienced the highest levels of solastalgia also show seasonal differences in expression, with solastalgia being strongest in summer, when impacts from loss of the beach are likely most acute. Findings demonstrate the complexity of emotional

responses to environmental loss and indicate that more in-depth qualitative methods may be needed to parse these complexities. The approach employed in this chapter and findings are also likely to be of interest beyond this case study. Place disruption due to slow, creeping coastal erosion is widely experienced globally. Inevitable sea level rise and enhanced coastal erosion associated with anthropogenic climate change, means that understanding and addressing solastalgia will be critical to underpin successful adaptation.

Chapter 5 will explore solastalgia following undesirable landscape changes (e.g., coastal erosion, rapid development), complex place relationships and future perceptions of place in more depth at an individual scale. This chapter builds on the findings of Chapter 4 (Phillips and Murphy, 2021) which assessed these experiences at a community level. Perceptions of communication, participation, and consultation of locals in decision-making processes were also analysed. The chapter employed qualitative methods such as photo-elicitation and walking interviews.

5 The impacts of and responses to place loss in a coastal community in Ireland

5.1 Introduction

Undesirable place change often results in adverse emotional responses and experiences of place disruption (Albrecht, 2007; Silver and Grek-Martin, 2015; Phillips and Murphy, 2021). Such experiences are becoming increasingly common in coastal locations with climate change and associated sea level rise, intensifying storms, erosion and flooding (Solecki and Friedman, 2020). Exposure to such risks is also expected to increase. In Ireland alone circa 2 million people are expected to live within 5km of the coast by 2050 (Department of Housing, Local Government and Heritage, 2020). Sea level rise and coastal erosion in particular are slow onset impacts, incrementally changing everyday routines and environments (Giddens, 1979, Solecki and Friedman, 2020).

The concept of ‘slow violence’ describes slow-onset environmental changes that impact people gradually over time (Nixon, 2011; Davies, 2019). Davies (2019) highlights how gradual place change impacts people’s everyday lives causing suffering, while others highlight how unfolding changes challenge sense of place, local knowledge, social cohesion, and place identity; impacts which are hard to quantify and often ignored in impact assessments and adaptation policies (Connor et al 2004; Solecki and Friedman, 2020). In addition to direct impacts, adaptation actions themselves can be distressing if local contexts of place are not adequately considered (Solecki and Friedman, 2020). Clarke et al (2018) showed that coastal communities can perceive flood defences as negative place change impacting people-place relations. Batel and Devine-Wright (2013) also discussed how local communities can oppose the construction of renewable energy infrastructure in places they live even though it is crucial for tackling climate change. Adaptation to climate change itself can cause transformations of place that affect people place relations (Batel and Devine-Wright, 2013; Clarke et al, 2018), yet the ways in which people interpret and respond to place disruptions remain poorly understood (Solecki and Friedman, 2020).

Scholars have shown that loss of valued places can cause strong emotional reactions and feelings of distress, grief, anxiety, hopelessness and sadness for some (Connor et al, 2004; Higginbotham et al, 2007; Marshall, 2012; Warsini et al, 2014). Macy (1995) discussed the experience of these emotions by people globally stemming from environmental

change. Marshall et al (2012) point to the rise in an emotional reaction towards ecological losses the authors call a “global mourning”, while Albrecht (2005) defined the concept of solastalgia to describe the ‘psychological desolation’ experienced by residents of the Upper Hunter valley, Australia because of undesirable change. Solastalgia manifests as a deterioration of one's sense of place, leading to an inability to derive solace from one's home following undesirable transformations (Albrecht, 2020). Benham (2016) details how residents of Gladstone, near the southern Great Barrier Reef, experienced loss from the erosion of fishing and recreation opportunities with loss of the reef. McNamara and Westoby (2011) discuss how environmental changes to Australia’s Erub Island in the Torres Strait have had negative emotional and psychological impacts on indigenous people, characterised by worry, sadness, and distress. They highlight that such feelings are likely to be experienced by many globally as they are impacted by climate change.

Places hold personal connections, memories, identity and often underpin a sense of community (Agnew 1987; Cresswell, 2014). They constantly change as they are made, maintained and contested, while particular interests and social power relations are embedded within them (Rose, 1994; Massey, 1995; Cresswell, 2014). Aspects of and interactions with place foster place attachment, with place identity and dependence being two important components described by scholars (e.g., Kaltenborn and Bjerke, 2002; Clarke et al, 2018). Place attachment is often heightened in places that offer recreational opportunities, hold personal memories and natural beauty and has been shown to be moderated by length of residence, cultural values, familiarity, sense of belonging, emotions and beliefs situated in environmental settings (Proshansky et al, 1983; Korpela, 1989; Fullilove, 1996; Hess, 2008; Silver and Grek-Martin, 2015; Beery and Jönsson, 2017;). For others, sense of place may be more about social connections, memories and cultural practices which are not necessarily entrenched in one particular location, becoming mobile when faced with threats to place (Farbotko, 2010). In many cases people gain familiarity with place, begin to assign meaning to it and form intimate bonds that create a sense of attachment (Tuan, 1977; Hess, 2008). People-place relationships and interactions are understood to have important influences on psychological wellbeing, influencing how people navigate, cope with and perceive undesirable place change (Hess, 2008; Massey, 2010; Fresque-Baxter and Armitage, 2012; Creswell, 2014; Bornioli et al 2018; Solecki and Friedman, 2020).

Despite this, adaptation often focuses on economic and material losses with many scholars calling for co-produced, place specific strategies (Marshall, 2012; Barnett et al,

2016). Moreover, people are often denied agency in adaptation planning, with some indicating that increasing community engagement with adaptation may help them come to terms with place loss and/or disruption (Marshall, 2012; Barnett et al, 2016). Work by many scholars shows that often the most at-risk groups are disproportionately impacted by undesirable place change as a result of uneven power dynamics and politics that determine who is prioritised and who is made vulnerable (Farbotko, 2010; Farbotko and Lazrus, 2012; Marshall, 2012; Barnett, 2016; Westman and Joly, 2019). Moreover, climate change impacts and adaptation do not happen in a vacuum, but rather unfold within existing governance and power structures, with adaptation processes interacting with other pressures and changes faced by communities (Adger et al, 2013; Marshal et al, 2014; Solecki and Friedman, 2020; Lambert et al, 2021). Too often, scholarship presents adaptation as a process that will unfold independent of other societal pressures.

Building upon a previous empirical study that sought to measure the impact of loss of place on the community of Courtown in the south-east of Ireland through the gradual disappearance of their beach, we use qualitative methods with selected individuals within the community to further interrogate the impacts of and responses to place loss. In particular, we investigate i) the experiences and emotional challenges of place loss; ii) the impacts that slow-onset environmental changes and adaptive actions have on people's place relationships; iii) how other changes confronted by the community impact on adaptive processes and lastly; iv) how individuals are re-imagining the future of place following disruption.

5.2 Results.

5.2.1 Impacts of place loss due to coastal erosion

Photo-elicitation allowed participants to make comparisons between Courtown harbour and beach in the past and present. We used photographs as a conversation aid, such as the postcard provided by one interviewee showing an expansive beach and prosperous Courtown (See Plate 5.1).

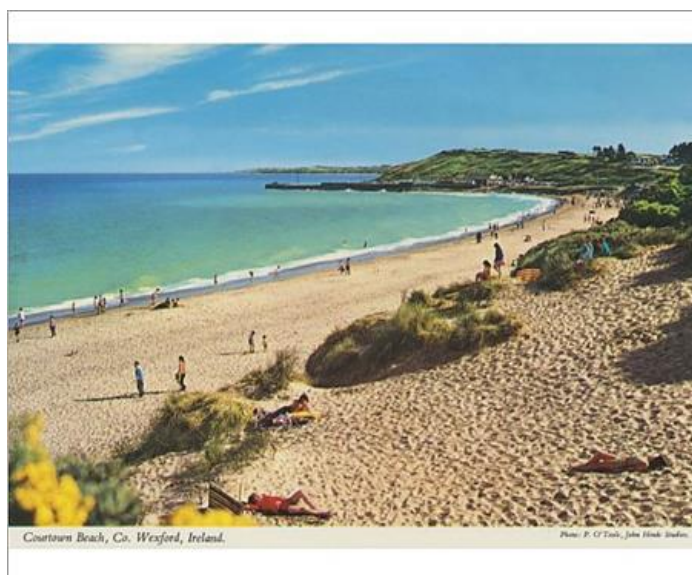


Plate 5.1 P. O’Toole and John Hinde postcard showing an expansive beach in the past. Source: John Hinde Limtex, County Dublin, Ireland.

Notably, participants discussed loss of the beach within the context of multiple complex changes the community has undergone in recent decades, including environmental, developmental, social, and economic changes resulting in the loss of its “*seaside village*” identity that some participants said has “*completely changed*”. Disappearance of the beach at Courtown has been “shocking” for some interviewees. Coastal erosion has transformed the area from a thriving tourist destination in the 1970s/80s with an expansive beach, to a “*shadow of its former self*” today, characterised as “*a sliver of sand with grey and stark rocks*”. Some interviewees gave their account of the timeframe of these changes:

“The biggest change would have been between the mid-70s to mid-80s. That’s when it [the beach] really starts to go. And then really by the 90s it was pretty much gone ... I don’t think there was anything to speak of by the end of the 90s and definitely not after 2000...just little stamps of sand.”

The experience of losing the beach has been painful for many and has impacted livelihoods, particularly for those who had small family businesses that relied on the beach for tourism, and childhood memories of the beach or connections to their identity. Such loss has also limited some interviewees’ ability to meet with family and friends as the beach was a frequent meeting spot for walks. Due to the loss of the beach some interviewee’s family members no longer wish to meet at the beach or walk along it, while

some people feel there isn't enough space to meet up with family. Loss of the beach has also impacted recreational activities and created an unfamiliarity with the area. One interviewee highlighted the impact on business while another discussed the impact on recreation:

“It [loss of the beach] affects business. If you talk to any of the businesses one of the biggest things people remember is the beach here in their youth...and they are wondering where the beach is. Who took the beach?”

“It [loss of the beach] would impact my recreation by comparison to how it was when I was young. I have hugely happy memories of being on the beach and I was always very involved in outdoor pursuits...and now you're trying to find a spot where there's no people...because there isn't room.”

All interviewees discussed the stark environmental changes between the photographs shown to them (Plate 3.2) that elicited feelings of loss. One interviewee gave their account of the environmental changes that have occurred over time saying the installation of rock armour marked the end for them:

“I remember when the rock armour arrived. Nobody liked it...It just looked grey and stark. It kind of signified the end of the beach.”

Due to loss of the beach the area has lost its blue flag status and subsequently the lifeguard. Another interviewee discussed this while comparing past and present photographs (See Plate 3.2) of the beach.

“There's no beach there at all anymore. The beach is just completely gone. There's not even a meter of beach, the sea just breaks onto the rocks, there's no beach anymore. And we've lost the blue flag as well which makes things even worse... because of that we've lost the lifeguard”

According to interviewees the beach is the main issue for Courtown's survival and losing it has led to its “*stagnation*”. This loss has impacted livelihoods, memories and created many emotional and physical challenges for the community.

The rock armour that was installed on the beach is heavily disliked by many who “*don't go down to the rocks.*” Along with inadequate planning and maintenance, interviewees highlighted that not enough is being done to protect Courtown. Planning issues and lack of local consultation are blamed for enhanced erosion. Walking by the rocks provided

one interviewee the opportunity to use them as a visual aid to discuss what he believed was a significant cause for the loss of the beach:

“The beach was lost because of an engineer, a roads engineer down here many years ago when I was a teenager. He put rocks where they shouldn’t put rocks, and it lost the beach. The old fishermen told him at the time but he wouldn’t listen, [the fishermen] said he was going to destroy the beach.”

Interviewees worry that valued aspects of Courtown are vulnerable to loss, while past and anticipated impacts to place cause emotional challenges. All interviews expressed sadness for the loss of the beach and shock towards developments that have negatively transformed Courtown; however, some expressed these emotions very deeply. While discussing photographs of the expansive beach of the past one interviewee expressed sadness that his daughter won’t experience the same experiences that he did growing up and that she won’t be able to share the same memories of the place:

“I grew up here and...my daughter is going to grow up here and its things that I remember that I'd love to share with her, or I'd love for her to do or see that I had as a child. When I think of Courtown, I think of my childhood, because this is where I grew up, and I just want the same thing for her... It just is deeply saddening that my child is going to grow up in a town that is renowned for its beach, and there isn't going to be one.”

This person is disappointed in how the beach looks now and deeply saddened for its loss which they feel every time they visit. During an interview following a walk through Courtown harbour, the interviewee compared pictures of the beach in the past to its present state. They discussed how the transformation has brought about a lower frequency of visitation for them and undermined their attachment to place:

“I feel disappointment, sadness, like every day I go down there. I find myself wanting to go down there less because it just makes me so angry and just so annoyed that it is the way it is. There is nothing that you can really do. It's just so deeply saddening to see how far it [the beach] has turned from the way it used to be.”

Photographs of the beach originally elicited happy memories which were “overshadowed” by sadness from loss. This feeling was shared by two interviewees. This loss has impacted happy memories and emotions. It has created feelings of unfamiliarity as the place has changed so much, along with feelings of worry, concern and sadness. While standing next to the rock armour during a walking interview one interviewee

expressed such strong emotions for the beaches condition that it makes them feel physically sick:

“As someone who grew up in the area, the woods was my play area, down here was my play area [the beach]. To, to see it today would make you physically sick.”

Loss of the beach and the areas vulnerability has created deeply felt anxiety for some, with one interviewee having a “reoccurring nightmare” about Courtown being flooded by large waves. As they describe it:

“[In the nightmare] I'm standing on the steps going down to the beach and there's a massive 40-foot wave coming towards me. I've been having this dream...maybe once every year or two, since I can remember.”

Visible disgust and shock were expressed by interviewees when shown pictures of the beach during photo-elicitation interviews. One interviewee noted while discussing a current picture of the beach that the adaptation actions in the form of rock armour have caused them distress:

“I think it's distressing [the rock armour] because I think a lot of the work done in Courtown was actually detrimental to the beach. I don't think it benefited the beach. There were better ways to try and maintain the beach.”

Some interviewees express distress, while others show anger towards the present-day condition of the beach and Courtown. The emotions being felt by interviewees such as sadness, distress, disgust, anger, physical sickness and anxiety are all emotions attributed to solastalgia (McNamara and Westoby, 2011). Some interviewees feel powerless to change the outcome of processes occurring presenting emotional challenges and feelings of powerlessness. Strong emotional responses to coastal protections (rock armour) highlight issues regarding distress and disruption that adaptation actions themselves can cause.

The beach has also been a big part of all interviewees' identity, mostly in the past before it changed. One interviewee said it was part of who they were:

“The beach is part of my own identity. It's part and parcel of who I am as I grew up. When I describe to anyone where I grew up, the beach would be a big part of who I am.”

However, one person indicated during their photo-elicitation interview, that they were more attached to the beach in the past when they were younger. Now that it's gone their attachment to it has weakened. This person said:

“I don't see the appeal anymore...it's gotten to the point where there's no joy left in it. When I was younger I identified strongly with it [the beach]. I'm from Courtown, I grew up beside the sea and it was great but I just don't feel an attachment to it anymore. I feel like I've lost a certain amount of attachment towards the beach because of the fact that there isn't one anymore.”

Another interviewee expresses their attachment to the beach; however, it is connected to the memory of how it was in the past:

“I am very much attached to it. Loved it. Loved having it there, you know? It is a big loss... to everyone, not just locals, to all the people that like to come out for a walk on the beach and yeah, it's a big, big loss.”

5.2.2 Impacts of socio-economic change and new developments

Changes to place from coastal erosion have deeply impacted the community emotionally resulting in experiences of solastalgia, however experiences of loss have been compounded by policy decisions and socio-economic changes. The rapid expansion of Courtown and Riverchapel through residential development has resulted in a dramatic change to Courtown and Riverchapel that was badly communicated to locals (Mottiar and Quinn, 2003, Irish Times, 2000). Such place change has coincided with loss of the beach and further impacted place identity, intensifying existing experiences of loss and solastalgia. A common sentiment among respondents was how community perspectives have been ignored by decision makers. One interviewee highlighted the inadequate development and lack of support in decision making:

“They've [local and national government] evidenced in the past that they don't particularly have an interest in proper development. There was just insanity in building, and hundreds of houses were built without any support in the area, no schools, no shops...there was nothing there. Nothing was there to support the people who are already trying to survive.”

Another interviewee discussed similar points:

“We had 54 housing estates built in a parish during the building boom. That is only starting to settle now, many years later. The school up here is bursting at the seams I don’t know how they’re going to reopen that school [post pandemic restrictions] because they are like sardines in it.”

Following rapid development of housing estates, the population increased substantially in the early 2000s with the influx of new residents dramatically changing the social structure of the area.

“A lot of the houses were built in Riverchapel. I think it was over 1000 houses that were built. In a very short space of time that created, almost like a new dimension to Courtown and all of a sudden we have this big residential side to it, which we didn't have before. Before that we were a small community.”

Some interviewees feel that the influx of new residents has caused a “*chasm*” between what longer-term residents and newer residents want for the area. They feel that newer residents do not view the same aspects of place as being valuable and are not emotionally impacted to same degree by loss of the beach. One person said:

“We had a massive influx of people moving out of Dublin, down to Wexford...we gained a whole new community. But this community now have nothing to do with tourism as a livelihood. So, there's a complete disconnect between Courtown as a seaside resort, and a source of income and then this new group of residents who live here.”

The structural and social changes occurred while the beach was disappearing, combined with a lack of facilities and economic decline.

“it's not just losing the beach, there's two big things that happened in Courtown at once, losing the beach was one, but the second was the explosion of development in the area, and all the houses that were built in Riverchapel. Once that tax incentive ran its course, a lot of those properties went up for sale.”

Courtown and Riverchapel’s main economic functions include leisure, recreation, and tourism with most facilities being centred on Courtown harbour. Interviewees strongly attributed economic decline to loss of the beach. A combination of transformations of place and policies that ran counter to local needs have changed Courtown from a thriving seaside resort into a “*mass of countless houses that were built without facilities*” with “*grey and stark*” rock armour instead of the expansive beach it once had. It has been

compounded by policies that expanded residential development in the area and weakened the voice of residents that have been there for generations.

Interviewees highlighted limited communication, participation, representation and consultation regarding important local decisions (e.g., installation of the rock armour, pier works). As one interviewee noted:

“It’s a problem in more than Courtown, if the government actually listened to the people who live in the towns, and what their actual problems are and what their experience is...their experience would tell them how to fix or how to even go about starting to fix it [Loss of the beach].”

This interviewee also pointed out that local knowledge is not consulted enough:

“People have been dealing with these issues. [People would say] I’ve been thinking about this problem for 30 years. Who’ve been fishing in Courtown and who’ve been sailing in Courtown for...the better part of their life...Ask the locals, what they would actually do to fix it and start from that.”

Interviewees feel that greater communication and community involvement is needed, not just for important stakeholders *“with the deepest pockets”*, but for the entire community. Feelings that local people are *“not listened to at all”* and their needs have not been addressed have emerged. Local consultation regarding the rock armour installation was inadequate, propagating a sense of powerlessness amongst some interviewees. One interviewee said decision makers are *“going to go ahead and do it anyway”*. While another highlighted that *“they [engineers and consultants] wouldn’t listen to the local people.”*

Decisions have been made in the area that resulted in drastic environmental and social changes without consultation with locals. One interviewee highlighted their frustration towards the lack of inclusion:

“We’re [Local people] not listened to at all at all. Everything is taken out of the local decision-making context. For one reason or another the engineers feel that they know more about the area than the locals and that’s the fundamental problem.”

They also expressed diminished trust in the local council and government to deliver on promises creating *“frustration”*. They also believe the council is *“disengaged”* from the community. Some feel abandoned with *“no voice at all”* in government as one interviewee said:

“People wonder you know, why aren’t we doing something about it. We can voice as much as we like but unfortunately our voices are not being heard by council, councillors or otherwise.”

Interviews show that there are many problems surrounding communication and consultation in decision making processes for the area that appear to run counter to the community’s needs.

5.2.3 Behavioural responses to change - adaptation and coping responses

Despite loss of the beach, the sea itself still holds a prominent place in some interviewee’s sense of identity which was evident in the pictures they chose, and routes selected for walking interviews. People recall memories of eating *“ice cream by the sea”* where they would *“go down and get an ice cream and walk along the sea front”*. Access to the sea is just as important as the beach for some, and if they can see it and *“dip a toe in the water”* that appears to help them come to terms with negative emotions associated with losing the beach. One interviewee discussed this feeling:

“I’m happy if I can just see the sea or walk out a little bit and just stand there for a few minutes and then carry on with the walk. If you didn’t have that opportunity yeah you would miss that, because you feel like you can breathe.”

However, since loss of the beach, dependence on it has changed for most interviewees. Some prefer to visit other beaches even if they must travel further to acquire experiences Courtown beach once provided. Others avoid the beach completely now. One person said:

“I’d be much less likely to go down to the beach. Having dogs, I used to walk them on the beach but now I wouldn’t really go down there. A trip to the Courtown would always have been a walk to the beach but it’s not anymore, I don’t go down to the beach anymore, it’s just rocks.”

Without the beach, one interviewee feels there is no reason to visit Courtown as it has lost its main attraction. The area isn’t appealing to them anymore. While another said, *“why would you come to Courtown?”* Those who are experiencing emotional challenges due to place loss *“don’t go down to the beach anymore”*, they *“don’t go down to the rocks”*. These expressions show a changing relationship with place following loss of the beach. Their dependence on the area is lowered because Courtown/Riverchapel no longer meet many residents’ needs, with lack of facilities/services and a severely eroded beach. One interviewee expressed a desire to leave Courtown:

“If I won money. I wouldn't even think twice about moving out of it [Courtown]. There's nothing here for me anymore. I've got family that live here but other than that I wouldn't even think twice about moving.”

Some participants express little or no change in feelings towards the beach or Courtown since the beach has disappeared. They tend to be involved in decision-making or have focused their attachment to the forest. The sea is ingrained in the identity of Courtown and people's attachment to it. Some interviewees discussed how they find themselves ‘gravitating’ towards the forest more:

“I find myself gravitating more towards the woods again...it's kind of where the woods breaks on to the sea. That stuff hasn't changed so I find myself gravitating to those areas that were always the same.”

“It [the woods] was also another amenity that was underutilized, underappreciated and taken for granted. Now that the beach has gone, I think people are realizing how important the woods are and how unique it is to have woodlands, so near to the coast. It was a bit of a no brainer to refocus on to the woods which is adjacent to the beach so people still feel they're in the areas they like. It's just a matter of being in the woods now instead of on the sand.”

The forest is being utilised more now as it offers opportunities and interactions with place (e.g., recreation, social gatherings, view of the sea) that the beach once did. Some interviewees appear to be re-orientating their sense of place as a response to place change.

However, some hold concerns about future access to the sea and access to the forest as new development plans progress. The Courtown woods are in the process of being sold to private investors and some interviewees are concerned for its future. This process has been carried out without consulting the community, leading to protests and petitions in an attempt to stop the woods being sold. This form of proposed/anticipated risk associated with future development of the area was feared by some interviewees. These actions are likely to further undermine place identity that are just beginning to recover from loss of the beach and exacerbate already present emotional challenges.

Hope that the future will be more positive is shared by most interviewees. One interviewee expressed the sentiment that hope for a better future is all they have left now:

“There is hope but I have kind of come to accept that it is the way it is now. I have to hope, because otherwise my whole memory of what Courtown used to be I feel like is gone

now. I feel like it's sullied my memory of Courtown and if I can I want to at least hope that my child can have the same positive experiences of Courtown that I did."

Developments have been planned to re-vitalise the area and interviewees expressed hope that the *"place will be re-imagined"*. Some interviewees hold a positive outlook for the future for this reason. They view Courtown as having much potential and untapped resources that could re-vitalise and help re-imagine place:

"I think this is one of those situations where we need to come together and re-imagine the place. I still think there's an awful lot going for it. There is a whole untapped resource as far as the woods is concerned. Definitely less focus on the beach, but more focus on marine ecology and education and promotion about climate change, because, as somebody said Courtown is the poster seaside resort of what climate change has done. So why not use that as an educational tool for both residents and for visitors to come."

Some interviewees expressed a negative view of Courtown and its future either by being *"afraid that there isn't going to be a beach"* at all or *"worry that future development will strip"* away what is left of Courtown's identity. The forest is now being threatened by the encroaching sea, changes in ownership and future developments (See Plate 5.2).



Plate 5.2. Left- Image 1 photograph showing the erosion of the beach and tree line near Courtown woods. Right- Image 2 signs protesting the sale of Courtown woods Sources: image 1 provided by interviewee. Image 2 Protect Courtown Woods Community organisation.

Feelings exist that valued aspects of place are now vulnerable as proposed developments lead to anticipated risks and create emotional challenges. One interviewee during their photo-elicitation interview expressed worry that the forest is being impacted by erosion as the tree line has been pushed back:

“That’s a really good picture to show the erosion [Plate 5.2], and that would have been our tree line, like literally 10 years before that and you can see the trees have fallen over in it. It was shocking the rawness of the erosion there and that’s got a lot worse actually since and just a lot more trees have fallen down.”

As well as re-imagining Courtown, some interviewees wish to increase community cohesion and bridge the gaps between the old and new communities to collectively solve Courtown's problems:

“We are actively involved in planning for the future now. So we literally have to get on with it. But people’s perception of it [Courtown] has changed because of the lack of the beach. We nearly have to read from both areas [parts of the community] as a base for something else. I think it’s nearly even more important that people have a family day by the sea as opposed to on a beach.”

This person also highlighted what they think would help re-imagine Courtown without a beach centred on accessible spaces by the sea for families:

“So there’s a focus on creating spaces and areas where you can sit and look at the sea, as opposed to being on the beach. That’s one of the great things about Courtown, it’s so accessible. I think it’s one of the most accessible places to have a day by the sea on the east coast.”

However, even though interviewees are willing to see Courtown re-imagined, some have expressed worry over who will benefit from future developments and if locals will be left out. One interviewee is concerned that developments might restrict access for residents and exacerbate existing problems, showing that anticipated changes to place are also causing worry:

“My concern would be that a large amount of sea front will be restricted to a sailing club or private enterprises, and that the local people or the people that now live in the area would lose a massive amount of access to the seafront. That would be a major concern for me.”

Despite these concerns, interviewees wish to move on from the loss of the beach and re-imagine Courtown. They are showing a willingness to take ownership of the loss, turning it into something more positive for the community and future generations despite emotional challenges. One interviewee discussed the positive aspects of future developments:

“the only thing that can improve Courtown is the likes of the new hotel which will bring so many jobs to Courtown, the likes of a market house which will bring jobs to Courtown the Marina...which would also bring more jobs. Developments would bring more people, would put Courtown on the map as...a destination for sailing.”

However, when asked what could be done to improve issues in Courtown, interviewees talked about the need for increased communication *“just to have somewhere, where everything [local information] is in one good place”*, local participation to *“make people feel that they've been heard”* in decision making and increased *“public consultation”*. These people are willing to reimagine the area and want to take ownership of the loss they have experienced in order to create a better future for themselves, the community and future generations. They still worry that the area is vulnerable to further transformations that will negatively impact the community, similar to their experiences in the past.

5.3 Discussion

We explored individual experiences of place loss, the impact adaptive actions have on place relationships and how individuals re-imagine the future of place following disruption. Using photo-elicitation and walking interviews, we found that interviewees express emotions associated with solastalgia (Connor et al., 2004; McNamara and Westoby, 2011), including sadness, anger, anxiety, worry, distress and powerlessness due to the loss of the beach, corroborating the findings of Phillips and Murphy (2021). One interviewee discussed feelings of physical sickness at the current state of the beach, while others expressed anxiety about the continued vulnerability of the area and feelings of deep sadness every time, they visit the beach. These experiences are like those reported by Albrecht et al. (2007) who showed that people living in the upper Hunter valley Australia expressed a physical sickness due to environmental degradation. Other interviewees highlighted a sense of unfamiliarity with place between the past and present, similar to

the sense of “*home sicknesses*” described by McNamara and Westoby (2011) regarding undesirable environmental changes in the Erub straits.

When adaptation options or actions run counter to values, beliefs, place attachment or interactions with place, individuals may view them as undesirable or barriers to adaptation can emerge (Moser and Ekstrom, 2010; Clarke et al, 2018). As the beach in Courtown eroded, rock armour was installed. This rock armour is described as “*stark*” by many, seen as amplifying the impact of place loss and signifying the end of the beach for some interviewees. The installation of rock armour further undermined interactions with place, community, and place attachment for some. As shown by Clarke et al, (2018), when adaptation actions transform place they can undermine community wellbeing, be resisted and amplify stressors experienced by coastal communities (Solecki and Friedman, 2020). Adaptation actions that reinforce disruptions to place have been shown by some scholars to challenge place attachment and magnify impacts of loss creating limitations to adapt to future change (Cheng and Chou, 2015; Adger, 2016; Clarke et al, 2018). In the case of Courtown interviews show that adaptation actions in response to place loss have caused further harm for some, amplifying sense of loss and creating distress.

Transformation of place does not occur in isolation of socio-economic or political factors. Evidence presented in this paper highlights that for many respondent’s loss of the beach is intertwined with and amplified by other place changes, primarily due to a lack of voice in decision making. The experience of loss in Courtown has been amplified by planning and policies associated with large scale development. Policies such as the “*Renewal Scheme for Traditional Seaside Resorts*” encouraged intense residential development and social change, altering the structure and values of the community. Undesirable place change brought about by large scale developments, combined with environmental loss (coastal erosion) have challenged interviewee’s interactions with and connections to place and community. Interviewees expressed greater attachment to the beach in the past, compared to today. As a result of undesirable place change, some interviewees have lower frequency of visitation to the beach which Halpenny (2006) states is a sign of reduced attachment while another interviewee stated they are willing to leave. Slow-onset or incremental shifts such as these can have long lasting socio-economic impacts, altering community makeup, causing stress and undermining sense of place (Solecki and Friedman, 2020)

Interviews indicate weak public consultation and participation with locals in decision-making processes. Some feel powerless to stop undesirable place change. Lack of consultation and participation in decision-making can undermine place attachment, self-efficacy and sense of control, whereas increasing participation has been shown to reduce experiences of place disruption and nurture positive place relationships (Clarke et al, 2016; Anton and Lawrence, 2016; Von Wirth et al, 2016). In line with other studies, our findings indicate that weak consultation combined with environmental changes have exacerbated sense of loss (Connor et al, 2004; Higginbotham et al, 2007; Marshall, 2012; Warsini et al, 2014). Interviewees want local knowledge and solutions to be consulted, with greater communication and access to information on local decisions, which previous and current developments in Courtown neglected to include. This lack of engagement seems to be repeating, as evident through local tensions surrounding the future of Courtown woods. Our suggestion for policy makers and organisations working with communities is guided by interviewees' desire for a "ground-up approach" to decision-making. Blader and Tyler (2003) discussed how people's views of authority are influenced by the quality of decision making and treatment they receive during decision making procedures. The way people are treated during decision making influences how they evaluate the fairness of those procedures (Blader and Tyler, 2003). Our interviewees have highlighted how they think organisations and policy makers should treat them during decision making. Procedures must incorporate greater consideration of local knowledge and co-development of policies from the outset. Indeed, lack of engagement on local development issues seems to amplify and prolong the sense of loss and lack of control that residents feel in response to loss of the beach. Climate adaptation literature also suggests that successful adaptation in valued places tends to be co-produced, place specific, and promotes individual and community agency (Marshall, 2012; Barnett, 2016; Malloy and Ashcraft, 2020; Westoby et al, 2021). Adaptation to place loss in Courtown/Riverchapel has failed to adequately include the community and has caused distress for some. We suggest that climate change adaptation actions and policies would garner more support if authorities and experts increased inclusion and worked to maintain the trust of locals in decision making.

Despite the challenges that interviewees have faced, pessimistic outlooks for the future are not shared by all. Community groups such as Courtown Community Council are actively working on new projects to re-vitalise the area, re-imagine place and increase community cohesion. This includes focus on the forest, expanding walking trails,

promoting sea views and access. These actions are shifting the community's hopeful intentions for the future from a passive (waiting for solutions) to an active (creating solutions) state (Hayes et al, 2018). Some see the process of re-imagining place for a better future as the only way forward. However, even for these people the recent liquidation of Waterworld Leisure Centre, the future ownership of Courtown woods and stalled marina proposals are undermining community efforts to cope with loss of the beach and their ability to re-imagine place. Moreover, beyond issues of ownership, Courtown woods are vulnerable to ongoing erosion with the tree line receding. As Solecki and Friedman (2020) discussed, perception of on-going risks and future anticipated risks can have significant impacts on communities' everyday lives. For some, experiences of worry are reinforced by plans to construct a marina, raising concerns over ownership of the sea front and access for locals.

Finally, we note some limitations and reflections on our methods. Our findings are based on a small sample size; however, this research follows a larger quantitative study with 271 respondents from the area conducted by Phillips and Murphy (2021). A small sample size combined with photo-elicitation and walking interviews allowed time to build adequate trust between the researcher and participants and acquire detailed and rich experiences. Indeed, the combination of photo elicitation and walking interviews provided insights that traditional interviews may not as they include sensory stimuli that can trigger unique responses (Lombard, 2013; Briggs et al, 2014). We suggest that the combination of such methods may be beneficial for other research investigating responses to place loss. Social distancing and restrictions on movement during the Covid-19 pandemic made conducting all interviews in person impossible, requiring photo-elicitation interviews to be conducted online and some adjustments to the roll-out of walking interviews. These necessary adjustments didn't result in loss of integrity but did hamper ability to better observe sensory reactions.

5.4 Conclusion

Place loss due to coastal erosion can foster significant emotional impacts for affected communities. Using the case study of loss of a beach in Courtown, Co. Wexford, Ireland we show how feelings associated with solastalgia can emerge for individuals within the community, confirming findings of previous research on solastalgia and place loss for residents of Courtown (Phillips and Murphy, 2021). Importantly, we also find that adaptation actions themselves, in this case the installation of rock armour, may also be

perceived as undesirable place change, increasing stress and feelings of loss for communities. Weak consultation and lack of opportunities for participation in local decision-making have exacerbated experiences of loss, creating a sense of powerlessness among our interviewees, who see the same lack of engagement in decision making on issues ranging from loss of the beach to local development. However, despite these challenges, some interviewees are actively working to re-vitalise and re-imagine place. This anatomy of the impact of place loss on the community of Courtown will be of interest in other contexts, highlighting the importance of public engagement and people-place relationships in decision making on adaptation planning in response to place loss.

Building on this work, chapter 6 is concerned with perceptions and attitudes expressed by the community towards governance, local development, decision-making processes and how governance is related to solastalgia and place attachment. It also includes individual statements regarding these topics from five individuals. Chapter 6 aims to explore themes of solastalgia, trust in governance, communication, and inclusion in decision-making across multiple developments in the community. It will employ quantitative methods such as survey analysis, interviews from photo-elicitation and walking interviews as well as digital sources discussed in chapter 3.

6 The relationships between solastalgia and attitudes towards governance and decision-making processes.

6.1 Introduction

Chapter 4 found that almost half of residents surveyed experienced strong solastalgia, especially those with length of residence longer than 20 years (Phillips and Murphy, 2021). Findings showed that solastalgia and place attachment are positively correlated. While people whose lives are impacted by environmental change express stronger place attachment and solastalgia. Despite experiencing solastalgia, those with high place attachment expressed moderate outlooks for the future. Chapter 5 showed deep sadness exists in the community from loss of the beach and undesirable landscape transformations. Some participants expressed strong solastalgia emotions, impacts to wellbeing and negative place perceptions. Findings confirmed that despite solastalgia emotions being experienced strongly by many, participants are re-focusing their attachments to unchanged aspects of place (e.g., woods) and re-imagining place. However, participation, communication and consultation in decision-making was found to be poor. Chapter 5 showed that policy, developments, and adaptation actions can act as confounding factors exacerbating existing solastalgia. The chapter surmised that “*re-focusing place attachment, increasing local participation, communication and consultation in decision-making processes*” (Phillips et al, 2022) will help communities come to terms with solastalgia.

6.1.1 Undesirable landscape transformation and development plans in Courtown and Riverchapel

Interviews with five residents of Courtown and Riverchapel (See Chapter 5), document the undesirable landscape changes that have occurred. Work presented in Chapter 5 highlighted that there are more undesirable place changes besides loss of the beach that have impacted the community. Some undesirable transformations have been due to inadequate planning and local decision-making that failed to adequately consult or communicate with locals. For this reason, it is important to explore the impacts of multiple developments on the community. The “Renewal Scheme for Traditional Seaside Resorts” a highly criticised scheme, introduced in 1995 (Phillips and Murphy, 2021), resulted in rapid development of residential buildings in Courtown and Riverchapel. It

aimed to renew/update tourist amenities in seaside resorts that had lost out to holiday packages in sun destinations abroad (Oireachtas, 1995; WCC, 2014). The scheme intended to allow tax breaks for refurbishing and constructing tourism related buildings such as hotels, restaurants, and holiday cottages (Chartered Accountants Ireland, 1997). It allowed for the construction of holiday homes and offered tax incentives for short-term letting resulting in a boom of holiday home construction between 1995 and 2006 for Courtown (Department of Tourism, Sport and Recreation, 1999; Norris et al, 2008). This caused an over development of houses that were left vacant, resulting in housing “wastelands” in seaside villages included in the scheme (Independent, 2000; Norris et al, 2008). In Courtown 1,500 holiday homes were constructed in the space of 18 months (Courtown revival, 2021). However, the local economy did not experience the same level of growth with 26% of Courtown’s population being unemployed, having some of the highest unemployment rates in County Wexford (Meredith, 2006; WCC, 2018).

In Courtown this coincided with bad coastal management, undermined tourism and resulted in forest clearance for holiday home development (Mottiar and Quinn, 2003; Phillips et al, 2022). During the period 1998-2000 there were extensive coastal protection works carried out across County Wexford, including Courtown which consisted of rock revetments (Phillips and Murphy, 2021). The rocks at Courtown now extend for around 750m with some property owners placing rock armour to protect their properties and delay erosion (WCC, 2015). Residents and business owners have been critical of the installment of rock armor as well as lack of consultation and communication regarding its installation (Gorey Guardian, 2020; Phillips et al, 2022). A coastal protection scheme was planned over a decade ago which included beach nourishment and construction of a marina (Gorey Guardian, 2019). The predicted date for completion when plans were initially drawn up was 2014, however, to date no progress has been made beyond the consultation phase (Gorey Guardian, 2008). A plan for acquiring, transporting, and replenishing sand was drawn up in 2016 but this plan never took effect. The ‘Courtown north Beach and Marina Feasibility Study’ was completed, and a public consultation phase was held 12th of November 2019 (WCC, 2019). However, the significant funding that is needed to begin the plan has not been secured and work has not begun (Gorey Guardian, 2019). Severe erosion has meant that Courtown did not receive its blue flag which is a huge blow to the area. In 2021 Courtown Water World a company which owned the local leisure centre and surrounding woods fell into liquidation (See Chapter 5). This resulted in the leisure centre and its adjoining adventure activities

closing. However, the woods were also owned by Courtown Water World Limited and were included in its sale to a private consortium raising issues over the woodland's ownership. This has led to a large petition and protest to resist the sale.

Wexford County Council stated in their 2015-2021 area plan that while erosion is natural, they suggest that inappropriate development, pressures from leisure or recreational activities and presence of man-made protection works may have accelerated erosion (WCC, 2015). As there is no national coastal management plan in place the current area plan for Courtown states the council will not approve new development in at risk areas. The current coastal protection plan for Courtown is to renew and maintain existing protections (rock armour) and possibly construct break waters (WCC, 2015). Recently the government of Ireland has created the "National Coastal Change Management Strategy Steering Group" chaired by the department for Housing, Local Government and Heritage and OPW (Gov.ie, 2020). This group has been tasked with creating a "whole of Government" coastal management strategy and met for the first time in September 2020 (Merriestreet, 2020). Darragh O'Brien the minister for Housing, Local Government and Heritage who chairs the group said:

"The group will examine how Ireland can best manage our coastline and mitigate the risks from rising sea levels and more frequent extreme sea events. We will work closely with the OPW which have previously undertaken work in this regard."

He also indicated that by 2050 coastal erosion could impact up to 2 million people living within 5km of the coast (Gov.ie, 2020). The aims outlined for the steering group mention consideration of "economic, environmental, cultural and social policy issues arising with approaches to coastal change management" however, most of its considerations appear to be economic and material with little mention of psychological and emotional impact of both coastal erosion and the proposed strategy (Gov.ie, 2020). They aim to build on existing frameworks which may uphold the status quo and risk repetition of past coastal management mistakes. To date no national coastal plan exists.

Using a case study of Courtown County Wexford in the southeast of Ireland this chapter aims to, i) explore attitudes and perceptions expressed towards local developments, decision-making and adequacy of governance and ii) investigate how perceptions of governance relate to expressions of place attachment and experiences of solastalgia.

6.1.2 Constraints on adaptation planning and the benefits of meaningful public engagement.

Engagement in adaptation and adaptive actions can be constrained by feelings of environmental and ecological grief associated, with solastalgia leading to paralysis in the face of ongoing environmental changes (Connor et al, 2004; Higginbotham et al, 2006; Warsini et al, 2014). Engagement can also be constrained through inadequate inclusion of local knowledge; where governance has not meaningfully engaged with the public, trust has been found to be lower (Rhoads et al., 1999; Bosch et al., 2012; Bresnihan and Hesse, 2019). However, where meaningful engagement, collaboration and communication are adequate, trust will be higher (Rhoads et al., 1999; Bosch et al., 2012; Bresnihan and Hesse, 2019). In Ireland there is a history of expert driven decision-making and resource management that fails to adequately engage local communities and knowledge (Clarke et al, 2018; Bresnihan and Hesses, 2019; Phillips et al, 2022). Such approaches to decision-making have caused distrust and anger towards state officials, scientists, and outsiders where locals feel they have little say in decision-making processes and scepticism of consultation efforts (Bresnihan 2016; Clarke et al 2018; Phillips et al, 2022). Governance approaches to adaptation actions and decision-making in Ireland have resulted in protests in Clontarf County Dublin in relation to the construction of a sea wall and in Courtown County Wexford in relation to the sale of local woodland to a private company (Clarke et al, 2018; Phillips et al, 2022). Bresnihan and Hesse (2019) suggested that local expertise must be consulted from the beginning of decision-making and engagement maintained throughout for more meaningful impact of decisions.

Co-producing knowledge and strategies for adaptation based on scientific expertise and local knowledge is beneficial and should reduce barriers to adaptation actions (Cloutier et al., 2015). However, the impact of pre-existing policies, institutions and their contexts can determine who participates and how this can also lead to people being excluded from decision-making (Bresnihan and Hesse, 2019). The act of listening to communities and different groups increases those groups acceptance of decisions and feelings of inclusion, however if people are ignored and not consulted discontent emerges and undermines adaptation efforts (Manzo and Perkins, 2006; Quinn, 2014; Clarke et al 2016). It is important for planning to incorporate how local people view adaptation and what it means for them, this could be the difference between adaptation strategies succeeding or failing. Unfortunately, meaningful public engagement is ill-defined in policy (Grothman and Patt,

2005; Adger et al, 2009; Quinn, 2014; Whitman et al., 2015; Graversgaard et al., 2016; Bresnihan and Hesse, 2019). Burley et al (2007) showed that one of the biggest issues for people with coastal management in Louisiana was not being listened to by governing bodies or having their views counted in the decision-making process. Research has shown that promoting community agency through inclusive decision-making and considering community perceptions of change is important for maintaining well-being, otherwise change may be viewed as undesirable (Devine-Wright and Howes, 2010; Clarke et al., 2016).

Rush (2018) through interviews around the coastline of the United States in relation to place loss by sea level rise showed that many factors such as scepticism of government policies, lack of resources/funding and lowered social cohesion (e.g., friends/families leaving) can influence actions a person takes when place is threatened and may result in relocation. These issues are reflected in the stance that Koslov (2016) takes, that residents' reactions to environmental threats are often not supported by political willingness and economic factors as residences may not have adequate resources to respond appropriately. This literature shows that it is difficult to separate cultural values and psychological processes (e.g., place attachment, wellbeing) from political and economic contexts. Therefore, this chapter considers how they are inter-related in the context of political, economic, and environmental change in Courtown County Wexford. However, transformative change which is non-linear and deviates from the status quo can have long lasting impacts on wellbeing and place relationships (Marshall et al., 2016; Clarke, 2018). If unacceptable social or environmental side effects are ignored by governance structures or if adaptation processes themselves cause them to emerge, adaptation efforts may be constrained (Ekstrom et al., 2011; Clarke et al, 2018). However, Kates et al (2012) showed that transformative adaptation is often constrained because institutions focus on maintaining current or past policies. Transformations are often more acceptable when governance is effective and local knowledge is integrated into the decision-making process (Clarke et al, 2018).

As shown by Clarke et al (2018), the manner in which construction of a sea wall negatively alters land uses, interactions with the environment and the construction of place meanings can be viewed as an undesirable transformation. As the beach in Courtown County Wexford has been eroded and rock armour laid in its place, community and individual interaction with place has been altered resulting in what can be perceived as a significant and undesirable transformation of place. The literature presented here

indicates that there are many reasons adaptive capacity can be constrained through lack of communication and public engagement in decision-making, lack of trust, weak consideration/inclusion of local knowledge and lowered social cohesion. Often these factors which are integral to adaptation and governance are not considered in decision-making processes. Local communication and engagement are fulfilled as compliance activities and are not equitably included throughout the decision-making process. Therefore, it is important for adaptation actions and governance to consider how these themes play out across multiple developments and not just environmental loss. This chapter will explore many of these themes across multiple issues (e.g., rapid residential development, marina plans, sale of local woods) the community in Courtown County Wexford have experienced that may constrain adaptation and capacity building.

6.2 Results

6.2.1 Attitudes and perceptions expressed by the community towards local developments, decision-making and adequacy of governance

This section will explore attitudes and perceptions of governance using data triangulation. It will also examine the issues communities have faced from lack of planning. Furthermore, it will discuss the impacts of lack of consultation with locals in decision-making processes and factors influencing trust and confidence in governance.

6.2.1.1 Factors contributing to attitudes and perceptions of governance employing data triangulation.

Newspaper archives from the Gorey Guardian, Wexford People, Irish Independent, Enniscorthy Guardian and New Ross Guardian highlight a history of undermined trust, broken promises, abandonment/detachment by the local council and a lack of consultation, communication, and inclusion of locals within decision-making (See Table 6.1). While newspapers often choose topics and respondents specifically to report controversial views and issues, findings are corroborated by interviews and surveys showing distrust, anger, sadness, and frustration within the community. While council meetings highlight delays in completing local work (e.g., pier work, dredging) as well as planning issues and trouble acquiring funding.

Table 6.1: Sample of relevant newspaper quotes obtained from the main body of text and sources related to perceptions and attitudes towards governance, decision-making processes, and local development. Extracted themes displayed within the left column.

Theme	Quote and newspaper source.
<p>Lack of planning, infrastructure, facilities.</p>	<p>He warned against County Councillors engaging in another rezoning spree without due regard to, social and educational infrastructure. Gorey Guardian (12/01/2006)</p> <p>The building of new estates won't be allowed until proper infrastructure is in place. Gorey Guardian (17/11/2014)</p> <p>You rezoned hundreds of acres and there was no planning for water or sewerage. Gorey Guardian (22/04/2010)</p> <p>My opinion is that the Council made a mistake putting the rock armour there. Gorey Guardian (20/06/2020)</p> <p>What we have now are ghost villages - places from Courtown to Duncannon, which only come to life at weekends or when the sun shines. Gorey Guardian (31/03/ 2005)</p> <p>The blight of holiday homes has had a very damaging effect on entire communities in County Wexford. Gorey Guardian (31/03/ 2005)</p> <p>We all know that the area is lacking in big infrastructure. Gorey Guardian (03/09/ 2009)</p>
<p>Lack of consultation, information, representation.</p>	<p>No confidence the people's views have been represented given the lack of public consultation. Gorey Guardian (05/06/2021)</p> <p>The decision in 2002 of County Councillors to rezone without public consultation. Gorey Guardian (12/01/2006)</p> <p>There had been a lack of any information and a lack of communication and engagement with local representatives and the community in Courtown. New Ross Standard (22/05/2021)</p> <p>All that was on the ground in Courtown was a lack of information. Gorey Guardian (29/05/2021)</p>
<p>Undermined trust/confidence.</p>	<p>She added that the group has 'no confidence' that they are being represented. Gorey Guardian (05/06/2021)</p> <p>No confidence the people's views have been represented given the lack of public consultation. Gorey Guardian (05/06/2021)</p> <p>The anger of those attending was palpable...there was widespread incredulity and fury [over the sale of the woods]. Gorey Guardian (05/06/2021)</p> <p>Understandably people wanted to know how this was being enabled at local governance level and what their elected councillors [were doing about it]. Gorey Guardian (22/05/2021)</p>

6.2.1.2 Community issues resulting from inadequate local planning

This section will discuss issues regarding large scale residential development, harbour/pier works and the proposed marina. Issues regarding these developments stem from inadequate planning, delays in funding acquisition and commencement of work. Newspapers indicate that the 2002 Gorey Local Area Plan (LAP) focused on re-zoning, which was carried out with little public consultation, creating large amounts of residentially zoned land (See Table 6.1). The rezoning occurred in conjunction with the seaside resort renewal scheme that gave tax breaks for construction of buildings for tourism. The scheme allowed for construction of residential developments and holiday homes in the area lead to a rapid increase in development at the peripheries and decline of the inner town that undermined community cohesiveness. Some councillors raised the issue during council meetings that better transport links and infrastructure should have been considered in the 2002 LAP (Gorey Guardian, 2010) but these suggestions were largely ignored (See Table 6.1). Interviews also indicated that undesirable landscape changes such as rapid development and influx of new residents undermined community cohesion and contributed to the emergence of solastalgia emotions. Large scale residential development, lack of facilities and infrastructure along with the tax incentive scheme that led to overdevelopment and emergence of ghost estates (Irish Times, 19/06/1999; Gorey Guardian, 15/11/2010). An Irish Times article published in November 1999 quoted the then president of the Irish Planning institute Mr Niall Cussen, who said:

‘The seaside resorts tax incentive scheme is just the latest in a long line of government-sponsored initiatives which lack any spatial dimension. And what it will leave... is a plethora of ghost housing estates.’

The Irish Times (19/06/1999) article also highlighted that the ‘*overall impact on the landscape is devastating*’ and ‘*a relentless process of suburbanisation is well under way*’ with a lack of infrastructure and facilities to accommodate developments. Some in the community fear that derelict buildings, ghost estates and holiday homes will have adverse impacts on the community and the area (See Table 6.1). Interviewees corroborated the issues regarding inadequate planning discussed in both newspapers and council meetings, one person said:

‘The development did nothing positive for the area because it was not well planned allowing the heart of the village to fall into ruin... [there are] no positive connotations

with any of those changes... Somebody moving into the area might not necessarily appreciate it for the same value...I know there's aspects of Courtown that are so subtly Courtown...I'd hate to see them go but somebody who comes into the area might see that as an eyesore...[also] over overpopulating without putting in supports'

Another interviewee confirmed the planning issues by saying there were '*countless houses that were built without facilities*'. One newspaper quoted a councillor who said '*Courtown is at a point where it is crying out for redevelopment and regeneration*' (Gorey Guardian, 04/01/2020). The 2015 LAP that followed, aimed to provide infrastructure, services, and facilities that the 2002 LAP failed to consider. Council meetings and newspapers highlighted that the 2015 LAP did not meet its objectives and had to be extended for another 5 years (WCC, 18/06/2019; Gorey Guardian, 04/01/2020).

'Extension of the plan would provide additional time to achieve the strategic objectives of the plan' (WCC, 18/06/2019)

'They were told that since 2015 there has been good progress in terms of development of footpaths, but other objectives include infrastructure, water and community development.' (Gorey Guardian, 04/01/2020)

According to council meetings objectives included providing infrastructure, water works, and community development weren't achieved (WCC, 18/06/2019). The Gorey Guardian (03/09/2009) quoted one councillor saying:

'Now is the time for people to get together and map out the future of Courtown. We all know that the area is lacking in big infrastructure such as footpaths, public lighting, a larger community centre and playing pitches, and there are also problems with water supply and unfinished housing estates. The marina and coastal erosion are also going to be important factors of the plan for the future.'

Another example of local development that has been carried out with inadequate consultation and planning are harbour and pier work. Delays in harbour and pier work such as dredging have impacted livelihoods of fishermen and businesses, resulting in some businesses closing as pointed out by council members to the Gorey Guardian (Gorey Guardian, 02/07/2016). Council members '*explained that fishermen were frustrated that they couldn't use Courtown harbour all winter and were still unable to dock with the swell on a calm day*' as recently as 2020 (WCC, 21/01/2020). Newspapers and council meetings have discussed the troubles with dredging and harbour/pier works Courtown

has experienced in the past (Gorey Guardian, 02/07/2016; WCC, 18/06/2019, 21/01/2020). The Gorey Guardian discussed the impacts delays in harbour/pier works were having:

'Fishermen in Courtown have issued a stern warning that the much-delayed works on the north pier in Courtown will make the harbour entrance more dangerous than ever'

However, obtaining funding for harbour works and dredging has been difficult, and once harbour work was finished its users expressed concern that the work carried out (narrowing of the pier) made the entrance more dangerous leaving fishermen in a worse situation than before. As quoted in the papers:

'We've been looking for funding for this work for years, now that we got it, we could be worse off than before, we are angry and frustrated that our livelihoods are in danger.' (Gorey Guardian, 02/07/2016).

In terms of the marina and breakwaters, construction has been mentioned frequently in municipal meetings being described by councillors as a long-term solution for Courtown including issues regarding the sand bar and dredging but have continuously been delayed (WCC, 19/06/2016). The completion of feasibility studies, planning, environmental assessment, and funding for marina construction was expected to take *'between 6-12 months, and due to the complexity of [the] project it could take more than year'* (Gorey Guardian, 28/09/2019). No funding has been announced to date and work hasn't begun. The Gorey Guardian (28/09/2019) quoted Director of Services for Wexford County Council Eddie Taaffe:

'We're still talking about a number of years before we see shovels in the ground, and it will only happen if we get significant funding from central government'

Some community members express concern over the marina. They feel it will leave many in the community out, being mainly for private interests or people who have boats (Gorey Guardian, 20/06/2020). The Gorey Guardian (20/06/2020) quoted a community member saying:

'A marina only suits people with boats, it doesn't suit the ordinary people who want to come here to relax but a beach suits everybody. The people need to work now and really concentrate on getting the beach back.'

6.2.1.3 Communication and consultation issues in decision-making processes

This section discusses issues surrounding consultation and communication in decision-making related to important harbour/pier work, marina plans and sale of the woods. Interviews corroborate many of the issues surrounding communication and consultation highlighted in Table 6.1 and point to further flaws in the decision-making process. One interviewee said that the council goes ahead and does work without listening to locals, implementing developments that are often detrimental and negative for the area. This interviewee said the following in relation to the harbour and piers:

'No one on the council...wanted to hear [about the piers] ...there seems to be a lot of the work that was done in Courtown by the County Council that seems to have been almost detrimental as opposed to having a positive impact... there is no doubt the piers needed to be repaired but the work they did on them was causing more issues than the repair...that's quite frustrating when something like that happens. I think you reach a stage where you go there's no point in worrying about it anymore because they're going to go ahead and do it anyway.'

Interviews indicate that communication and consultation regarding work on the piers/harbour as well as rock armour installation has been limited, one interviewee said:

'There was no locals consulted on it [Pier works] ...just men in suits, consultants, decided they were going to do the two piers a certain way...when they finished, it cost I don't know how much money, ridiculous money they actually made it worse...They wouldn't listen to the local people.'

Another interviewee said:

'I don't think communications over that rock armoury, or the development of the pier was very good.... for the public in general I don't think there was very good communication on that at all.'

Regarding the Marina, consultation with the public has occurred on more than one occasion. There have been meetings in 2007 including a meeting with local business owners as well as a public consultation in 2016 and 2020 discussed in council meetings and newspapers (Gorey Guardian, 31/06/2007; WCC, 18/06/2019; WCC,21/01/2020).

However, follow up meetings communicating results of feasibility studies are lacking according to papers and interviews with the Gorey Guardian (20/06/2020) quoting a community member:

'There had been talk of break-water boundaries, but there's plenty of talk with no action. We've had no feedback yet from the public consultation on the north beach marina feasibility study, but the community certainly need to come together on this'

The results of marina feasibility plans, and the outcome of public consultations have not been communicated to the public according to local papers and interviews. The marina and beach nourishment project has not gotten off the ground and the County Council cannot guarantee when the project will begin. One interviewee describes how the decision-making process in its current form causes resistance from locals because the council already have plans in place before any consultation is carried out:

'I think with any change in an area, no matter where the area is... that line of communication is always inverse. They always have something done prior to going to the locals and then the locals are up in arms. So immediately they're defensive. Instead of going to people and saying... we're looking at what we can do for the area, come back to us and tell us what you value in the area ... give us that information, give us what you want for your community...it never happens like that it always happens the other way around...it's just like, we done this.'

In terms of the woods, its sale was carried out with little transparency, public engagement, or consultation (See Table 6.1). Papers stated that there was *'a lack of any information and a lack of communication and engagement with local representatives and the community in Courtown'* (New Ross Standard, 22/05/2021).

Newspapers and interviews have indicated that communication and engagement of locals in decision-making is weak. Decisions appear to rely on expert knowledge employing plans created and finalised before public consultation or engagement is considered. Public engagement is not carried out at the beginning of the decision-making process, being conducted briefly and not maintained throughout. Interviewees have noted their feelings that consultation and public engagement is a formality as opposed to being seen as beneficial. Newspapers and interviewees also highlight perceptions that locals' views and local knowledge/expertise are not considered in decision-making. Locals feel the council or hired consultants do not listen to local knowledge or opinions regarding developments. Public engagement relies on successful acquisition of funding and completed

environmental/scientific assessments. The lack of transparency, communication, collaboration, and information in decision-making processes has caused fury, frustration, anger, distrust, and protest (See Table 6.1).

6.2.1.4 Trust and confidence in governance

Inadequate planning, lack of transparency and communication have been common in many decisions and developments in the area contributing to the emergence of distrust. This section will discuss the distrust that has emerged in relation to the sale of the woods and decision-making. Newspapers show locals have lost confidence in the local council and believe that their views are not being represented with complete lack of consultation in decision-making regarding the woods (Gorey Guardian, 05/06/2021) (See Table 6.1). The public called on the council to buy the woods and put it into public ownership which many people believed it already was. The local group Protect Courtown Woods gathered eight thousand signatures and seven hundred people marched in protest of the sale which still went ahead. The Gorey Guardian said in relation to the Protect Courtown Woods group:

'...the group has 'no confidence' that they are being represented...the campaign group says it has no confidence the people's views have been represented given the lack of public consultation'

The council 'guaranteed' that the woods would be protected and that only rezoning through a LAP can threaten the woods which no councillor would engage with. However, locals have expressed anger over treatment of the woods once taken over by the private consortium. Fencing and wiring have been nailed to trees causing concern over future damage to the woods. The decline in trust over years was corroborated by interviews, with one interviewee saying:

'there was a great trust between the engineers and ourselves [Community Council] but it was down to a few people on a committee and we proved that we were willing to walk the mile with them if they were willing to walk the mile with us...but now there's a new set of people in that I wouldn't be associated with them'

While another interviewee highlighted that distrust towards 'outsiders' arises when locals are not listened to:

'There is a distrust of outsiders when they don't listen to what the locals want...when they don't listen to Courtown and when...they think they know better. It's when they actually take us into account...we actually do sit back and be like...we trust them. But other than that, we have had some bad experiences where people have been like, we don't care what you think, we know better'.

The accounts from both newspapers and interviews highlight that over time lack of inclusion and consultation has fostered distrust and lack of confidence in the council and outsiders.

6.2.1.5 Thematic analysis of social media comments

This section will analyse social media comments to determine attitudes and perceptions of governance and decision-making in relation to 'local development', 'the sale of the woods, and 'current state of the beach'.

The overall sentiment towards development occurring in the area was negative (See Table 6.2). Positive comments (23) indicate some locals are positively anticipating the commercial opportunities that developments will bring such as more jobs. Positive comments also come from a perception that the beach looks bigger, people have good memories of the area, and they are happy to see some of the derelict buildings torn down. The negative comments (61) highlight a lack of information and secrecy, lack of involvement of locals in decision-making, confusion, uncertainty, distrust in the council/investors and scepticism towards positive benefits developments may bring.

Table 6.2: Thematic analysis for the category ‘local development’. Showing positive and negative social media comments and reasons for designated attitude.

Sentiment		Reasons
Positive (23)	Perception that the beach looks big and is recovering. Person is happy to see boats in Courtown again. Following dredging. Happy about developments beginning Anticipation regarding developments for business The hotel is demolished, in this context they are happy it’s gone.	Positive and happy about developments but sceptical about time frame. Hopeful that developments will be good for the area Sense of positivity towards the commercial gains the developments will bring Good memories Looking forward to changes, still lack of information
Negative (61)	Impact to aesthetics Lack of information and secrecy, lack of involvement in decision-making. Unfamiliarity with place now compared to past Not happy about the developments Lack of trust in developers’ intentions. Proposed development is bad for local businesses Defending people objecting to developments, let people have their own opinion Concern about timing of dredging and how this impacts the ecology of the area	Strongly sceptical of developments and governance Strongly sceptical of decision-making process Distrust of governance, investors, and decision-making process Not happy with how the developments will impact daily lives Emotionally troubled by developments A sense of anticipation, wait and see what happens Confusion over development plans leading to mixed feelings Weaker opinions due to lack of information

Social media comments related to the sale of the woods in Courtown showed an overall negative sentiment (See Table 6.3). Positive sentiment (99 comments) occurs for reasons other than the sale of the woods such as a desire to protect the woods, attachment to the woods, expressing love for the area and praising local action (See Table 6.3). Some comments express hope for the future, that the sale will be positive in terms of bringing business and jobs to the area, while others pointed out the health benefits of the woods. Social media comments indicate that positive sentiment stems mainly from locals’ attachment to and love of place, the community as well as the praise for community action against the sale of the woods. However, negative attitudes and perceptions towards the sale of the woods (169 comments) stem from a lack of information, transparency, representation, and involvement in the decision-making process as well as feelings of being ignored and abandoned. Some negative comments express anger, frustration, sadness and distrust towards the council and investors and a negative perception towards governance (See Table 6.3).

Table 6.3: Thematic analysis for the category ‘sale of the woods. Showing positive and negative social media comments and reasons for designated attitude.

Sentiment	Reasons	
Positive (99)	Commitment to the protection of the woods Positivity towards community action Trust in councillors Love of the woods, don't want to see it destroyed Desire to help protect woods Providing solutions (e.g., Buying the woods) Attachment towards the woods Health benefits of the woods Hope for the future	Recreation is important to people Love for the area The woods are a very important amenity not to be lost Solutions to protect the woods (e.g., Council purchase) Positive for council meeting regarding woods General information regarding community action Beautiful place, aesthetic values Woods are great for health and wellbeing. People in the community work hard to maintain the woods
Negative (169)	Lack of information, transparency, representation, and involvement leading to people not having a full picture The woods are being taken away from the community and future generations Some positive attitudes towards community action, but negative towards developers Suspicion, lack of trust, scepticism over plans Natural wildlife will be disrupted, environmental issues Powerlessness Uncertainty in how to feel about it Sadness and concern for the wood's future Sense of abandonment Questioning decision-making process and law Worry over further development Angry regarding misleading information and lies.	Lack of action from council, people not listened to Identifying people who sabotaged community action Anger over sabotage of community efforts Discussing ways to disrupt the sale More action needed from the council Misleading information being spread Manipulation of community and decision-making process Anger over sale of woods Indifference, nothing can be done Anger over littering Desire to see woods protected Blaming the council Concerned for the impact to environment Special amenity at risk Don't want to see the woods being sold

The overall sentiment was negative towards the current state of the beach with only a small difference between positive and negative comments (See Table 6.4). Positive comments (38) show people still find the scenery aesthetically pleasing, they believe the beach is recovering, they still have good memories of the beach, or they meet family for recreational activities. Negative comments (62) are heavily related to sadness for the current state of the beach and unfamiliarity with its current state compared to the past. Some people blame the County Council for the current state of the beach, others believe they need to do more and put together strategies to protect the coastline. Other locals believe nothing can be done to halt coastal erosion expressing a sense of defeat in their comments. Safety of beach access and swimming is currently an issue expressed by some locals.

Table 6.4: Thematic analysis for the category ‘current state of the beach’. Showing positive and negative social media comments and reasons for designated attitude.

Sentiment	Reasons	
Positive (38)	The beach still looks beautiful to some people	Looking forward to visiting
	Positive emotions towards the area	Hope the beach will be better in the future
	Solution given, build up the sand	Rock armour is doing its job
	Belief the beach is back or coming back	Family meetings and recreation are important
Negative (62)	Sad to see the beach in its current state	Some positivity but concern for the beach
	Unfamiliarity with the place now compared to the past	Defeatist attitude from some, nothing can be done to halt coastal erosion
	Impacted recreation	More needs to be done to protect the beach, by local and national government
	Wexford County Council responsible for destruction	Unhappy with access, unsafe and difficult.
	Acknowledgment of damage done, hope more isn't done	Some blame the government for loss of the beach
	Recreation has been impacted but not much	Slow progress on harbour works highlighted, no strong emotion expressed
	Access to safe swimming unavailable	Local governance needs to draw up a coastal erosion strategy

6.2.2 How perceptions of governance relate to expressions of place attachment and experiences of solastalgia

This section employs Kruskal-Wallis tests and quantitative data obtained through a questionnaire survey in field campaigns discussed in Chapter 4. In this section perceptions of governance will be analysed in relation to different strengths (levels) of solastalgia and place attachment using similar analytical procedures and reporting of results employed in Chapter 4. This section will also statistically analyse public perceptions of inclusion and consultation in decision-making processes, trust in governance and community perceptions of political representatives' connection to the community/area.

6.2.2.1 Solastalgia by level related to perceptions of governance

Kruskal-Wallis tests between solastalgia by level and individual Likert items show statistically significant differences for all items (See Table 6.5). Higher mean ranks indicate that a group is more likely to agree, whereas a lower mean rank indicates a group is more likely to disagree. For the single Likert item '*I feel I would be capable of convincing the local council to better manage Courtown beach*' people who self-reported medium levels (H=122.9, p<.01) of solastalgia have the highest mean rank (more likely to agree) compared those who reported high (H=126.04, p<.01) and low (H=148.71,

p<.01) solastalgia. For the Likert item *'The Local/National government will deliver on promises made to manage coastal erosion'* those who self-reported low levels (H=118.66, p<.01) of solastalgia have the highest mean rank (more likely to agree), while high levels of solastalgia (H= 151.73, p<.01) hold the lowest mean rank (more likely to disagree). The high solastalgia group have a lower mean score (H= 150.20, p<.01) for the Likert item *'The political representatives for Courtown care about its people'* as well as the item *'The political representatives for Courtown care about the loss of the beach'* (H=150.31, p<.01) showing they are more likely to disagree with these statements. People that self-reported higher levels of solastalgia (H=152.21, p<.01) have a lower mean rank (more likely to disagree) for the item *'I feel a sense of trust in the Local government'* than those with low levels of solastalgia (H=115.02, p<.01). Those with high levels of solastalgia also have a lower mean rank (H=155.15, p<.01) than those with low levels (H=122.41, p<.01) for the Likert item *'I feel my views about the planning decisions in Courtown are being taken into consideration'* again showing they are more likely to disagree with this statement. Results indicate that people with high solastalgia are less likely to have trust in governance, believe the political representatives of Courtown care for the people or loss of the beach and believe their views are counted.

Further analysis of solastalgia by level and single unidimensional scale (See Chapter 4) with single Likert items, indicates that people who self-reported high levels of solastalgia are more likely to disagree on all single Likert items apart from *'I feel I would be capable of convincing the local council to better manage Courtown beach'* (See Figure 6.1). People's perceptions of *'...convincing the local council to better manage Courtown beach'*, *'The Local/National government will deliver on promises made to manage coastal erosion'*, *'The political representatives for Courtown care about its people/beach'* and their *'views about the planning decisions in Courtown are being taken into consideration'* are weak.

Table 6.5 Kruskal-Wallis H statistics between solastalgia by level (High, Medium, Low), place attachment by level (High, Medium, Low) and single Likert items measuring perceptions towards governance (strongly agree to strongly disagree). H is the test statistic used.

<i>Kruskal-Wallis H</i>	<i>Solastalgia level (H)</i>	<i>p value</i>	<i>Place attachment Level (H)</i>	<i>p value</i>	<i>Age (H)</i>	<i>p value</i>	<i>Length of Residence (H)</i>	<i>p value</i>
I feel I would be capable of convincing the local council to better manage Courtown beach	6.8	<.05	12.87	<.01	1.95	.92	5.53	.35
The Local/National government will deliver on promises made to manage coastal erosion	11.48	<.01	3.78	.15	16.98	<.01	18.40	<.01
The political representatives for Courtown care about its people	9.36	<.01	.23	.89	3.09	.80	5.23	.39
The political representatives for Courtown care about the loss of the beach	9.27	.01	.53	.77	2.89	.82	2.76	.74
I feel a sense of trust in the Local government	12.22	<.01	.14	.93	4.15	.66	7.22	.21
I feel my views about the planning decisions in Courtown are being taken into consideration	15.11	<.01	1.83	.40	11.84	.07	10.76	.06

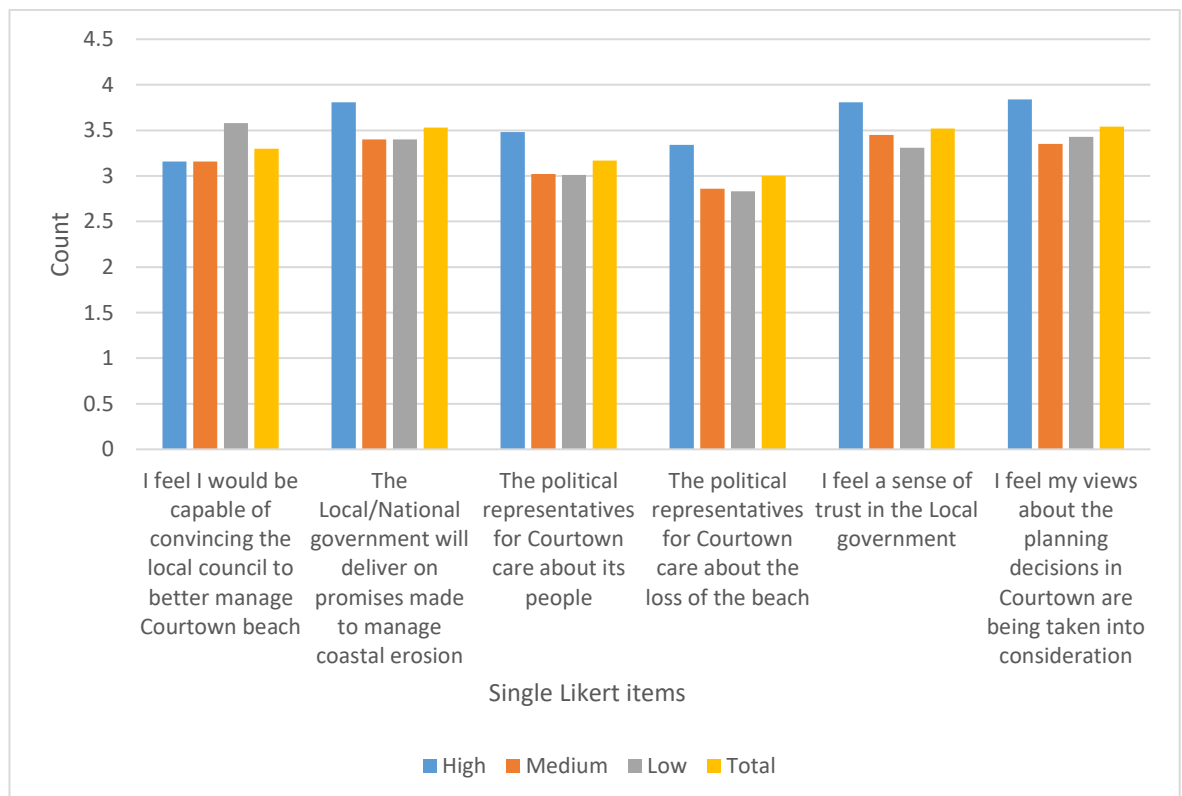


Figure 6.1. Solastalgia by level (High/Medium/Low) and single Likert items related to perceptions of governance. Lower scores indicate a higher likelihood to agree with the statement.

6.2.2.2 Place attachment by level related to perceptions of governance

Kruskal-Wallis tests between place attachment by level and individual Likert items show statistically significant differences for one Likert item only (See Table 6.5). Higher mean ranks indicate that a group is more likely to agree, whereas a lower mean rank indicates a group is more likely to disagree. People who self-reported high levels of place attachment for the Likert item *'I feel I would be capable of convincing the local council to better manage Courtown beach'* have a mean rank of H=110.42 ($p<.01$) (more likely to agree) compared to those who experience low levels of place attachment with a mean rank of H= 149.66 ($p<.01$) (more likely to disagree). All other variables showed statistically non-significant differences between varying strengths of place attachment.

Further analysis of place attachment by level and single unidimensional scale (See Chapter 4) with single Likert items (See Figure 6.2) showed that people expressing all levels of place attachment are likely to report that they *'Neither agree nor disagree'* or *'disagree'* for all single Likert items. Those who self-reported low levels of place attachment, their answers tend towards disagree for the items *'I feel I would be capable of convincing the local council to better manage Courtown beach'*, *'The Local/National government will deliver on promises made to manage coastal erosion'*, *'The political representatives for Courtown care about its people'* and *'I feel my views about the planning decisions in Courtown are being taken into consideration'*.

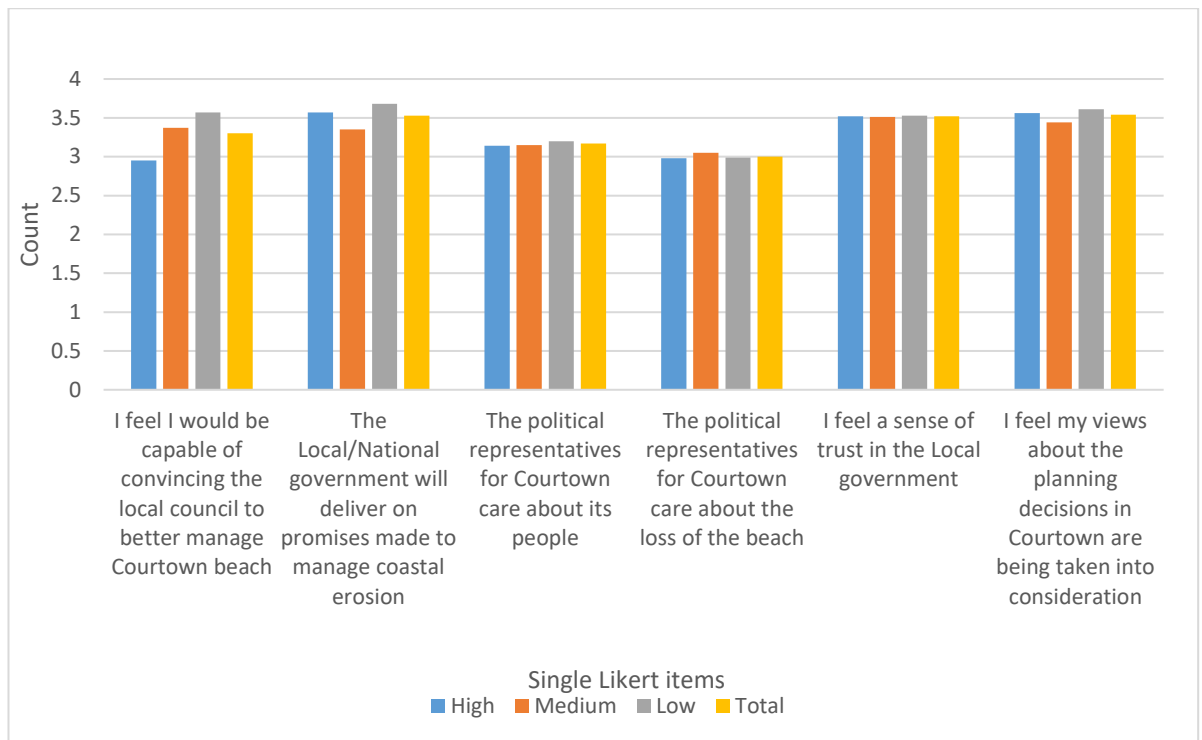


Figure 6.2. Place attachment by level (High/Medium/Low) and single Likert items related to perceptions of governance. Lower scores indicate a higher likelihood to agree with the statement.

6.2.2.3 Age and length of residence related to perceptions of governance

Kruskal-Wallis tests between various age groups and individual Likert items show statistically significant differences for one Likert item only (See Table 6.5). Higher mean ranks indicate that a group is more likely to agree, whereas a lower mean rank indicates a group is more likely to disagree. For the item *'The Local/National government will deliver on promises made to manage coastal erosion'* the age group 18-24 has the highest mean rank (H=90.89, p<.01), the age group 45-54 has the lowest mean rank (H=151.18, p<.01) while the age group 55-64 also had a low mean rank (H= 147.88, p<.01). The results show that younger age groups are more likely to agree with the statement *'The Local/National government will deliver on promises made to manage coastal erosion'* compared to older age groups. The difference between age groups for the remaining single Likert items are statistically non-significant.

Kruskal-Wallis tests between various lengths of residence and individual Likert items show statistically significant differences for one Likert item only (See Table 6.5). Higher mean ranks indicate that a group is more likely to agree, whereas a lower mean rank indicates a group is more likely to disagree. People who reported living in the area for 1-5 years have a higher mean rank (more likely to agree) for the variable *'The*

Local/National government will deliver on promises made to manage coastal erosion' (H=106.65, $p<.01$) while those who reported living in the area 20+ years have the lowest mean rank (H=163.90, $p<.01$). All other variables showed statistically non-significant differences between varying lengths of residence.

6.3 Discussion

Findings indicate that attitudes towards governance and developments in Courtown are mostly negative. Negative attitudes arise from lack of communication, information, representation, and consultation regarding decision-making. Scholars have shown that negative perceptions of equity in governance and decision-making where local knowledge is not consulted can contribute to undermined trust (Head, 2007; Bresnihan and Hesse, 2019). Solecki and Friedman (2020) discussed that variables of trust are inextricably embedded in effectiveness of governance. Where Lambert et al (2021) discussed how public mistrust can arise from perceived inadequate governance and play a role in communities' perception of environmental risk. Lack of trust in local officials may also contribute to feelings of powerlessness and fatalism (Lambert et al, 2021; Higginbotham et al, 2006). Higginbotham et al (2006) showed that trust in governance can be influenced by the integrity and accuracy of information provided to residents by governments or industry in relation to environmental issues. Scholars have also highlighted that trust in the government is a key mediating factor in experiences of environmental distress (Higginbotham et al, 2006; Galway et al, 2019). Transformations to place will bring stress if governance processes fail to manage it from the outset while considering resident concerns and values (Solecki and Friedman, 2020). In Courtown lack of involvement of locals in decision-making and consultation has allowed a negative perception of and attitudes towards governance and decision-making to emerge. This has fostered scepticism towards many developments in the area and lack of trust towards governance which could hinder implementation of future adaptation actions.

Despite evidence from environmental assessments suggesting Courtown's north beach is vulnerable to further erosion and loss of awards for beach quality, some believe the beach is recovering. This perception towards environmental change is important to recognise and maybe related to how some members of the community perceive risk and environmental change. Communities regularly adjust their perceptions of and attitudes towards their environment when presented with environmental risks or undesirable situations such as place change (Greenberg and Schneider, 1996; Solecki and Friedman,

2020). However, risk perception is unevenly distributed within a community as access to resources, social capital, income, occupation, place attachment and past experiences may act as mediating factors causing some to more readily adapt than others (Marshall et al, 2013; Clarke et al, 2016; Solecki and Friedman, 2020, Lambert et al, 2021). However, risk perception alone will not drive protective behaviour but plays a role in conjunction with beliefs about the type of behaviour, the cost of action, past experiences and socio-economic factors (Wachinger et al, 2013; Lambert et al, 2021). Risk perception is a mediating factor for adaptation and positive perceptions of beach recovery could be beneficial for implementing future adaptation actions when considering such factors.

Findings also indicate that those who report high levels of solastalgia are less likely to have trust in governance, believe the political representatives of Courtown care for the people or loss of the beach. These findings agree with that of Higginbotham et al (2006) who found that environmental distress associated with solastalgia is related to reduced trust in governance. Moreover, the authors indicated that levels of trust in governance is heavily influenced by undesirable landscape change. Connor et al (2004) also found that undesirable landscape changes are related to feelings of mistrust, loss of control, powerlessness and division in communities. In Courtown, people who self-reported high levels of solastalgia are less likely to feel their views count and that they have the ability to influence local decisions. These findings agree with the position of Higginbotham et al (2006) and Connor et al (2004) that perceived indifference by government to environmental losses cause feelings of powerlessness and sadness. Lambert et al (2021) also discussed how feelings of being overlooked or inconsequential or having little stake in local decisions comes with expressions of mistrust in the government where governance is perceived as being inadequate. Results indicate that solastalgia is negatively related to perceptions of governance and that perceived indifference of governance can lead to negative attitudes and perceptions. On the other hand, people who reported all levels of place attachment (i.e., high, medium, low) express weakened trust and feelings of representation. Where consultation and participation of locals in decision-making are inadequate, place attachment processes and feelings of control are weakened (Anton and Lawrence, 2016; Clarke et al, 2018). In Courtown weak governance and lack of consultation resulted in resistance in the form of protest and petitions. This is similar to the community response towards the construction of a flood wall in Clontarf following weak governance, public consultation, and participation. However, place disruption and resistance to adaptation actions can be reduced through inclusive and participatory

governance (Von Wirth et al, 2016; Clarke et al, 2018). This was suggested by an interviewee from Courtown who calls for such an approach from the outset of decision-making incorporating local knowledge throughout the process.

Findings have shown that over time lack of inclusion and consultation has fostered distrust, lack of confidence, anger and frustration towards governance and decision-making processes. Weak communication, community participation and governance can create stress for communities when they feel alienated from the decision-making processes creating a barrier to successful implementation of adaptation actions (Adger et al, 2009; Clarke et al., 2016; Gibson et al., 2016; Clarke et al, 2018; Solecki and Friedman, 2020). Whereas participatory governance and co-development of decisions can reduce disruption, promote place-based values, and create adaptation actions which are more acceptable (Lambert et al, 2021; Clarke et al, 2018). In Courtown, consultation and participation are perceived by locals as a regulation compliance activity where local participation is briefly included in a single stage of decision-making. Interviews indicate the council already have plans in place before any consultation is considered. Some community members hold the perception that they are not listened to, and the council will implement developments that are often detrimental for the area. Lack of local participation often stems from entrenched power relations blocking local knowledge from being meaningfully considered in the decision-making process and running the risk of perpetuating the status quo, replicating past policies, and supporting the interests of the same ‘winners’ (Bresnihan and Hesse, 2019). On the other hand, local officials and experts may see public participation and consultation as legal obligations to comply with regulations as opposed to benefiting decision-making processes (Bresnihan and Hesse, 2019). While limiting public participation can result in future resistance (Sprain, 2017; Hügel et al, 2020). Governance processes in Courtown with weak inclusion and participation have caused fury, frustration, and anger amongst many in the community who feel they have been abandoned. However, strong community engagement from the outset has the potential to ease some of these issues (Solecki and Friedman, 2020). Bresnihan and Hesse (2019) suggest that effective public engagement requires the co-production of knowledge. Participatory approaches may increase empowerment and help people to cope with solastalgia emotions (Galway et al, 2019). Hügel et al (2020) suggests that in order to effectively co-produce knowledge for decision-making and climate adaptation, governments and scientists need to view locals as experts, offering expertise of their lived experiences. Moreover, interviewees from Courtown call for a change in

governance processes that are more inclusive adopting co-production of decision-making from the outset and maintained throughout.

Redevelopment of Courtown harbour is being undertaken despite exposure and vulnerability to sea level rise and increased intensity of storms. Plans in Courtown to construct a marina and new hotel lack detailed consideration of climate change impacts. The LAP 2015-2021 which has been extended by five years briefly mentions climate change whereas County Council meetings discussing redevelopments do not mention climate change (WCC, 2015). Technical documents related to the construction of the marina briefly mention that climate change must be considered. This lack of consideration presents problems for effective climate action that is seen as equitable by the community and risks repeating past mistakes by implementing decisions that are detrimental to the area. However, residents and local community groups such as the Courtown Community Council (CCC) are aware of the risks associated with climate change. The CCC have engaged in climate change related projects (i.e., planting 3,800 trees) and climate awareness initiatives, winning environmental awards for their efforts. Therefore, co-production of knowledge and decision-making with local community groups will be crucial for successful implementation of adaptation actions in the future that build adaptive capacity and limit impacts to wellbeing. Future research may further investigate the influence community groups such as CCC have on how coastal communities cope with solastalgia emotions and place loss. It may also be important to explore how such groups influence adaptive capacity. The effects of the proposed national coastal management strategy should also be investigated to assess the effectiveness of governance in reducing risk and preventing the emergence of solastalgia through adaptation actions.

Limitations associated with chapters 4 and 5 in relation to data collection and analysis also apply to this chapter. Other limitations associated with desk research and data triangulation have been discussed in chapter 3 and apply to the analysis conducted in this chapter.

6.4. Conclusion

This chapter aimed to explore how perceptions and attitudes towards governance, local development, and decision-making processes expressed by a community in the southeast of Ireland relate to expressions of solastalgia and place attachment. This chapter aimed to

explore themes of solastalgia, trust in governance, communication, and inclusion of locals in decision-making processes across multiple social, economic, and environmental issues and the influence these factors have on adaptive capacity. Findings indicate that attitudes towards governance and developments in Courtown are mostly negative. Negative attitudes arise from lack of communication, information, representation, and consultation regarding decision-making. Where lack of involvement of locals in decision-making and consultation was found, negative perceptions of and attitudes towards governance and decision-making have emerged.

Findings also indicate that those who report high levels of solastalgia are less likely to have trust in governance, believe political representatives care for the community or undesirable environmental change. On the other hand, people who reported all levels of place attachment also express weakened trust and feelings of representation. Where weak governance, lack of consultation and inclusion in decision-making has been found, public resistance in the form of protest and petitions has emerged. This chapter also highlights that when consultation and participation of locals in decision-making are inadequate, place attachment processes and feelings of control are weakened. Moreover, perceived indifference of governance to environmental losses contribute to feelings of powerlessness.

Results indicate that solastalgia is negatively related to perceptions of governance and perceived indifference of governance which can lead to negative attitudes and perceptions. Results presented within this thesis reveal the relationship between solastalgia, perceptions of governance and perceived indifference showing that those who experience strong solastalgia are more likely to hold negative perceptions of governance. Results across core chapters 4-6 indicate that local governance actions which transformed place, perceived governance indifference and lack of local consultation and inclusion in decision-making have contributed strongly to the emergence of solastalgia and may have preceded it. This chapter highlights how indifference of governance relates to scepticism towards developments and lack of trust which can hinder implementation of future adaptation actions. These issues predate the disappearance of the beach and installation of rock armour as evident from interviewees recollection of decision-making processes. Therefore, negative perceptions of governance have predated and contributed to the emergence of solastalgia emotions. Whereas participatory governance and co-development of decisions can reduce place disruption, promote place-based values, and create more equitable adaptive actions. Therefore, co-production of knowledge and

decision-making with local community groups will be crucial for successful implementation of adaptation actions in the future that build adaptive capacity and limit impacts to wellbeing. Moreover, this chapter has highlighted a call for a change in governance processes by community members that should be more inclusive, adopting co-production of decision-making from the outset and maintaining it throughout. These insights are important for consideration in adaptation policy and local developments. However, redevelopment of Courtown harbour is being undertaken with minimal consideration of climate change and local needs despite exposure and vulnerability to climate change impacts.

Chapter 7 will discuss the summary of findings for each research question as well as contributions to knowledge and policy recommendations.

7 Discussion and Conclusion

7.1 Introduction

This chapter synthesises the findings from the core chapters of this research to answer the research questions laid out in Chapter 1, Section 1.2. Specifically, this chapter draws conclusions from the core empirical chapters to develop insights for policymakers and communities to help create adaptation strategies that reduce undesirable place change and emergence of solastalgia. Ultimately it will provide adaptation and policy insights relevant for the EPA climate research strategy 2014-2020. These insights should aid in the development of more equitable adaptation and decision-making that focuses on co-development.

The main findings of the research will be briefly summarised in section 7.2. In section 7.3 the main contributions of the research to existing scientific knowledge will be discussed. Section 7.4 will analyse some of the relevant policy implications from key insights. Section 7.5 will discuss some of the limitations within the thesis. Finally, section 7.6 will discuss areas further research is needed and concluding remarks will be discussed in section 7.7.

7.2 Summary of findings

The principal aims of this thesis are as follows:

- To assess lived experiences of place disruption and loss as a result of negative environmental change occurring in Courtown County Wexford.
- To explore the impact adaptation strategies, have on experiences of place loss and community adaptive capacity.

With respect to these research aims, five research questions were be addressed:

1. Does the experience of loss and disruption result in the experience of solastalgia among community members?
2. Does place attachment moderate the experience of place loss/disruption and the experience of solastalgia?

3. How is place being reimagined following disruption?
- 4 What impacts does place loss/disruption have on outlook for the future?
5. What role do governance and decision-making processes play in the experience of place loss/disruption?

The aforementioned aims and objectives address significant knowledge gaps in our understanding of the relationships between solastalgia, place attachment, place disruption and their relationship with community outlook for the future. They also examine research gaps regarding relationships between impacts of slow and ongoing environmental loss with the experience of solastalgia in a coastal community and the complexities of emotional responses to loss of place and impacts on place relationships. Finally, the aims and objectives address knowledge gaps regarding community perceptions, attitudes and trust towards governance, local development, decision-making processes as well as communication and inclusion in decision-making across multiple developments and how they relate to solastalgia and place attachment.

This research uses the case study of coastal erosion and undesirable place change due to over development in Courtown and Riverchapel, County Wexford in the southeast of Ireland. The community of Courtown/Riverchapel have witnessed many undesirable landscape changes both from natural and human sources as well as inadequate governance and inclusion in local decision-making which have been explored in the core chapters. Chapter 4 of this research highlights the impact that loss of the beach and subsequent installation of rock armour as an adaptation action has had at the community level. While chapter 5 explores the individual lived experiences of undesirable place change that occurred alongside beach loss, such as large-scale development of residential buildings in more depth. This chapter also explored the impacts rapid social change has had on the community and individuals as well as the effects of limited facilities and services to support the expanding population. Chapter 6 highlighted the lack of inclusion and consultation in local decision-making, weak governance, harmful policies, and ownership contention of natural amenities, limited information and transparency related to local developments. The chapter also showed that many of the developments that have occurred in Courtown have been detrimental to the area. Such experiences of undesirable place change and exclusion have contributed to the emergence of solastalgia emotions.

Quantitative and qualitative methods were used to answer each of the research questions and have been presented in core chapters 4-6. A quantitative approach was used in chapter

4 to empirically measure solastalgia and explore how it relates to place attachment, place disruption and outlook for the future. A qualitative approach was used in chapter 5 to assess in greater depth the lived experiences individuals have in relation to place change, solastalgia and place attachment. Finally, both quantitative and qualitative approaches were used in chapter 6 to assess how solastalgia and place attachment relate to governance and decision-making processes with a focus on local communication and participation.

Both quantitative and qualitative methods have been used by previous scholars to examine solastalgia, with each method having merits and challenges. Using a questionnaire survey incorporating a solastalgia scale was beneficial for assessing the levels of solastalgia between different groups and examining how other factors influenced the strength of solastalgia experienced by those groups. Devising the correct items for the scale and achieving good internal reliability was difficult, however a solastalgia scale adapted from Higginbotham et al (2006) was used. Employing the scale was beneficial for more easily measuring the extent of solastalgia expressed by a community. It also allowed for comparisons between other scales, such as the scale employed for place attachment. However, such a method does not provide depth of individual experiences of solastalgia. Therefore, qualitative methods were beneficial for examining more in-depth experiences. It was more difficult to assess which emotions were indeed solastalgia and if the participant was experiencing solastalgia using qualitative methods as emotions are rarely exact. However, work has been carried out using qualitative methods by McNamara and Westoby (2011) who provide a clear indication of the emotions related to solastalgia as discussed in Chapter 5. Drawing on the emotions associated with solastalgia that McNamara and Westoby (2011) provided it was possible to determine when a participant was experiencing solastalgia emotions. This helped overcome difficulties examining solastalgia using qualitative methods. The following sections will provide a brief summary of the findings from each empirical chapter to answer the key research questions.

[7.2.1 What is the extent of solastalgia and place disruption experienced by the communities of Courtown harbour and Riverchapel and have these experiences influenced future perceptions of place? \(Chapter 4\)](#)

Chapter 4 explored experiences of solastalgia and place disruption resulting from undesirable landscape change in the southeast of Ireland. More specifically the chapter investigated the extent of solastalgia, and place disruption experienced by a community

witnessing place change, how these concepts are related and their association with future outlook. Loss of place and undesirable place change can have severe impacts on the wellbeing of communities and individuals while also reducing their ability to adapt to future change. The links between solastalgia, place disruption and future outlook in relation to slow and ongoing place loss such as coastal erosion have been understudied but reflect the experiences of millions worldwide as they struggle to adapt to climate change impacts (e.g., sea level rise, increased storminess, flooding). The findings within this chapter provide ample evidence that undesirable place change in the southeast of Ireland contributes to the emergence of solastalgia, including emotions such as sadness, anger, worry and disappointment consistent with findings by Connor et al (2004) and McNamara and Westoby (2011).

The chapter provides evidence that solastalgia can result from slow and ongoing environmental change such as coastal erosion and is being experienced by a community within Ireland. To the authors knowledge this the first account of solastalgia being linked to coastal erosion within an Irish context. Findings showed that forty two percent of respondents experience place disruption as a response to place loss with specific impacts on recreation, family meetings, community, memories, aesthetics, therapeutic opportunities and tourism. The impacts of place loss and experiences of solastalgia are stronger for those who have lived in the area longer. In particular people who have lived in Courtown and Riverchapel 20 years or more experience solastalgia more strongly. This result makes sense in the context of the relationship between place attachment and solastalgia discussed in section 7.2.2. Place attachment is a common mediating factor for solastalgia, and length of residence is linked to the strength of place attachment (Anton and Lawrence, 2016; Galway et al, 2019). The chapter also highlights seasonal variation of solastalgia, with more negative emotions expressed in the summer most likely related to the association the beach has with tourism and recreation in summer months reigniting feelings of loss. Scholars have linked uncertainty and concerns for the future and future generations to experiences of solastalgia (Connor et al, 2004; Galway et al, 2019). Findings presented in Chapter 4 highlight the strong correlation between negative outlook for the future of place and strength of solastalgia. This is also true for concerns for future generations, where concern is greater for people who experience stronger solastalgia agreeing with findings of Connor et al (2004). Chapter 4 highlights key mediating factors related to solastalgia such as length of residence, place disruption, season and place

attachment. While also showing that pessimistic outlooks for the future of place and concern for future generations are important aspects for how solastalgia is experienced.

This research has provided greater understanding of solastalgia and the factors affecting how it is experienced following chronic environmental change. As climate change impacts unfold worldwide experiences of undesirable place change and exposure to risks such as sea level rise and intensified winter storms, solastalgia experiences are likely to become a more common aspect of peoples everyday lived experiences of place. Chapter 4 highlights key mediating factors of solastalgia and better understanding of key relationships with place attachment and place disruption that will help underpin successful adaptation to future climate and environmental change. Chapter 4 also shows the reliability of employing a solastalgia scale to measure solastalgia which would be beneficial for research in other settings related to solastalgia impacts.

7.2.2 How does solastalgia, place attachment and place disruption influence community and individual ability to cope with environmental change and loss of place? (Chapter 4 and 5)

This research question is answered through findings from both chapters 4 and 5. Chapter 5 explored how place loss from coastal erosion impacted the community of Courtown and Riverchapel, Co. Wexford using a qualitative approach. The chapter built upon the findings of chapter 4 and aimed to explore lived experiences of solastalgia and place attachment at the individual scale in relation to undesirable place change in more detail. Chapter 5 highlighted that people's responses to, and interpretation of place disruptions caused by adaptation actions is still poorly understood and aimed to increase scientific understanding of these processes. Through in-depth interviews the impacts of multiple developments and undesirable place changes were explored as well as interviewee's ability to cope with place change. Findings from chapter 4 showed a strong positive relationship between solastalgia and place attachment and that people who experience strong solastalgia are also more likely to feel disruption from loss of place. However, place dependence has been weakened as adaptation of place relationships within the community are still forming. Chapter 5 found that interviewees experienced emotional responses consistent with solastalgia emotions due to place loss and undesirable place change. Findings show that solastalgia is experienced at the community level, while some solastalgia emotions are experienced deeply by individuals.

Section 7.2 highlighted some of the undesirable place changes that the community of Courtown and Riverchapel have witnessed led to the emergence of solastalgia. They have also experienced harmful policies such as *'Renewal Scheme for Traditional Seaside Resorts'*, lack of consultation regarding local developments, lack of inclusion in decision-making processes and the sale of natural amenities that were once thought to be in public ownership. In addition, adaptation actions such as the installation of rock armour has contributed to feelings of distress which often occurs when place values and place specific contexts are not taken into consideration. It is important for adaptation strategies to understand and consider how adaptation actions and place disruption will be interpreted by communities to avoid adverse emotional reactions more deeply. In the case of Courtown Co. Wexford, incidences of coastal erosion have been some of the most severe in Ireland with the north beach being greatly depleted. Over recent decades Courtown's north beach has been severely depleted by coastal erosion, it also experienced rapid expansion of residential development and new population. The rapid expansion was not accompanied by the adequate provision of services and facilities.

Chapter 4 and 5 show that solastalgia and place disruption does not only apply to landscape icons but is experienced by local communities as a result of chronic and slowly unfolding place change such as coastal erosion. While recent research indicates that place disruption can lead to negative impacts for mental health (Rehling and Sigston, 2020) but also cause barriers to people's ability to cope with environmental change. Chapter 5 findings were in line with previous research which found significant and positive relationships between place attachment and solastalgia. More intense feelings of place attachment are related to stronger experiences of solastalgia following place change. In Courtown, despite intense feelings of solastalgia and experiences of place disruption residents still held moderate levels of place attachment. Findings also showed that length of residence is strongly related to both solastalgia and place attachment. However, place dependence was weakly expressed by people who were interviewed with some willing to leave Courtown. Others expressed reduced or weakened place attachment due to the undesirable place changes that have taken place. This may be reflected in people's willingness to adapt to change as those who have weakened attachment are more prepared to leave than engage in place protective actions. While some interviewees indicated that they have already adapted to the loss of the beach by shifting their focus and activities to other beaches nearby and the local woods. These people expressed a deep connection to place and were more prepared to engage in place protective actions including protest

towards the sale of Courtown woods. Place attachment was also found to have a strong positive correlation to optimistic outlooks for the future of place even if intense solastalgia emotions were present. This has been reflected in previous studies that attributed place protective behaviours and engagement in adaptation actions to strong expressions of place attachment and solastalgia following loss of place (Higginbotham et al, 2006; Eisenman et al, 2015; Albrecht, 2007; Lemée et al, 2019). Therefore, in cases where people experience undesirable place change or anticipated place change those who are strongly attached to place and experience solastalgia are more willing to adapt to place change. However, on-going negative place changes to the case study location are likely to intensify under climate change. Therefore, despite positive future outlooks of people with strong place attachment, solastalgia emotions are likely to become a more dominant aspect of peoples everyday lived experiences of place and continue to add pressure on residents' ability to cope with place change.

Therefore, a large portion of the community experience solastalgia emotions and place disruption which has impacted some people's perceptions of place and ability to cope with change. A multitude of stressors exist which coastal communities must contend with originating from political, social, economic, and environmental sources which can reduce a community's ability to adapt to future change. If adaptation actions are not carried out with place specific values at the centre of decision-making processes, they risk impacting the health and wellbeing of communities, causing distress, and weakening adaptive capacity. Findings in this thesis have shown that adaptation actions such as installation of rock armour can be met with resistance or barriers when they run counter to community values, beliefs and relationships with place. Chapter 5 shows that transformation of a place due to adaptation actions if not carefully executed can undermine community wellbeing and place relations. In case of Courtown woods, poorly executed decision-making which did not take into account place specific values resulted in heavy resistance. This thesis also found that place attachment can be challenged by adaptation actions that reinforce place disruption instead of alleviating it leading to future limitations for adaptation

7.2.3 How have Courtown harbour and Riverchapel communities everyday lived experiences of place been altered by negative environmental change and loss of place? (Chapter 5)

Chapter 5 specifically dealt with individuals everyday lived experiences of place have changed as a result of undesirable place change through the use of in-depth interviews with five key stakeholders. Moreover, the chapter explored individual experiences and emotional challenges associated with place loss related to slow-onset environmental changes as well as more rapid development perceived as being negative. Using photo-elicitation and walking interviews the chapter indicates that interviewees express strong emotions associated with solastalgia such as sadness, anger, worry, distress and powerlessness. While undesirable place changes, social change and governance issues have changed people's relationships with place.

Interviews in chapter 5 discussed physical and emotional distress that place change has caused some people to experience, with one interviewee noting they feel physically sick to look at Courtown today. Other interviewees expressed deep sadness, anxiety or shock when visiting the beach or seeing sprawling residential development. Due to the place changes that have occurred, interviewees noted a sense of unfamiliarity with place when viewing images of the past and present. This feeling is a key component of the experience of solastalgia as interviewees experience a sense of 'home sickness' regarding undesirable place changes while remaining in their home (McNamara and Westoby, 2011). In Courtown place loss occurred alongside structural, social and economic change highlighting the dynamic and multifaceted nature of place change that contributed to feelings of loss for the community. Chapter 5 found that Interviewee's connections and interactions with place have been challenged by large scale developments and environmental loss. This chapter also showed that place attachment was greater in the past before undesirable place changes occurred resulting in lower frequency of visitation to the beach. This has also resulted in desires to leave Courtown due to reduced place attachment. Chapter 5 showed that in Courtown a combination of place changes, social change altering community makeup and exclusion from decision-making has caused distress and undermined sense of place for some.

Chapter 5 also began looking at the impacts that weak consultation and participation with locals in decision-making has. Some interviewees expressed a sense of powerlessness in the face of place change. Findings presented in this chapter are in line with that of other

studies that show how weak consultation and inclusion of locals in decision-making can undermine place attachment and exacerbate loss (Connor et al, 2004; Higginbotham et al, 2006; Marshall et al, 2012; Warsini et al, 2014). Whereas increasing participation can help nurture positive place relationships (Clarke et al, 2016; Anton and Lawrence, 2016; Von Wirth et al, 2016). Noteworthy are the suggestions by interviewees that decision-making should be conducted using a ground up approach, with greater emphasis on communication, consultation and access to information regarding local decisions. This will require as interviewees suggested, local knowledge being consulted from the outset of decision-making and maintained throughout which will be discussed in greater detail in section 7.2.5. However, lack of engagement persists in local decision-making evident in the sale of Courtown woods and tensions that have emerged.

7.2.4 How are the communities of Courtown and Riverchapel reimagining place? (Chapter 5)

Despite solastalgia being associated with a negative outlook for the future, not everyone shares a pessimistic outlook. While some people interviewed who expressed weakened place attachment desire to leave Courtown and view the future of place negatively some people within the community are actively trying to re-vitalise and re-imagine place. Local community groups such as the Courtown Community Council (CCC) and some people interviewed are actively working on projects such as expanding walking trails and promoting access to the sea. With the recent sale of the woods some interviewees engaged in protests to protect the woods. Chapter 5 showed that some interviewees who have expressed strong connections to place and the community are actively trying to rebuild community cohesion. Actions of the CCC are aimed towards shifting people's attention towards unchanged natural amenities such as the woods as interviewees indicated that re-imagining the future of Courtown is the only way forward. For some this involves reinstating the beach while others believe the beach is gone and other avenues should be explored. The sale of the woods to a private company has caused tension as many people were beginning to focus their place attachment on the woods which played an important part for many in re-imagining the future of Courtown. The sale of the woods and stalled marina proposals have undermined community efforts to come to terms with loss of the beach and other undesirable place changes and re-imagine place. Plans to construct a marina although seen as a positive plan for the future by some, it has reinforced experiences of worry for others who are concerned these developments will repeat past mistakes and reduce access to the seafront for locals and again raising concerns over

ownership of the sea front. The marina plans and development of hotels on the seafront also fail to meaningfully include considerations of climate change impacts. Chapter 5 also noted that adaptation actions such as the installation of rock armoury has been perceived as undesirable place change leading to increased stress and feelings of loss. However, some interviewees are actively re-vitalising and re-imagine place despite the challenges they are experiencing.

7.2.5 How are attitudes towards governance and decision-making processes related to solastalgia and place attachment? (Chapter 6)

Chapter 6 built upon the work from core chapters 4 and 5 and explored in detail community attitudes and perceptions towards governance, decision-making processes, local developments and relationships between solastalgia, place attachment and governance. This chapter explored these themes in the context of multiple sources of place change such as rapid residential development, marina plans, and sale of local woods and negatively perceived adaptation actions. Findings in chapter 6 agree with many scholars that climate adaptation in valued places should be co-produced and place specific (Marshall et al, 2012; Barnett, 2016; Malloy and Ashcraft, 2020, Westoby et al, 2021). In Courtown/Riverchapel adaptation actions in response to coastal erosion failed to include the community through consultation and participation opportunities causing the emergence of distress for some. Chapter 6 highlighted that lack of public engagement in decision-making and adaptation can lead to resistance, potentially constrain future adaptation actions and reduce trust in governance. Often communication with locals and consideration/inclusion of local knowledge are not considered in decision-making processes being labelled as compliance exercises. Chapter 6 discussed the importance for adaptation actions and governance to consider the impacts of limited inclusion in decision-making across multiple developments alongside environmental loss.

Chapter 6 found that public attitudes and perceptions of governance, decision-making processes, and most local development in Courtown are negative. These attitudes and perceptions have arisen from weak communication, representation, consultation and limited provision of information and transparency. The chapter's findings showed that trust in governance was weak for people who reported all levels of solastalgia and place attachment but was weakest for those who reported the strongest levels of solastalgia. There is also a strong belief that political representatives do not care for the community or place loss. Weak governance and trust were also associated with lack of

communication, consultation and inclusion in decision-making with many developments in Courtown/Riverchapel being detrimental for the area. This has resulted in recent petitions, protests and resistance towards council decisions and proposed developments. Moreover, the indifference perceived by governance to environmental loss and undesirable place change has contributed to feelings of powerlessness for some. This chapter also highlights that when consultation and participation of locals in decision-making are inadequate, place attachment processes and feelings of control are weakened. Moreover, perceived indifference of governance to environmental losses contribute to feelings of powerlessness and lack of trust.

A key finding of chapter 6 is that strong expressions of solastalgia are related to negative perceptions of governance, while perceived indifference of governance towards undesirable place change and weak inclusion in decision-making leads to the emergence of negative attitudes and perceptions. This has led to resistance towards developments. Therefore, negative attitudes and perceptions causing reduced trust can hinder successful implementation of future adaptation plans. The chapter also discussed the benefits of co-production of knowledge and decision-making with locals for the implementation of adaptation actions that build adaptive capacity as opposed to reproducing distress and impacting wellbeing. Important to note is that interviewees call for a change in governance and decision-making processes. One interviewee stressed the need for more inclusive decision-making, adopting co-production of knowledge from the outset and maintaining communication throughout.

7.3 Contribution to knowledge

7.3.1 Solastalgia can emerge from slow-onset environmental change

There have been some attempts to empirically measure solastalgia, most notably by Higginbotham et al (2006) with the construction of the Environmental Distress Scale. An adapted version of this scale was employed in two other studies by Warsini et al (2014) and Eisenman et al (2015). A scoping review by Galway et al (2019) highlighted five studies which measured solastalgia, the most common method for investigating solastalgia was through interviews. Therefore, a need for further empirical case studies measuring solastalgia was needed to better understand how it emerges. Case studies also focus on environmental changes linked to extreme weather events, natural disasters, resource extraction or climate change with little focus on chronic changes. Albrecht (2019) did discuss how solastalgia could emerge from slow-onset and chronic

environmental changes, but empirical research was lacking. Previous research into solastalgia had also focused mainly on landscape icons and case studies within the US and Australia. However, McNamara and Westoby (2011) mentioned that the erosion of coastlines could contribute to solastalgia, but this was not empirically examined. Quantitative investigation of common mediating factors (e.g., place attachment, powerlessness, trust in governance, uncertainty for the future) for solastalgia were also understudied (Galway et al, 2019).

This research adapted the EDS for use in the context of case study of coastal erosion. A solastalgia scale was created which has good internal reliability and can be applied in other contexts. The scale was successfully employed to empirically measure solastalgia increasing scientific knowledge of how this experience emerges. This research also documents an empirical case of solastalgia outside of the US and Australia in relation to chronic environmental change such as coastal erosion increasing scientific knowledge of the types of change and places solastalgia can emerge. As more mundane examples, such as coastal degradation are often overlooked this research begins to document experiences that could be shared by millions worldwide as they struggle to cope with climate impacts. This research also presents the first known case of solastalgia in Ireland, given that by 2050, 2 million people will be living within 5km of the Irish coast, experiences of solastalgia are likely to become more common and should be considered in adaptation strategies. The research also provides ample evidence for the existence of solastalgia in the context of chronic environmental change and makes a strong case for these experiences existing worldwide.

This thesis adds to the documentation of places where solastalgia and chronic environmental change is being experienced. However, more case studies are needed in relation to different environmental changes and pressures to fully understand how and why solastalgia emerges from chronic environmental changes. It would be useful to extend the case studies where solastalgia is being experienced in Ireland and catalogue the environmental changes which caused its emergence and the key mediating factors. It would also be useful to examine the role community groups play in how solastalgia is experienced by residents and identify avenues for helping such groups overcome solastalgia. Therefore, once solastalgia is identified in a place the best approach for helping communities overcome it could be employed, possibly through community volunteer groups. This will be important to consider as climate change intensifies, and adaptation actions are implemented.

7.3.2 Solastalgia, place attachment and future outlook relationships

As noted in the previous section, the relationships of many mediating factors for solastalgia such as place attachment, future outlook and powerlessness are understudied and poorly understood. Research by Higginbotham et al (2006) and Warsini et al (2014) discovered that place attachment is an important mediating factor for solastalgia. Specifically, stronger place attachment is related to more intense experiences of solastalgia, but there is little empirical evidence to support this relationship. Swapan et al (2020) carried out a review of studies related to place attachment and natural hazards, while solastalgia and place attachment relations were mentioned there was little empirical investigation. Therefore, scholars have called for research to enhance understanding of place attachment and solastalgia relationships in different contexts (Cunsolo and Ellis, 2018; Galway et al, 2019). Also, the influence of future perceptions and uncertainty regarding the future of place is under-investigated. Galway et al (2019) also highlight that the role of socio-economic factors and decision-making power play in intensity of solastalgia experiences needs further exploration.

This research has provided empirical evidence for the relationship between solastalgia and place attachment. The findings agree with the position of Higginbotham et al (2006) and offer ample evidence that when place attachment is strong, solastalgia will be more intensely experienced following undesirable place change. The research also presents findings that strong feelings of solastalgia relate to pessimistic views of the future. Within the research scales have been created for place attachment and solastalgia with good internal reliability which provided meaningful results. The research also presents measures to investigate relationships between outlook for the future and solastalgia. These scales and measures can be adapted and employed in other contexts to investigate the relationships between solastalgia and its mediating factors. Not only has this research provided ample evidence for place attachment and solastalgia relationships in the context of coastal erosion but multiple social, structural, and political contexts. Therefore, findings within this research have enhanced the understanding of place attachment, solastalgia and future outlook relationships in various contexts.

7.3.3 Adaptation actions, undesirable place change and government policy can reinforce distress from place loss.

Some scholars have shown that transformative adaptation actions such as flood walls and managed retreat can cause stress, this is also true for government policy interventions (Clarke et al, 2018, Solecki and Friedman, 2020). Albrecht (2020) discussed how any pervasive change to a place where place identity is challenged has the potential to foster solastalgia. While Warsini et al (2014) indicated that emotional distress can occur when people are forcibly separated from their homes. There is a strong history of scholars showing how undesirable place change can result in distress or anxiety but the connection between adaptation actions and solastalgia is poorly understood. However, any place change that is perceived as undesirable and undermines place attachment or place identity can contribute to experiences of solastalgia (Albrecht et al, 2007; Warsini et al, 2014). Government policy and planning as well as transformative place changes can impact residents if place specific contexts and socioeconomic contexts are not considered (Solecki and Friedman, 2020). Social contexts and existing vulnerabilities shape how residents are impacted by adaptation policy and planning (Ribot, 2014; Sarzynski, 2008; Solecki and Friedman, 2020). Market-orientated policies that include land re-zoning and privatisation of public land are examples of policy and planning that can have adverse effects on communities (Newman and Wyly, 2006; Solecki and Friedman, 2020).

This research contributes to scientific knowledge as it shows how solastalgia emerges not only from environmental loss but also from government and local authority planning and policy. Policy such as the seaside renewal scheme which offered tax breaks to tourism related buildings and land re-zoning encouraged rapid residential development transforming Courtown. This also led an influx of new people changing the social makeup of the area and undermining community cohesion. Chapter 5 provides ample evidence that such consequences of policy and planning contribute to the emergence of solastalgia emotions and feelings of loss in conjunction with environmental degradation. Chapters 4 and 5 also showed that adaptation actions in the form of rock armoury can be negatively perceived and intensify feelings of loss. More recently privatisation of what was believed to be public land has exacerbated feelings of loss resulting in strong resistance and diminishing trust in governance. This research describes the anatomy of loss and place change, where place loss is multifaceted with multiple social, political and environmental changes contributing to the emergence of solastalgia.

7.3.4 Governance, solastalgia and trust

Galway et al (2019) review of solastalgia research showed very little research investigating the relationship between solastalgia and trust in governance. Higginbotham et al (2006) showed that reduced trust in governance and industry was related to the intensity of solastalgia experienced. Alam (2018) discusses how infrastructure development can lead to distress, social tensions and solastalgia. While Alam (2018) doesn't directly research the relationship between trust in governance and solastalgia, the author's findings show that governance decisions can result in social tension and distress. Tschakert et al (2013) also highlighted that failed government initiatives can worsen feelings of solastalgia but does not allude to the relationship between solastalgia and perceptions or attitudes towards governance. Government policies and planning can create feelings of mistrust, while distress can be exacerbated through policy (Askland and Bunn, 2018). Albrecht (2020) discusses how the emergence of solastalgia is the outcome of deliberate political policy.

This research provides evidence for the relationship between solastalgia and undermined trust in governance. Government and local authority policy that have resulted in undesirable place change, privatisation of natural amenities and lack of facilities and services have compounded feelings of loss in relation to coastal erosion. This combined with weak communication and inclusion in decision-making processes have reduced trust in governance and belief that resident's views count. Moreover, these perceptions and attitudes are more likely to be expressed by people who experience strong solastalgia. Therefore, the research contributes to scientific knowledge by providing evidence that governance actions and perceived indifference towards community experiences of place change contribute to the emergence of solastalgia and reduced trust.

7.4 Policy recommendations

This section provides two policy recommendations based of the findings from the core chapter 4-6. The policy recommendations are as follows:

Policy recommendation 1.

Decision-makers need to consider solastalgia in the development of adaptation actions and strategies. They must consider how planned adaptation actions may result in the emergence of solastalgia and incorporate measures to alleviate this experience. Such measures may include strengthening place attachment, trust in governance, consultation, communication and community cohesion which have been shown by this thesis to help overcome solastalgia emotions:

It is common for adaptation strategies to focus on quantifiable and material aspects of loss due to environmental and climate change. Often overlooked are the emotional and psychological impacts of undesirable place change that contribute to the emergence of solastalgia. Therefore, adaptation planning, government and local authority policy should consider solastalgia but also how they may intensify experiences of loss.

Within this research it has been discussed how adaptation planning routinely focuses on material and tangible aspects of climate or environmental change using economic measures to assess material losses (Adger et al, 2013). Often aspects of place that are less tangible for decision-makers and difficult to measure are ignored. However, climate change also threatens people's emotional and psychological wellbeing. Barnett et al (2016) discusses how climate change can cause dispossession of tangible assets such as property but also causes loss of health, identity and place attachment which are considered intangible losses. For some, important losses maybe material and financial but for other people losses maybe be intangible and related to connections with place. Adaptation actions themselves can intensify feelings of loss by not considering place specific contexts, failing to include local knowledge and public consultation, becoming viewed as undesirable place change. Solastalgia may emerge following undesirable place change but also from economic, political and social forces, in many cases political policy can lay the foundation for the emergence of Solastalgia (Albrecht, 2020). However, Albrecht (2020) suggests that solastalgia can be overcome through personal and community action but also through a shift in how decision-making is conducted.

The case study of Courtown and Riverchapel highlight that government policy, local authority decision-making and adaptation actions can result in solastalgia. It also

highlights that intangible losses to place can occur from policy and adaptation actions. This thesis demonstrated that understanding the impact that policy and adaptation can have on coastal communities is important for the successful implementation of future adaptation actions. While adaptation actions and policy contributed to the emergence of solastalgia in Courtown and Riverchapel, future adaptation planning should consider solastalgia emotions to avoid intensification. Considering solastalgia emotions in future adaptation planning will be crucial as 2 million people are projected to live within 5km of the Irish coastline by 2050. It is very likely that solastalgia emotions will increase in Courtown and Riverchapel as place continues to experience change under climate change and resulting adaptation responses. This is also likely to become a more common element of people's experience of place worldwide as they also adapt to climate change. Therefore, the research findings have relevance nationally and internationally for other coastal locations as more people will live at or near the coasts.

Policy recommendation 2.

Include local knowledge and co-production in adaptation actions and decision-making processes. Decision-makers should consult locals from the outset of planning adaptation actions and maintain engagement throughout the decision-making process:

Decision-making at local level often fails to adequately consider local knowledge and involves weak consultation and inclusion of locals. Issues surrounding weak consultation and inclusion in decision-making fosters lack of trust and feelings of powerlessness also contributing to the emergence of solastalgia. Therefore, decision-making processes need to focus on co-production of knowledge and local decisions while maximising place attachment. This should help create a more equitable decision-making process and help communities come to terms with solastalgia.

This thesis showed that co-production of knowledge with local residents is crucial for more equitable adaptation decision-making that helps people come to terms with solastalgia. This requires strong consultation, consideration of local knowledge and inclusion of locals in decision-making processes. In Courtown many developments in the harbour and north beach were carried out with little consultation with locals who view them as detrimental to the area. In Ireland decision-making relies on technical expertise and often fails to incorporate other forms of knowledge (Clarke et al, 2018). Consultation often becomes a compliance exercise with the minimum legal requirements for communication being met and public engagement being seen as an obstacle.

There is growing evidence provided by many scholars that co-producing knowledge and including a range of stakeholder in decision-making will aid successful implementation of adaptation actions (Bahadur and Tanner, 2012; Van Bommel et al., 2016, Clarke et al, 2018). In Courtown local knowledge has largely been ignored which has eventually led to resistance towards developments and lack of trust in the local authority. Failing to adequately include locals in decision-making has led to resistance from other coastal communities in Ireland such as Clontarf Co. Dublin (Clarke et al 2018). Therefore, ignoring local knowledge and local perceptions of place can produce social tension and lead to the emergence of distress. This research shows that co-production and participatory governance will be crucial for minimising the emotional impacts of place change from both natural and human induced sources. Future adaptation policies should consider place values and include locals throughout the process which will help create adaptation actions that improve wellbeing as opposed to intensifying feelings of loss. Albrecht (2020) proposes that a more collective form of decision-making in governance is needed. A new system of decision-making would incorporate traditional forms of knowledge and be more inclusive of locals. Albrecht (2020) suggests that solastalgia can be overcome through collective action and collaboration with individuals and communities.

Moreover, local people of Courtown call for a change in how decision-making is carried out, with more inclusion of locals from the outset. The thesis provides evidence that more inclusive decision-making, adopting co-production of knowledge from the outset and maintaining communication throughout is needed. These insights are important for consideration in adaptation policy and local developments. However, redevelopment of Courtown harbour is being undertaken with minimal consultation and consideration of local knowledge.

7.5 Limitations

Chapters 4-6 discussed the limitations present in each core chapter. However, an additional limitation has been identified in relation to the entire thesis.

7.5.1 Limitations of a single case study design

This thesis focused on a single case study located in Courtown and Riverchapel, Co Wexford in the southeast of Ireland. While the use of case studies in research especially climate research is growing in popularity some scholars have highlighted limitations to using a single case study such as a limited ability to generalise to other areas (Rowley,

2002; Eisenhardt and Graebner, 2007; Gustafsson, 2017). Some concerns associated with a single case study research design are that such research projects may have less scientific rigour with some findings being difficult to validate (Rowley, 2002; Baškarada, 2014; Gustafsson, 2017). Single case studies can also lead to the generation of large and rich data sets which some scholars have pointed out can present problems for researchers when deciding what findings to include (Eisenhardt, 1989). There is also a concern that findings from a single case study will be less robust than research designs that include multiple case studies (Yin, 2009; Clarke et al, 2018).

In this research core chapters 4-6 relied on analysis of data from one case study with chapters 4 and 5 focusing on a single data source in each chapter. However, chapter 6 followed a data triangulation approach incorporating multiple data sources, it also assessed themes discussed in chapters 4 and 5 across multiple social, political and environmental issues. Chapter 4 relied on a single case study and a quantitative approach to better understand the extent of solastalgia and place disruption within a community. This provided an opportunity to test the existence and extent of such concepts in an Irish context. This chapter discussed how the unidimensional scales produced to empirically measure place attachment and solastalgia have very good internal reliability and can be adapted to other contexts and case studies. The research is place specific as it aims to assess how undesirable place change contributes to the emergence of solastalgia for a coastal community. Concerns over generalisability can be minimised as scales used in chapter 4 were adapted from previous research on solastalgia (Higginbotham et al 2006) and place attachment (Kaltenborn, 1998; Clarke et al, 2018) which used a case study design. Analytical generalisation in a single case study research design can be achieved by using previously developed theory as a template and comparing findings with other case studies (Rowley, 2002). This research used adapted scales and applied theory from previous research, arriving at similar conclusions showing minimal concerns for lack of generalisability. Furthermore, the thesis provides valuable insights of peoples lived experiences of loss and the anatomy of place change regardless of the extent of generalisability. The purpose of chapter 5 was to gain a deeper understanding of people's connections to place at an individual level and how solastalgia emerged from undesirable place change. This chapter increased richness of data and validated and contextualised findings of chapter 4. While chapter 5 employed a single case study location it compensated by assessing multiple issues spanning environmental, social and structural change while exploring findings of chapter 4 in more depth. Chapter 6 explored multiple

political, social, structural and environmental issues incorporating a wide range of data sources and analytical techniques in order to further contextualise and validate findings from both chapters 4 and 5, which is a key strength of this thesis.

While some limitations exist associated with the use of a single case study design this thesis incorporates a broad range of methods and data sources to overcome them. Bias and limitations associated with a single case study design have been reduced as much as possible through the implementation of a multi-methodological approach and data triangulation. The opportunity using a single case study provides to explore the richness of data and many perspectives available from multiple sources is a strength of this approach. For this reason, data triangulation was employed to corroborate facts and validate findings from rich and robust data sets (Rowley, 2002). Despite concerns some scholars have with the limitations of a single case study design, this approach continues to be employed as it offers in-depth insights and richness of data that other approaches may not (Rowley, 2002). A single case study also offers opportunities to acquire more depth of understanding of a subject or phenomenon and create high-quality theory (Gustafson, 2017). Furthermore, this thesis was inherently interested in investigating in-depth the emergence of solastalgia because of slow-onset place change at a local level where a single case study design was deemed more appropriate to acquire the depth of understanding needed.

7.6 Future research

Throughout the thesis each empirical chapter identified possible avenues for future study. Directions for future research are explored in greater detail in the following section.

7.6.1 Community groups influence on experiences of solastalgia

Research has shown that undesirable place change and resulting emergence of solastalgia can result in reduced community cohesion (Warsini et al, 2014; Albrecht et al, 2007). Extensive urban development and influx of new residents can cause social tensions in communities especially coastal communities where natural aesthetics and tradition are important (Solecki and Firedman, 2020). In some cases, undesirable place change can undermine place attachment and cause distress (Higginbotham et al, 2006, Phillips and Murphy, 2021). However, this research has corroborated some scholar's findings that people who express strong place attachment and experience undesirable place change also experience intense solastalgia emotions. Place attachment is an important mediating

factor for solastalgia, and maximising place values may help people come to terms with solastalgia emotions (Galway et al, 2020; Phillips and Murphy, 2021). Other important factors in the expression of solastalgia are feelings of powerlessness, lack of representation, indifference of governance and weak consultation and inclusion in decision-making (McNamara and Westoby, 2011; Galway et al, 2020; Phillips and Murphy, 2021). However, Albrecht (2020) suggests that some avenues to overcoming experiences of solastalgia can be found through collective community action and more inclusive decision-making processes.

Local community groups such as Courtown Community Council (CCC) and Protect Courtown Woods (PCW) are involved in climate awareness initiatives and place protective behaviours. Chapters 5 and 6 showed that some members of these groups express strong connections to place despite feelings associated with solastalgia as well as positive outlooks for the future. They aim to increase people's attachment to place and re-imagine a better future for Courtown. Such groups are also acutely aware of their community's vulnerabilities and the risks associated with climate change. As discussed in chapter 6 these groups call for co-production of knowledge and decision-making as well as more transparent decision-making processes. More recently, the CCC and PCW have begun looking for national community groups to join to increase their ability to protect Courtown from undesirable and detrimental place change. They also have the ability to rally the community together to oppose the sale of natural amenities to private investors highlighting the strong influence community groups have with local residents.

As 2 million people are projected to live within 5km of the Irish Coastline by 2050, experiences of solastalgia are likely to become a more dominant aspect of people's experiences of place. While new policy for coastal management may run the risk of perpetuating the status quo and intensifying already present feeling of loss and vulnerability. It is important to consider how future climate change and adaptation policy will affect existing experiences of loss. The influence of community groups such as CCC on resident's experiences of solastalgia is not an extensively studied research area covered in Galway et al (2019) scoping review of solastalgia. Although Albrecht (2020) discusses the importance of collective action in overcoming solastalgia emotions there is little empirical evidence of this relationship. While the important role that community groups and residents play in climate adaptation has been studied by many scholars (Pringle et al, 2012; Cunningham et al, 2016; Hegger et al, 2017), how community groups can help overcome solastalgia is understudied. McNamara and Westoby (2011) provide some

insight into how local community leaders play a role in adaptation as main holders of knowledge but provide little discussion of how such leaders come to terms with solastalgia. Community groups such as CCC are actively promoting place attachment, community cohesion and increasing resident's self-efficacy. The benefit of community groups overcoming undesirable place change and feelings of loss has occurred in Maharees Co. Kerry. The Maharees Conservation Association brought a community together to tackle coastal erosion and protect local sand dunes when governing bodies failed (Irish Examiner, 2020). Therefore, a direction for future research would be to explore if community groups can help residents overcome experiences of solastalgia and place loss.

7.7 Concluding remarks

This thesis was dedicated to understanding experiences of solastalgia from slow-onset and chronic place change and the relationships between place attachment, place disruption, future outlook and trust in governance. Place loss profoundly impacts the wellbeing of individuals and communities while often negatively impacting their ability to cope with future change. This research investigated experiences of solastalgia in Courtown Co. Wexford resulting from undesirable place changes such as beach loss, extensive development, and sale of natural amenities to private investors. With a projected increase of people living near the coast, more people worldwide are at risk of future climate change impacts such as rising sea levels and increased storminess. Therefore, solastalgia is likely to become an increasingly dominant aspect of everyday lived experiences of place for millions of people world-wide. This thesis has also shown that the adaptation actions implemented in response to environmental or climate change can intensify feelings of loss. It will be important to consider solastalgia in adaptation planning to help communities overcome solastalgia as opposed to contributing to its emergence.

The thesis provided evidence of solastalgia being experienced by a large portion of a community in the southeast of Ireland. It has re-emphasised the types of emotions associated with solastalgia such as sadness, worry and disappointment, powerlessness, anger and distress. This thesis has also increased understanding of the relationship between solastalgia and place attachment showing that people who express strong place attachment also experience more intense solastalgia emotions following place loss.

Moreover, pessimistic outlook for the future and concern for future generations is strongly correlated to the strength of solastalgia experienced.

Findings of this research showed that slow onset place loss such as coastal erosion can lead to the emergence of solastalgia emotions which are intensified by adaptation responses such as installation of rock armour. While more in-depth investigation through interviews showed how place change is multi-faceted and environmental degradation is one of many undesirable changes to place with cascading impacts intensifying solastalgia. This thesis showed that coping with undesirable place change is influenced by other concurrent changes driven by social, structural and political aspects of place. Aside from these changes, adaptation actions themselves maybe perceived as undesirable if carried out with weak community consultation and inclusion intensifying feelings of loss and powerlessness. This thesis also highlighted that local authorities often engage in limited public engagement viewing it as a compliance exercise and barrier to decision-making as opposed to being beneficial. While strong feelings of solastalgia are related to lack of trust in governance where negative attitudes towards governance arise through weak consultation, representation and lack of information regarding local decisions and perceptions of governance indifference to place loss. These factors can diminish trust and lead to resistance towards developments which may hinder successful implementation of adaptation actions in the future.

This thesis showed that despite the many challenges faced by the Community of Courtown/Riverchapel and strong experiences of solastalgia, some people are actively working to re-imagine the future of place and increase community cohesion. The thesis also suggests that participatory governance and co-development of decisions will help people come to terms with solastalgia, promote place-based values and reduce place disruption. Moreover, this thesis has improved understanding of the anatomy of place loss and emotional responses of a community. Insights which this research have provided regarding how governance, policy and planning can compound feelings of loss will be valuable for creating more inclusive and equitable adaptation policy in the future. The slow onset of solastalgia from chronic place change is not unique to Courtown nor are the emotional, psychological and wellbeing impacts of place loss. The relationships between place attachment, disruption and influence on people's ability to cope with future place change are also not unique to Courtown but have not been researched in Ireland in relation to coastal erosion. However, the social, political, economic and structural make up of Courtown may lead to unique perspectives on governance which may not be present in

locations where there is higher political mobilisation or community organisation. In Courtown and Riverchapel there is a link between political alienation as well as limited political mobilisation within the community with expressions of solastalgia and negative perspectives of governance. Rapid population growth, extensive development, a rise in popularity of sun holiday packages and severe erosion of the beach before the Celtic tiger, lead to socio-economic changes which were negatively perceived by many residents. These factors as well as a perceived slow decline of the area, weak political inclusion and mobility contributed to the emergence of solastalgia. The social changes that occurred during this time have been attributed by some residents to declining community organization. Therefore, the political, social, and structural links to the emergence of solastalgia, influence on future outlook and perspectives of governance maybe a unique finding for Courtown and Riverchapel that warrant further investigation.

The approach of empirically measuring solastalgia and the findings presented in this thesis will be of interest to others nationally and internationally in the context of future climate change impacts and adaptation responses. The experience of place disruption from coastal erosion will be widely experienced which emphasises the importance of these findings. Furthermore, sea level rise is now inevitable due to intensifying climate change, considering and addressing solastalgia will be crucial for adaptation planning. While participatory governance and co-development of adaptation actions with communities will help create adaptation actions that build adaptive capacity as opposed to intensifying loss.

8 References

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9 Appendices

Appendix A: Survey for Courtown and Riverchapel

Q1. To what extent do you agree or disagree with the following statements in relation to Courtown beach:

(Please circle a number to indicate your answer).

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
I have good memories of Courtown beach	1	2	3	4	5
My family has connections to this area from far back	1	2	3	4	5
I feel part of a community in Courtown	1	2	3	4	5
Courtown beach is very special to me	1	2	3	4	5
Courtown beach is part of my identity	1	2	3	4	5
No other place provides the same opportunities to do what I like in my spare time	1	2	3	4	5
It is important to me how this area develops	1	2	3	4	5
No other place can compare to Courtown beach	1	2	3	4	5
I get more satisfaction out of visiting Courtown beach than any other	1	2	3	4	5
The loss of the beach has negatively affected how I interact with people in my community	1	2	3	4	5
I would leave Courtown because of changes that have taken place	1	2	3	4	5
My sense of identity connected to Courtown has been changed after losing the beach	1	2	3	4	5
Loss of the beach has impacted my relationship with friends	1	2	3	4	5
I engage in local activities that are significant for Courtown less due to the loss of the beach	1	2	3	4	5
My participation in recreational activities has been impacted from loss of the beach	1	2	3	4	5

Q2. To what extent do you agree that each of the following are *negatively* impacted by the loss of the beach?

(Please circle a number to indicate your answer).

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Natural beauty	1	2	3	4	5

Recreational opportunities	1	2	3	4	5
Your livelihood	1	2	3	4	5
Your lifestyle	1	2	3	4	5
Your sense of identity	1	2	3	4	5
Your connection to Courtown	1	2	3	4	5

Q3. To what extent do you agree or disagree with the following statements:

(Please circle a number to indicate your answer).

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
I feel saddened by the loss of the beach at Courtown	1	2	3	4	5
I feel disappointed in the way Courtown looks now	1	2	3	4	5
I am worried that the valued aspects of Courtown are being lost	1	2	3	4	5
My lifestyle is being threatened by the environmental change that is occurring in Courtown	1	2	3	4	5
My sense of belonging to this place has been undermined by the loss of the beach	1	2	3	4	5
Sometimes I find myself thinking about times when the beach was larger	1	2	3	4	5
I feel that the beach suited my way of life more in the past	1	2	3	4	5

Q4. To what extent do you agree or disagree with the following statements:

(Please circle a number to indicate your answer).

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
I am concerned that future generations will not be able to enjoy the natural environment at Courtown	1	2	3	4	5
I am upset over the loss of the beach because it is part of my heritage	1	2	3	4	5
There is not much of a future for me in Courtown	1	2	3	4	5
Future development will revive Courtown	1	2	3	4	5
I believe that the beach will recover	1	2	3	4	5
I feel that Courtown has a positive future	1	2	3	4	5
I would accept more physical measures (Eg. Rock armour, flood walls) to help protect Courtown	1	2	3	4	5

I will personally get involved in protecting what is left of the beach and sand dunes	1	2	3	4	5
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Q5. To what extent do you agree or disagree with the following statements in relation to Courtown beach:

(Please circle a number to indicate your answer).

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The erosion of the beach is noticeable	1	2	3	4	5
I am concerned that the loss of the beach will negatively impact my family	1	2	3	4	5
There has been a large scale change to the natural landscape	1	2	3	4	5
I am satisfied with the local government's efforts to manage beach erosion	1	2	3	4	5

Q6. To what extent do you believe that each of the following are responsible for the loss of the beach in Courtown?

(Please circle a number to indicate your answer).

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Climate change	1	2	3	4	5
Winter storms	1	2	3	4	5
Natural ocean currents	1	2	3	4	5
Local government	1	2	3	4	5
Development	1	2	3	4	5
Tourist activity	1	2	3	4	5
Inadequate management	1	2	3	4	5
Misuse of the beach	1	2	3	4	5

Q7. Do you believe that climate change (rising sea levels, increased storminess) is likely to increase the rate of coastal erosion?

Yes No

Q8. Is your life impacted by the loss of the beach?

Yes No

If yes, please describe how:

Q9. Have your feelings towards Courtown changed since the loss of the beach?

Yes No

If your answer was yes, please describe how your feelings have changed.

**Q10. To what extent do you agree or disagree with the following statements:
(Please circle a number to indicate your answer).**

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
I feel frustrated because I cannot do anything to stop the erosion of the beach	1	2	3	4	5
People have given up trying to preserve the environment because they feel powerless	1	2	3	4	5
I feel I would be capable of convincing the local council to better manage Courtown beach	1	2	3	4	5
I trust in the local council to make adequate decisions regarding the management of the beach	1	2	3	4	5
The Local/National government will deliver on promises made to manage coastal erosion	1	2	3	4	5
The political representatives for Courtown care about its people	1	2	3	4	5
The political representatives for Courtown care about the loss of the beach	1	2	3	4	5
I feel a sense of trust in the Local government	1	2	3	4	5
I feel that my views about planning decisions in Courtown are being taken into account	1	2	3	4	5

**Q11. How difficult or easy would you rate each of the following statements:
(Please circle a number to indicate your answer).**

	Very Difficult	Difficult	Don't know	Easy	Very Easy
For me reducing the loss of the beach would be...	1	2	3	4	5
For me influencing planning decisions in Courtown would be...	1	2	3	4	5
For me accessing information regarding beach erosion or planning decisions would be...	1	2	3	4	5

Q12. To what extent do you agree or disagree that action to reduce the coastal erosion at Courtown over the next 20 years is the responsibility of the following groups?

(Please circle a number to indicate your answer).

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Homeowners	1	2	3	4	5
Local council	1	2	3	4	5
National Government	1	2	3	4	5
Environmental Protection Agency	1	2	3	4	5

Q13. To what extent do you believe that each of the following groups can reduce further loss of the beach?

(Please tick the box to indicate your answer).

	Not at all	Some	A Lot
Homeowners	1	2	3
Local council	1	2	3
National Government	1	2	3
Environmental Protection Agency	1	2	3

Q14. Do you believe local residents can influence decisions regarding beach management?

Yes No

Q15. What gender do you self-identify with? (Please tick as applicable)

Male Female Other Prefer not to disclose

Q16. What is your age? (Please tick as applicable)

18-24

25-34

35-44

45-54

55-64

65-74

75+

Q17. How long have you lived in Courtown or Riverchapel over all? (Please tick one)

Less than a year

1 to 5 years

6 to 10 years

11 to 15 years

16 to 20 years

More than 20 years

Q18. Are you from Courtown originally?

Yes No

Q19. Are you a permanent resident in Courtown or Riverchapel?

Yes No

Q20. If no, are you a seasonal resident at Courtown or Riverchapel?

Yes No_

Q21. What is your tenure at this residence? (Please tick one)

- Own outright
- Buying through mortgage
- Renting
- Live here rent free

Q22. What is your current employment status? (Please tick one)

- Working full time / part time
- Unemployed
- Looking after children / the house
- Retired
- Student
- Other: please state: _____

Q23. What is the highest educational or professional level qualification you have obtained? (Please tick one)

- Second level
- Vocational qualification
- Bachelor degree or equivalent
- Masters/PhD or equivalent
- No formal qualifications
- Still studying

Q24. Please tell us what type of residence this is? (Please tick one)

- House
- Apartment
- Holiday home (caravan, temporary house)

Appendix B: Survey information letter, used for surveys and online interviews.



Survey on the loss of place due to coastal erosion and its impacts on community wellbeing.

Dear Householder,

We are researchers from Maynooth University. We are carrying out surveys to examine your views on the loss of the beach at Courtown, County Wexford. In particular we are interested in understanding how the loss of the beach has affected the communities of Courtown and Riverchapel.

We would very much appreciate if you would participate in this survey. Any information you provide will be kept strictly confidential, will not be given to third parties and will only be reported in anonymous statistical form.

Please work through all the sections of the questionnaire, answering as much or as little as you want for each question. There are no right or wrong answers, what comes into your mind is most important. We are interested in your opinions, as ALL your views are relevant. It will take approximately 12-15 minutes to fill it in.

If you have any queries or would like more information, please contact Christopher Phillips, Department of Geography, Maynooth University on 0834490123 or email christopher.phillips.2013@mumail.ie

Please leave the completed questionnaire outside your door in the envelope provided.

One of our team will come and collect it tomorrow.

Appendix C: Guidance for creating a walking diary during government Covid-19 restrictions

Walking Diary guidance.

What is a walking Diary?

The original walking interviews were planned to be guided by you, in face to face interviews along the beach.

As government restrictions have made it impossible to carry out interviews face to face a new method is needed that is also effective and safe. Another option for us is a walking diary which is an effective tool that can be used to record your thoughts and opinions while walking through Courtown or along the beach. This walking diary can take any format you please, as long as it focuses on thoughts, opinions, emotions, knowledge and your attachment to the beach as it is today.

You can share as much or as little as you wish, any extra information is very much appreciated. If walking near Courtown beach is not possible for you, thinking about the criteria below related to the beach's current state is fine to.

Please consider the following criteria when writing:

1. Compare memories, emotions, and opinions of the beach when it was larger to its current state.
2. Consider if those aspects have/have not changed over time and why?
3. Consider your attachment to the beach today and over the course of its loss.
4. How do you imagine the future of Courtown and Courtown beach? are there any other places that you have become attached to? Why?

With everything that you have considered in mind, what are your thoughts on coping with future change and adaptation planning in Courtown in relation to further environmental change and climate change?

Appendix D: Survey Consent form.



Consent Form

Survey on the loss of place due to coastal erosion and its impacts on community wellbeing.

Christopher Phillips.

Department of Geography, Maynooth University

Material gathered during this research will be treated as confidential and securely stored on encrypted devices and treated following the security and anonymity protocols of the Irish Qualitative Data Archive. You have the right to access any of your interview materials (tapes, transcripts and notes) at any time. You have the right to withdraw from the study at any time without having to give an explanation.

Please answer each statement below concerning the collection of the research data.
(Please circle Yes or No to indicate your answer).

1.	I have read and understood the Information Sheet form.	Yes No
2.	I have been given the opportunity to contact the researcher if I have questions about the study.	Yes No
3.	I understand that I can withdraw from the study at any time without having to give an explanation.	Yes No

Below, are sets of statements that give you, the survey participant, a series of options about how you wish your responses to be used, your name will be removed and your comments made unattributable.

Please answer each statement.

(Please circle Yes or No to indicate your answer).

4.	I agree that data from the survey can be used in papers, reports and books published for academic and educational purposes.	Yes No Yes No
5.	I agree to survey responses (in line with the conditions outlined above) being archived and used by other bona fide researchers.	Yes No
6.	I agree to survey responses (in line with the conditions outlined above) being archived and used by other bona fide researcher's even if my anonymity cannot be guaranteed.	Yes No

Name (printed) _____

Signature _____ Date _____