Land, Sea, and Us: Planning for Climate Change on The Rock

by

Margaret Way

Supervised by

Dr. Laura E. Taylor

A Major Paper submitted to the Faculty of Environmental and Urban Change in partial fulfillment of the requirements for the degree of Master in Environmental Studies

York University, Toronto, Ontario, Canada

July 31st, 2022

Abstract

This paper discusses the impact that climate change will have on Newfoundlanders and their relationship to the land and sea around them, specifically within the Avalon Peninsula (the most eastern section of the island). As an island, Newfoundland will have different climate change concerns than many parts of mainland Canada. I approach these questions of identity, relationship, and climate change through analyzing the relationship Newfoundlanders have to the island by way of ethnographic interviews and a review of literature pertaining to the people and cultures in Newfoundland. Cultural landscape theory is employed to contextualize and understand how Newfoundlanders situate themselves in Newfoundland and relate to the landscape. The impacts of climate change are understood from both the scientific literature on the physical changes associated with climate change, and how these changes will impact the relationship between Newfoundlanders and the island. I employ political ecology to understand the environmental politics at play in Newfoundland in regards to climate change planning at the provincial level. In this paper, I find that climate change planning in Newfoundland is lacking, that change is anticipated but felt to be far off, and that the province of Newfoundland and Labrador's connection to the oil and gas sector hinders the province's ability to properly plan for climate change.

Foreword

In my MES program, I studied environmental planning and gravitated towards issues of climate change in Canada. This major research paper is the culmination of my time in the MES program. My area of concentration in my plan of study was Climate Change and Environmental Planning in Canada. The key words I focused on throughout my program were Climate Change Adaptation, Environmental Planning, and Climate Change Planning. I employed political ecology as a theoretical framework to allow me to understand the structural forces that factor into the phenomenon of climate change and climate change planning.

My learning components as laid out in my plan of study are 1) to learn the practice and theories in Environmental planning in order to better serve communities in my career, 2) to learn the role of political ecology in environmental and climate change planning, and 3) to understand climate change adaptation and mitigation strategies in order to be better able to support communities in preparing for the impacts of climate change

The research I have done for this major research paper supports these objectives through allowing me to gain a deeper understanding of what individuals are concerned about in the face of climate change, and how climate change will impact their communities and daily lives. Through the ethnographic interviews I conducted for this paper, I was able to speak to individuals in planning, in climate change work, and individuals who are not professionally involved in climate change planning but have concerns about how climate change will impact their homes, lives, and livelihoods. I employed cultural landscape theory and political ecology to understand the relationships between Newfoundlanders and the island, and to understand the structural forces behind (the lack of) climate change planning in Newfoundland.

This paper is the result of my interest in climate change, my love for my home province of Newfoundland and Labrador, and the goals I set forth in my plan of study for the MES program.

Acknowledgements

I would first like to acknowledge that my studies took place on the traditional territories of many nations, including the Anishinabek Nation, the Haudenosaunee Confederacy, the Huron-Wendat, and the Mississaugas of the Credit First Nation. Tkaronto is home to many First Nation, Inuit, and Métis people. My home province and the subject of this research, what we call Newfoundland and Labrador, is the home and traditional territory of the Beothuk, the Mi'kmaw, Inuit, and Innu. The land must be returned to the Indigenous nations who have lived here since time immemorial.

I have many people that I would like to thank for their love and support during the process of getting this degree and research and writing this paper. I met so many wonderful people during my time in this program. My friends in my cohort have been lifelines during this confusing and wonderful process, starting way back in Zoom rooms at the beginning of our program. I want to thank my partner David and our cat Bree for being my home. I want to thank my family, especially my dad and my brother, who are always proud of me no matter what.

I would especially like to thank my advisor and supervisor Dr. Laura E. Taylor for guiding and mentoring me through my degree, beginning back in my first semester in the introductory MES class.

Thank you all, you've been a blessing.

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Glossary

Labrador: The physical landmass of Labrador. The northern coast is Nunatsiavut in Inuktitut (Inuit), the southern coast is NunatuKavut in Inuktitut (Southern Inuit), and much of the landmass is Nitassinan in Innu-aimun (Innu).

Landwash: (colloquial) The area of land between high tide and low tide

Newfoundland and Labrador or **the Province**: The political entity of the province of Newfoundland and Labrador.

Newfoundland: The physical island of Newfoundland. Ktaqmkuk in Lnuismk (Mi'kmaw)

The Bay: A colloquial term for rural or outport Newfoundland, specifically communities on the coast.

The Rock: A colloquial term for Newfoundland, referencing the lack of soil on the island.

Town: A colloquial term for the capital city of St. John's.

Gold

the morning so grey it's nearly
purple
through salt-crusted windows,

ribbons of gold cut the heft of cloud
above the harbour

like fabric torn to
shreds

like a hair ribbon tangled
in branches

like tilting harbour saying,
hang on now,

there is harshness, yes,
but there is also this

- Heather Nolan, *Land of the Rock*
(Talamh an Carraig)

1. Introduction

1.1. A Return Home, in more than one sense

I have followed the proud tradition of Newfoundlanders who become obsessed with their home once they leave. Before I moved to Toronto in 2019 to go to school, I had not thought of myself as having an identity tied to Newfoundland, however I could not stop contrasting my new life in Toronto with where I came from. I realized that I am profoundly 'Newfie' and every return home to the Rock (as it is colloquially known) makes that clearer. I miss all the aspects of living on the island, but I realized that the proximity to the North Atlantic is what I miss almost above all others. The ocean has played a significant role in my life— I spent my summers at the beach, even if I had to wear sweaters and the water was still sub-zero. I fished off the commercial wharf

with my friends, always giving one of my braver friends the duty of unhooking all the fish we caught. Many members of my family have been employed, at one time or another, in the fishery. When the capelin rolled in and the whales followed, I spent those afternoons walking up to the cliffs on the coast and watched them breach and feed. People often anthropomorphize the ocean, like the fishers who say they know what mood the water is in, and it is easy to understand why when you spend time near the water.

I came home to visit Newfoundland in May 2022 towards the end of my research for this paper to see family and attend a friend's wedding. I brought my Ontario-born partner to some of the outport towns on the Avalon Peninsula, enjoyed the wind and the smell of kelp drying on the rocky shore. We happened upon this seaside property:

Figure 1: Witless Bay, new home replacing abandoned older home threatened by shoreline change (Way, 2022)

The abandoned house, closer to the shore, sits disturbingly close to the eroding edge, and the newer construction sits a more comfortable distance from the waves. A literal retreat from the

sea. This picture captures my own concern about climate change and my home province. What changes are in store for Newfoundlanders, people who build our lives around the coast, as sea levels rise and weather events get more extreme? How do Newfoundlanders think about climate change? How will climate change impact their relationship with the land and sea around them?

As someone who lived most of their life in St. Lawrence, a rural area on the Burin Peninsula in Newfoundland, I was never more than a 15-minute walk from the water. There are houses in my hometown that, much like in the picture above, have peeling paint from the constant battery of salty air off the ocean. On a stormy day, the potholes in the road will fill up with sea water driven up by the waves. These are not uncommon experiences for Newfoundlanders, especially rural Newfoundlanders.

However, the ocean is not only a source of dread. Our proximity to the ocean forms a large part of the Newfoundlander identity. This identity is created in part by our cultural backgrounds, of which a large subsection of the population in Newfoundland is settler colonial, White, of English or Irish descent, and either Protestant or Roman Catholic. All these facets of identity impact the way this group of Newfoundlanders view the world. The physical geography of Newfoundland contributes to the Newfoundland identity through the relatively isolated communities that sprung up along the coast. Newfoundlanders have shaped our lives physically and metaphorically around the ocean, from the ways our towns are built to the songs and art we've created exalting (but remaining wary of) the sea. For every negative my informants came up with about the water, there were far more emotionally charged positives.

The rising tides and increasingly severe weather from the changing climate pose a challenge for Newfoundlanders, but not one that is completely new or unknown. For all the ocean has given us, it has taken away in equal parts (just two years ago my small town lost four men at sea on a

fishing trip), so it seems fitting that the ocean now creates an existential threat to the island of Newfoundland.

I bring my own history as a Newfoundlander to this major paper research to understand how Newfoundlanders relate to the physical space of Newfoundland, how climate change will impact the relationship, and if the government of Newfoundland and Labrador is planning for climate change in an effective way.

I conclude that:

1. Change is anticipated and already being noted in certain aspects of daily life.
2. Individuals interviewed were interested in climate change and how that will impact the island and their lives, but most view it as a future problem that will be dealt with in time.
3. Climate research is scattered and not useful for Avalon Peninsula policymaking.
4. The oil and gas economy prevails, making a mockery of other forms of government climate action and solidifying the distrust most feel for government.
5. Municipal climate planning is weak.

Using the lens of cultural landscape theory, I review existing scientific literature, information gathered from interviews, and cultural/social literature to interpret how Newfoundlanders situate themselves in Newfoundland. Newfoundlanders derive their sense of culture and place from both the physical geography of Newfoundland— the isolation caused by the physical landscape, the economic reliance on the resources of the land— and from community interactions, values, and inclinations of people residing in the same area. As the communities in Newfoundland were historically highly isolated and the physical landscape varies so extremely, this created an insular

culture within each community, which is reflected in the differing accents between towns and peninsulas (Clarke, 2010, pp. 10–14; Rose, 2021, p. 952). This view agrees with Plumwood (2006) in which the author argues against the physical land/nature having a passive role in the creation of culture (Plumwood, 2006, p. 121). The island of Newfoundland exerts its influence upon Newfoundlanders— to see evidence of this one only needs to watch a Newfoundland community brace for a winter storm or see the houses on stilts along the rocky coast of the Battery in St. John's. I employ political ecology in this paper to understand the structural forces behind the drivers of climate change in Newfoundland, as well as the relative lack of planning for climate change. Political ecology helps us to understand how the structural forces present the idea of Newfoundland identity and culture can fit into issues of governance, impact, and the environmental politics at play in climate change action and the Province of Newfoundland and Labrador.

For this analysis, I have separated the information I gathered into the following categories:

- Background on the research area: the physical geography of the Avalon Peninsula, the historical and cultural context of the island of Newfoundland
- Physical effects of climate change
- Cultural effects of climate change
- Discussion of people's distrust in the Newfoundland and Labrador Government and how it impacts their views on climate change and the province
- A discussion of the state of climate change planning in Newfoundland

I use the information in these sections to draw conclusions about how climate change will impact the relationship between Newfoundlanders and the island and if the government is effectively preparing the population for climate change.

The concept of an unvaryingly White Newfoundland and Labrador is based on a myth of homogeneity and the legacy of colonialism— one which was present through much of the research I did for this project. Throughout this paper, I discuss colonial imaginative ideas of Newfoundland and Canada, one in which Newfoundland means White, English/Irish/Scottish, and Christian Newfoundland. This is the culture I was brought up in. This colonial viewpoint ignores the history of genocide of Indigenous people who live in what we call Newfoundland and Canada, the erasure of Black lives in Newfoundland, the erasure of Newfoundland's part in the Transatlantic Slave trade, and other racist policies that Black, Indigenous and people of colour Newfoundlanders have been subject to. Colonialism and White supremacy also require us to forget the history, traditions, and culture of non-White Newfoundlanders, and therefore how modern Newfoundland and Labrador has been shaped by the multi-cultural history of the Province.

Ainsley Hawthorn's collection "*Land of Many Shores: Stories from a Diverse Newfoundland and Labrador*" is a look into diverse experiences of living in Newfoundland and tells a narrative of being a Newfoundlander that isn't White, Christian, neurotypical, and non-disabled. Hawthorn discusses the diversity of Newfoundland and Labrador in the introduction of her book:

> "So, who are we really? Out of every hundred Newfoundlanders and Labradorians, nine are Indigenous… eleven have Indigenous ancestry. Two are Black or non-Indigenous people of colour. Two are of Asian heritage… One is of African or Caribbean heritage. Five are descended from French settlers. Two have a first language other than English or French. The most common are Innu-aimun, Arabic, Tagalog, and Mandarin. Two are immigrants. Fourteen have a disability. Ten have a mood disorder. Eighteen regularly drink more than experts consider safe" (Hawthorn, 2021, pp. 30–31).

Due to the limited scope of this paper, when I discuss Newfoundlanders and Newfoundland, I am primarily referring to the dominant culture in Newfoundland. Further analyses of the idea of Newfoundland through Indigenous and Black and people of colour's *specific experiences* would provide a more inclusive and complete idea of Newfoundland. This analysis is merely a step in the research of how climate change will impact Newfoundland and Newfoundlanders.

In shorter words, this paper investigates how climate change will impact people's relationship to Newfoundland but has a limited scope and will miss important parts of belonging and identity for some Newfoundlanders.

1.2. The Avalon Peninsula

Figure 2: Map of Newfoundland with Avalon Peninsula highlighted (Newfoundland, 2022)

I chose to focus on the Avalon Peninsula on the island of Newfoundland because the province of Newfoundland and Labrador is a large landmass that is made up of differing ecozones,

geographic features, and heritages which contextualize the way that individuals live their lives. Labrador, though physically connected to mainland Canada, is in some ways more isolated than the island of Newfoundland. Though I lived on Newfoundland for most of my life, the short time I spent in Labrador was eye opening to the food insecurity and medical travel issues experienced in another part of my home province. On the island itself, someone's daily life and routine who lives in the capital city of St. John's has very little in common with someone from a boat-in community such as South East Bight on the Burin Peninsula, where the nearest grocery store is over 50 kilometres away.

The Avalon Peninsula holds the capital city St. John's and just over half (53%) of the population of Newfoundland and Labrador (Statistics Canada, 2022). The median after tax income for the Avalon Peninsula is $35,600 ($39,200 for men and $32,800 for women) (Statistics Canada, 2022). In terms of highest education completed, 17% of the population on the Avalon Peninsula have no high school diploma, 25% have completed high school, and 20% of the population have a bachelor degree or above (Statistics Canada, 2016). Out of approximately 260,000 people on the Avalon Peninsula, 9135 individuals declared themselves as a visible minority, and 7760 Indigenous (Statistics Canada, 2016). The 2022 data on ethnicity is not currently available. By choosing to focus on the Avalon Peninsula, I am limiting the geographic scope of my research to focus more specifically on climate change impacts that the communities and individuals will face on the Avalon Peninsula.

1.3. Thesis Statement and Project Explanation

The goal of this research was to discover how Newfoundlanders view climate change, how this will impact their relationship with the place they live, and a secondary but important analysis on

what planning provisions and other government initiatives exist for climate change adaptation in Newfoundland.

I have focused this research on Newfoundlanders and the island of Newfoundland because I felt that there was space to examine how climate change will impact both the island and the people who live there. The unique contexts of Newfoundland and the Avalon Peninsula need specific research in order to understand how climate change will impact these places and to consider how climate planning can work to help communities adapt. Small, isolated rural towns located along the coastline (some at sea level) will have different needs and abilities in climate change adaptation than the urban City of St. John's. As an island in considerable economic trouble, Newfoundland will have different needs and abilities than mainland Canada when it comes to climate change adaptation and mitigation. Labrador, though not included in this analysis, will also have different concerns about climate change than parts of mainland Canada, due to the isolated nature of the settlements, the lack and disrepair of roads, and the sub-arctic to arctic climate. In short, each of these places is one part of a puzzle of how climate change will impact Canada, and this research is my addition to creating a more complete picture.

2. Methodology

To determine how Newfoundlanders situate themselves on the island of Newfoundland and how they view the changing climate, I determined that the best approach was through a qualitative review of existing materials, and through semi-structured ethnographic interviews with residents of the targeted study area. I asked questions but allowed informants to direct the flow of conversation. I was interested in peoples' views on their connection to the landscape, as the human impacts of climate change can be "felt, sensed, and apprehended emotionally" through individuals' everyday lives (Brace & Geoghegan, 2011), and can be interpreted with the physical science basis to produce a narrative of what is happening, how people are reacting, and, hopefully, what can be done to mitigate the negatives of these issues.

For this analysis, I have broken up the questions I asked into themes: 1) Views of place 2) views on physical effects of climate change, and 3) views on social effects of climate change. Through these themes each informant provided a narrative of their personal relationship with the landscape of Newfoundland, their concerns about climate change, and how it will impact their relationship with the island.

For my research, I completed a literature review of sources discussing the anticipated effects of climate change in Newfoundland, the cultures found in Newfoundland, and the relationship between Newfoundlanders and the island of Newfoundland. This review included peer-reviewed literature, non-fiction books, social media, news sources, and other published texts such as poetry compilations.

Using information gathered through these streams of inquiry, I was able to create an understanding of how climate change will impact the relationship between Newfoundlanders and Newfoundland.

2.1. Informants

I was able to interview seven individuals. My informants all currently live on the Avalon Peninsula, mostly within the bounds of St. John's. Three were born elsewhere in Newfoundland, and one is a fairly recent immigrant to Canada from Europe while the rest were born on the Avalon Peninsula. For the purpose of this analysis, I selected my informants based on certain conditions:

- Living near the coast
- Working in professions or volunteering with causes that are related to the land (i.e., tourism in Newfoundland, the fishery, land use planning, etc.)
- Having knowledge of/interest in climate change and how climate change will impact Newfoundland

Due to the Covid-19 pandemic, I was unable to travel to the Avalon Peninsula for the purposes of interviewing informants. This limited my ability to recruit for the interview process, and as such I relied on reaching out to people through email and my personal network. Not everyone who I contacted was able or interested in sitting for an interview, and in one case a potential informant did not want to discuss climate change specifically.

I was able to interview three planning professionals from the City of St. John's, and the Town of Conception Bay South, and a climate change professional within the provincial government. Conception Bay South is a township of roughly 26,000 people on the Avalon Peninsula, and though it is an independent settlement, it has recently become somewhat of a suburb of St. John's.

The other informants work in a variety of fields including non-profit work, tourism, and retail. My questions were not overtly personal as the aim wasn't to collect personal data for this analysis, rather just thoughts, feelings, and concerns. Five of seven of the informants were born and raised at least for a few years in rural towns in Newfoundland, moving later in life towards the urban center of St. John's. Five of seven of the informants were able trace family histories by settlement over the last 150-200 years on both sides of their families through oral history passed down by parents and grandparents. Knowing family history through oral history is a big part of Newfoundland culture, though we have typically called it 'storytelling,' which comes from a blend of Irish, English, Scottish, and French oral traditions (Jarvis, 2015). I've always heard my family history recited as a story with notable events, always rushed and in one long run-on sentence to fit the breadth of history into a conversational timeframe. This was reflected in the first question I asked the informants; most had a practiced answer at the ready that spans at least 100 years. One informant told me "make sure you stop me if I start rambling" (personal communication, April 2022). This family connection strengthens and colours the connection informants feel to the island.

2.2. Interview Questions

My aim for these interviews was to get a sense of how Newfoundlanders view the land and sea around them, how they situate themselves in the landscape, and how they view the relationship between themselves and Newfoundland. This information can then be used to extrapolate (with the information from the literature review) how climate change will impact the relationship between Newfoundlanders and the island. The questions posed during the interviews aimed to start conversations, rather than looking for direct answers from the informants.

The questions are as follows:

- Tell me about your family's settlement history on the island.
- What do you love about the land and sea around you? What don't you like?
- Where do you spend the most time?
- What are some activities that you like doing on the land and sea?
- Have you noticed any changes to the land and the sea in your lifetime?
- Are you aware of predicted impacts in your area due to climate change?
- How would (or how has) a higher sea level effect your life?
- Do you have any concerns about climate change on your home/life or livelihood?
- Are you aware of any plans or programs to lessen the impacts of climate change in your area?
- What do you think could be done or should be done in your area to mitigate the effects of severe weather and rising sea levels?
- Is there anything else you would like to tell me or that you think I should know?

Additional questions asked of the planning professionals:

- What drew you into planning?
- What is the City of St. John's plan for the rising sea level?
- What do you think of the St. John's municipality's climate change action plan? Is it useful? Is it being implemented? Could it be better?

- How do you feel that the St. John's municipality's climate change action plan is influenced by local politics?
- In your opinion, how would a metre of sea level rise would affect St. John's? How would this effect the weather/ severe weather we get?

3. Discussion of Interviews: Views of place and impacts of climate change

The questions the informants were asked were meant to get a sense of how individuals view climate change and how they think about their place in the land around them— what about Newfoundland and Newfoundlanders do they feel will be the most affected by climate change?

Views of Place

Many Newfoundlanders share a similar idea of what Newfoundland is and how they relate to the land/sea. Cultural landscape theory posits that a landscape means different things to different people, depending on their culture, upbringing, and circumstances, and speaking about these landscapes reveals their "values and beliefs about themselves and their society" (Taylor, 2007, p. 23). The shared values and feelings of Newfoundlanders about the island may be attributed to the similarities in cultural backgrounds and a shared economic reliance on the land through traditional work such as fishing, hunting, boat building, and more recently mining and the oil and gas industry.

A theme that was repeated throughout the interviews was how informants spoke about the land and sea as separate actors, sometimes giving and sometimes taking— i.e., the joys of berry picking vs the struggle of the weather. Individuals had specific examples of this concept in their lives, but the landscape of Newfoundland evoked strong joys and feelings of intense struggle, which is the dynamic referenced in the poem "*Gold*" by Heather Nolan (p. 1).

In Rose's 2021 paper, the author discusses the dual aspects of how culture grows through cultural landscape theory as well as anthropogeography. The author states that the future in geography of understanding culture is not through one of the above lenses, but instead seeing

how each of these theories reveal a part of the truth (Rose, 2021, p. 966). To illustrate, Rose asks why do subjects identify with daily habits as *habits that are theirs* rather than habits of living? The author states that the "phenomenon of identity is one where subjects make choices about which habits are conceptualised as their habits, the habits they care about, invest in and represent in material forms such as landscapes" (Rose, 2021, pp. 952, 966). Rose's question of identity and habit relating closely to the physical landscape is one that I see reflected throughout my research. Berry picking and disliking the weather are not unique to Newfoundland, but in this context these themes and activities were discussed with me as being *of* Newfoundland. The Newfoundland-ness of these activities is then borne out of the relationship with the island. If I go berry picking in Ontario, it is not the same activity *for me and other Newfoundlanders* as if I were berry picking on the cliffs near Cape Spear outside of St. John's. One is berry picking; the other is being on the land and interacting with the separate actor that is Newfoundland— an action that carries a sense of belonging. These habits of culture are built together by the human and non-human actors present in Newfoundland, each exerting their influence upon the other (Plumwood, 2006).

Figure 3: Blueberry picking outside of Ferryland, Avalon Peninsula August 2019 (Way 2019)

Figure 4: Brush and marsh landscape outside of Brigus, Avalon Peninsula June 2019 (Way 2019)

To get a sense of how the informants saw themselves as situated in the landscape— both the physical landscape of Newfoundland and the human landscape— I asked the following questions:

- Tell me about your family's settlement history on the island.
    - This question both allowed me to understand the informant's history with the island and provided an opportunity within the context of an academic conversation to do the typical Newfoundland greeting (Who's your mother, who's your father, where are you from), to provide context to each other of who we are and where we belong.
        - When asked this question, most informants began about 200 years ago, to the first record they know of/have of their ancestors in Newfoundland. Some named specific coves and bays that their families had lived in until resettlement while others spoke in vague terms of peninsulas and eventually settling in "Town" (St. John's). This knowledge of the

historical connection to the land is a good example of how Newfoundlander's relate to the place they live.

- What do you love (or don't love) about the land and the sea around you?
    - This question allowed me to understand the informant's relationship with the physical location of Newfoundland.
        - Words that emerged through this question were ones such as "rugged," "rooted," "unique," and "special." Only one informant stated that he didn't feel much of a connection to any physical place in Newfoundland, as he said that being an urbanite made him feel a little separated from the physical place. Others discussed favourite fishing spots, hiking trails, berry picking hills, and hunting areas. There was discussion of feeling proud for "surviving" Newfoundland's weather, isolation, and terrain. When asked what they disliked about Newfoundland, all informants stated that the weather was the number one complaint they had about their home, and some stated isolation as a secondary concern.
- Where do you spend the most time outdoors? What are some activities that you like to do on the land and/or the sea?
    - These questions gave informants a chance to reflect on their own habits and gave them an opportunity to speak about the places they find themselves going back to, and how they interact with the places they live in.
        - This question was mostly answered by the former question as activity and physical place are closely linked in the minds of most informants.

Informants restated their favourite activities such as hiking, hunting, fishing, berry picking, boating, and swimming.

Views on physical effects of climate change

This section of questions helps me to gather data on what the informants know about the physical changes associated with climate change, and how they feel the adaptation strategies should unfold.

- Have you noticed any changes to the land, sea, or weather in your lifetime?
    - This question helps the informant reflect upon the climatic conditions they have experienced in their lifetime (or time living in Newfoundland) and gives them a chance to discuss anything they have perceived as a change, without necessarily naming "climate change" a term which may remove them from their personal memories.
        - Informants discussed the perceived increase in extreme weather, such as multiple bad hurricanes during hurricane season rather than a singular notable storm. One informant mentioned that he distinctly remembered being bundled up in winter clothes every Halloween as a child, but there is no longer snow on Halloween. One informant stated that as a child they were able to walk across a certain section of the land wash at low tide that is now always submerged.
- How would (or how has) a higher sea level effect your life?
    - As most informants live within walking distance of the coast, higher sea level is one of the impacts of climate change that I believed most people would be considering. The aim of this question is to see what concerns the informants have,

and how they match with the Newfoundland and Labrador Government's sea level rise considerations.

- Informants discussed worrying about the beaches, coves, and shoreline infrastructure such as docks, wharves, fishing huts, and houses close to the shoreline. One informant stated, "I don't delude myself into thinking that that property down there won't be underwater in 40 years from now" (personal communication, March 2022). Another stated "A much higher sea level does create a lot of damage to our coastline, and that means we need to spend more time and more money into trying to address some of those challenges" (Personal Communication, June 2022).
- One informant stated that they were not worried about a higher sea level as they felt the physical geography of Newfoundland, with its rocky coasts and cliffs, would not be breached by the rising sea level.
- One informant discussed the possibility of saltwater intrusion into the freshwater table.

Views on social effects of climate change

- Do you have any concerns about how climate change would impact your home, life, or livelihood?
    - This question gives informants a chance to discuss any impacts they are aware of or may be worried about.
        - Most informants spoke in general terms for this question, discussing material conditions in their towns or what they perceive will happen in other towns. Three informants stated that they did not think climate

change will have any direct impact on their lives but agreed that climate change would impact other peoples lives.

        - One informant discussed the possibility of her property being submerged by the rising sea levels.
        - Two informants discussed how climate change would impact their activities on the land, such as hunting and berry picking.

- Are you aware of any plans or programs to lessen the impacts of climate change in your area?
    - This question asks informants to think about any climate adaptation strategies in their geographic area that they know of (that are therefore most likely to be general knowledge).
        - I did not ask this question to the planning professionals or the climate change professionals. The remaining four informants did not know of any local or provincial policies that would lessen the impacts of climate change in their area.
        - Informants stated that they felt that the policies they were aware of did not have any direct impact on them, were meant as tax breaks for the upper class (i.e., tax exemptions for buying electric vehicles), or were useless greenwashing attempts by the provincial government (i.e., cutting back paper usage)
- What do you think could be done or should be done in your area to mitigate the effects of severe weather and rising sea levels (or other climate concerns)?

    - This question allows me to gather data on local knowledge of both the concerns and the possible solutions of climate impacts.
        - Informants were divided on this question. Three of seven said that they were unsure what could be done on a local level. The remaining four discussed solutions such as breakwaters to prevent coastal flooding during storms, stopping construction in areas vulnerable to flooding, and some community-based solutions to prepare people for the impacts of climate change such as creating a stronger local food network.
- Is there anything else you would like to tell me or that you think I should know?
    - This final question gives informants a chance to bring up any information I may have missed.

Additional questions for the Planners interviews

These additional questions for the planning professionals I interviewed gave me a chance to learn about the professional opinions of people involved in land use planning, and the official position of the City of St. John's and Conception Bay South on climate change/climate change planning. An analysis of the answers to these questions will be included in Section 7 on planning provisions in St. John's and on the provincial level.

- What drew you into planning?
- What is the City of St. John's plan for the rising sea level?
- What do you think of the St. John's municipality's climate change action plan? Is it useful? Is it being implemented? Could it be better?
- How do you feel that the St. John's municipality's climate change action plan is influenced by local politics?

- In your opinion, how would a metre of sea level rise would affect St. John's? How would this effect the weather/ severe weather we get?

These interviews were all pleasant experiences, and while I asked the listed questions, I encouraged my informants to speak as much as they wanted about the topics at hand. The interviews ranged from 20 minutes to 60 minutes.

The literature that was analyzed was in the form of the physical science background of climate change's predicted impacts on the island of Newfoundland, the cultural background(s) of Newfoundland, and the planning contexts on the municipal and provincial scale.

4. Background on Newfoundland and Avalon Peninsula

4.1. Physical Geography

The physical geography of Newfoundland is often described as stark or barren, as glacial flow scraped a large amount of soil off the bedrock of the island, leaving behind jagged cliffs, sharp rocks, and little arable land (Newfoundland and Labrador, 2022). The physical geography of Newfoundland impacts the people on the island as much as the people impact the land (Plumwood, 2006).

Figure 5 shows the study area for this paper with a few highlighted settlements. The Avalon Peninsula is the most easterly section of the province of Newfoundland. This peninsula has 53% (276,852) (StatsCan, 2021) of the population of Newfoundland and Labrador, as well as the capital city of St. John's. The population of St. John's is 110,525 (StatsCan, 2021). Other large settlements on the Avalon Peninsula include Mount Pearl (22,957), Conception Bay South (26,199), and Paradise (21,389).

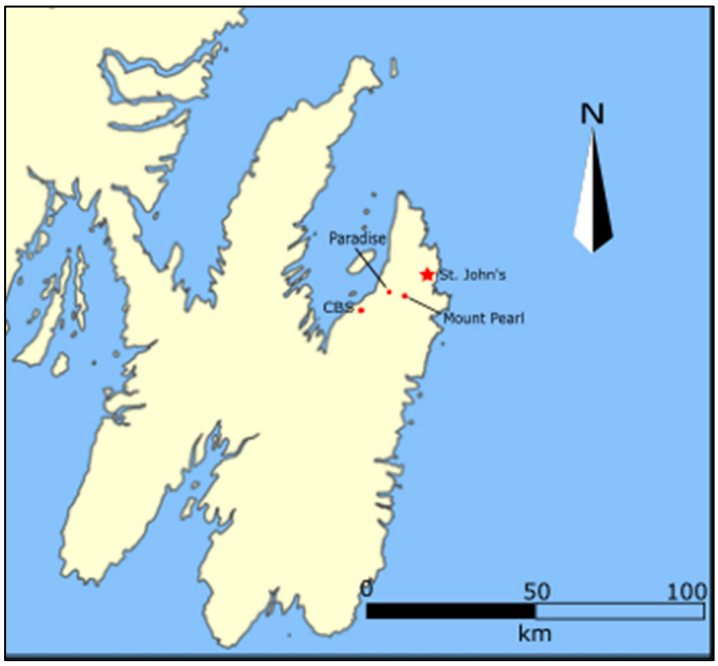

Figure 5: Avalon Peninsula with highlighted settlements (Way 2022)

Figure 6: St. John's Harbour from Signal Hill, May 2022 (Way, 2022)

The settlement patterns on the Avalon Peninsula are related to colonialization, as no traditional Beothuk settlements remain due to settler genocidal efforts. The Beothuk were declared culturally 'extinct' during the 1800s, after the Beothuk woman Shanawdithit died in London, England in 1829 (Carr, 2020). Mi'kmaq traditional knowledge has long stated that Beothuk people merged with their contemporary Mi'kmaq settlements due to settler pressure on their traditional lifeways (Tuck, 2019). Carr (2020) described genetic evidence that supports this knowledge. However, there are no current living settlements on the Avalon Peninsula that are described as Indigenous in origin.

Most towns on the island of Newfoundland are located on the coast, as the settler population of Newfoundland was mostly involved in the transatlantic migratory cod fishery until the 18th century, where fishers would spend summers on the island and travel back to Europe for the remainder of the year. These small summer settlements became somewhat permanent during the 1800s as fishers and their families began to stay on Newfoundland year round, most densely on the southeast and northeast coast of the Avalon Peninsula (Higgins, 2008).

4.2. Recent History, culture, and how it impacts the idea of Newfoundland

The recent history of what came to be the province of Newfoundland and Labrador has helped shape how Newfoundlander's view themselves and their place in both the island and in Canada. Newfoundland joined Canada on March 31st, 1949. Previous to that it was a British Dominion until 1937, when it briefly reverted to British rule due to corruption in the Newfoundland government (Malone, 2013). The decision to join Canada was made during the 1948 referendum, when Newfoundlanders were given the option to continue as a commission government under Britain, join Canada, or seek responsible government as an independent dominion. The independence option won the first vote, but in a secondary run off vote the option to join Canada won with 52.3% (Tattrie & McIntosh, 2021). Confederation with Canada continues to be somewhat controversial and plays into the narrative Newfoundlanders have created around corruption in the government, which is that the government (of both Newfoundland and Labrador and of Canada) is made up of people from the upper class who either do not care for the average Newfoundlander or openly disdain them (Hawthorn, 2021, p. 25). Danny Williams, one of the most popular politicians in Newfoundland and Labrador (at least during his terms), actually removed all the Canadian flags from provincial government buildings during a disagreement with the federal government stating "why would we fly their flag and pretend everything is rosy?" (CBC News, 2004). Malone's 2013 book "*Don't Tell the Newfoundlanders*" describes the vote to confederate, and provides excellent context into the conception of recent Newfoundland and Labrador history and how it shapes Newfoundlanders' view of their province. Malone said of confederation "…the loss was all for Newfoundland. Along with her sovereignty, Newfoundland lost her right to negotiate with Canada on an equal basis" (Malone, 2013, p. 23).

This history, the feeling of being tricked into joining Canada, contextualizes the views that Newfoundlanders have of their current circumstances. “The Newfoundland experience until well into the nineteenth century was not that of lawful colonists building up the civic institutions of a state, but one of the rugged individualists, shy of all civic authority.” (Malone, 2013, p. 29) Not that this view of colonization (“lawful colonists building up the civic institutions of a state”—colonial powers used coercive treaties, genocidal tactics, and illegal occupation to create the colonial state of Canada) is accurate, but rather that the from the point of view of Newfoundlanders, Newfoundland is separate from the North American colonial world— more isolated, more ‘rugged.’

This view of independence and self-sufficiency has continued into the present, as many Newfoundlanders believe they are not going to be directly affected by climate change or that the changes will not be anything they cannot handle, as their history on the island is hard won. We’ve culturally survived attempts to absorb us into the broader state of Canada, and we remain Newfoundlanders first and Canadians second.

All but one of the informants were not overly concerned about increased isolation. The one informant who was very concerned about increased isolation nonetheless discussed community-based solutions to problems that may arise such as increased focus on agriculture within Newfoundland rather than importing the majority of foodstuffs.

4.2.1 Cod Moratorium and the culture of extraction in Newfoundland

Fishing, and fishing cod especially, was and is a central facet of life in Newfoundland. Historically, cod was the reason that seasonal fisherfolk and eventually settlers colonized what came to be called Newfoundland.

The northern cod (*Gadus morhua*) moratorium in 1992 "marked a symbolic end to the way that life had sustained Newfoundland's outports for hundreds of years" (Hamilton & Butler, 2001, p. 1). Many individuals who were fishers by trade left the province in order to find work, while others participated in provincial education programs designed to help fishers locate other work in Newfoundland. While many have taken jobs in other sectors or moved from fishing cod and other groundfish to benthic invertebrates such as crab, there has always been anticipation of the cod stocks returning to historic levels— this sense of waiting with bated breath for the yearly DFO (Department of Fisheries and Oceans) report detailing the incremental rise or continued fall of the cod. July 2nd 2022 was the 30th anniversary of the cod moratorium, which was supposed to last two years (VOCM, 2022).

Many people continue to work in extractive industries, especially in the oil and gas industry. The fishery still exists, however the cod moratorium's effects can be seen in the very population of Newfoundland: 30,000 people went out of a job when the moratorium was put in place in 1992. 10% of the province's population left in the decade following the moratorium and the population of Newfoundland is still currently 58,000 below what it was in 1992 (Cooke, 2022).

One informant said of the oil and gas industry— "There's no real political opposition to oil production inside either of the two parties that are likely to govern [in Newfoundland], in the political discourse and the public discourse, it is a one-sided discussion." (Personal communication, April 2022.) As discussed further on pg. 59, the oil and gas industry has become embedded in the Newfoundland identity in the stead of the cod fishery.

Recently, despite several municipalities declaring climate emergencies and the provincial government ordering reports on the effects of climate change, a new oil and gas project was approved off the coast of Newfoundland, approximately 500 kilometres northeast of St. John's,

in the Flemish Pass Basin. This project, Bay Du Nord, is owned by Equinor, in conjunction with Cenovus Energy and BP (British Petroleum), the latter of which is responsible for the largest marine oil spill in history in the Gulf of Mexico, impacting over 1000 miles of coastline and which the effects of are still felt today (Meiners, 2020).

The approval of the Bay Du Nord project is highly controversial. The World Wildlife Fund Canada states that the project will have devastating effects on the marine ecosystem off of the Avalon Peninsula, which includes a nearby cod (*Gadus morhua*) subpopulation (there are important cod spawning grounds 48º' by 50º' and 50º' by 55º', and the Bay Du Nord project is approximately 48º' by 46º') (Hu & Wroblewski, 2009, p. 3).

Figure 7: Men launching dory for food fishery outside of Old Shop, Dildo Bay, May 2022 (Way, 2022)

4.3 Newfoundlanders relationship to the island and affects on climate change views

Through the interviews, six of the informants spoke of a sense of feeling "rooted" to the place they find themselves in. There is a sense of belonging, which is tied both to the human

geography and the physical geography of the island. All informants spoke of feeling close emotionally to the ocean, that seeing it on their daily commute or out their windows gave them a sense of comfort and shapes the land and air as well— most spoke of being able to smell the ocean even if you can't see it and admiring the way the shore has been shaped by the ocean. Informants who had lived away from Newfoundland for parts of their lives spoke of missing the ocean when they were away, a sentiment I can relate to.

One informant said "…it's funny when you come home from away, wherever you might be on vacation or you know work term things— you get off the plane, you forget that you can smell the ocean all the time when you're living here, and then all of a sudden you realize 'oh that's the saltwater smell I've been missing'" (Personal communication, June 2022).

This connection to the water is widespread through Newfoundland, whether it is felt emotionally as in the above example or is rationalized through scientific and climate change concerns. A grass roots activist group in St. John's called The Social Justice Co-operative (SJC) in conjunction with larger organizations such as the Center for Democratic and Environmental Rights (CDER) is drafting a bill recognizing the Rights of the Atlantic Ocean (Social Justice Co-operative, 2022). This bill hopes to introduce "a legal framework for combating the threats of climate change to [the] province" and raise awareness of the ocean's role in protecting the global environment (Social Justice Co-operative, 2022). One of the informants I interviewed is a leading partner in the SJC and has discussed the difficulty of impressing the urgency of climate change upon the politicians in the province. The informant stated that people have "trouble seeing beyond what's in front of them because we don't have a lot of vision in our parties— the NDP are talking about a Just Transition, but they're not necessarily putting forward a strong framework for that" (Personal communication, April 2022).

Informants also spoke of enjoying the close-knit small town feeling of most of the settlements, even of St. John's. An excellent descriptor of rural culture in contemporary Newfoundland came from the methods section of a paper about rural childhood in Newfoundland:

> "Class status in contemporary Newfoundland can be complicated in that a large majority of adults was officially poor when they were children… Many adults in Newfoundland who were poor did not experience many of the associated social exclusions because a relative poverty was the shared state of most people living in the small fishing towns and villages in rural Newfoundland… Although some of the women described childhoods during which the family struggled economically, the women interviewed also described themselves as being better off than many other families they knew" (Porter, 2022).

In my experience, the circumstances described by Porter (2022) created intensely connected, insular communities where no one worried where their next meal would come from because the community was there as support, but no one was able to think about the future beyond the next week, as there were too many variables to create plans for the future. Would the fish processing plant cut hours? Would the weather be too bad to go out and harvest fish? Is the population of snow crab lower than expected this year? Would the next storm cause more damage to the roads, which then need to be fixed?

This is not unique to my hometown, but rather seems to be a given throughout rural Newfoundland. Four of my informants from the interviews I conducted stated that they were not immediately concerned about climate change— the habit of only worrying about the immediate circumstances' communities find themselves in could potentially account for the relative lack of worry about the changing climate and the impacts that Newfoundland will face.

5. Physical Effects of Climate Change in Newfoundland

5.1. Rising tides and rising temperatures

As an island in the North Atlantic Ocean, Newfoundland will face different climate change impacts than many parts of mainland Canada. A main concern that I found throughout the scientific literature was the eroding coastline. “Sea levels will continue to rise due to the ocean’s sustained response to the warming that has already occurred— even if climate change mitigations succeed in limiting surface air temperature rise in the coming decades” (IPCC, 2021). As sea levels rise, erosion of the coast speeds up through wave action, storms, and higher high tides (Batterson, 2020).

Sea level rise was one of the effects of climate change that I focused on with the informants, who all live on the Avalon Peninsula. A range of answers resulted from the question “How would (or how has) a higher sea level effect your life?”

Respondents’ answers ranged from feeling that sea level rise would not directly impact their lives, to feeling sure that in 40 years their property would be underwater. However, even in the worst-case scenarios there was not so much a sense of fear of the rising sea level as there was an acceptance of this inevitable change. The informant who felt their property would be underwater in 40 years said that they were aware of this when they purchased the property, but due to the nature of the non-profit they were starting (to teach traditional fishing and construction techniques to youth, newcomers, and any interested parties) they had to be located close to the water. They felt the impact of sea level rise would both destroy their property but also quicken the loss of these traditional fishing methods (personal communication, March 2022).

A main concern regarding sea level rise in climate science scholarship in Newfoundland was the eroding coastline. Newfoundland and Labrador has approximately 29,000 km of coastline, which includes the coasts of the many small islands off the shores of the province (Newfoundland, 2022). The coasts on the island of Newfoundland range widely in composition, from bedrock to sand, and can transition from one to another type quite suddenly along the same stretch of shoreline. The average rate of erosion is 20 centimetres per year, however the range is 0 centimetres per year for bedrock coasts and over 100 centimetres per year for sand dominated coasts (Batterson, 2020). Typical mitigative and adaptive measures for coastal erosion weigh social and economic factors, and planners take into account the risk, rate of change, and the type of hazard before deciding what strategy to move forward with. The four types of strategies that are mainly used include:

1. Protection measures: sea walls, beach replenishment, or dune stabilization.
2. Accommodation: Used for built structures threatened by erosion. Improved flood protection, raising structures (has historical precedent as a traditional type of wharf house/shed structure is on stilts)
3. Retreat: Moving settlements further back from the coast, such as after following a large event like a landslide (see figure 9).
4. Do nothing: Allowing coastal erosion to continue without and mitigation or adaptation. "However unlikely, a municipality may opt to do nothing and simply let nature take its course, while hoping for the best" (Batterson, 2020, p. 9).

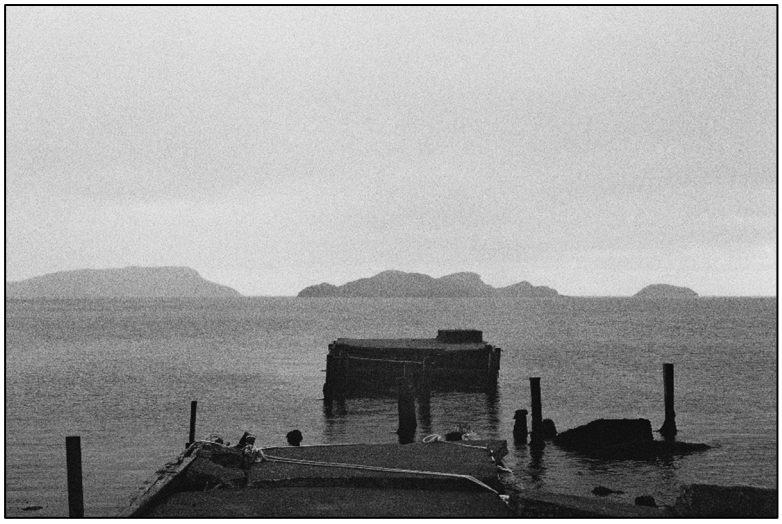

Figure 8: Abandoned dock outside of Tors Cove, Avalon Peninsula May 2022 (Way 2022)

Figure 9: Closed trail due to coastal erosion (Batterson, 2020, p.9)

The planning professionals I spoke to in Conception Bay South, St. John's, and with the provincial government all listed coastal erosion as a personal and professional concern of theirs. As Conception Bay South has 27 km of coastline, a rise in sea level would not only impact the direct coastline but also weaken cliffs and endanger houses by the shore, as seen in Figure 9. Saltwater intrusion is also a concern for coastal communities like Conception Bay South and St. John's. Saltwater intrusion is the process of sea water seeping into the groundwater, creating

unpotable drinking water and therefore decreasing the productivity of agriculture near the shoreline (British Columbia, 2016).

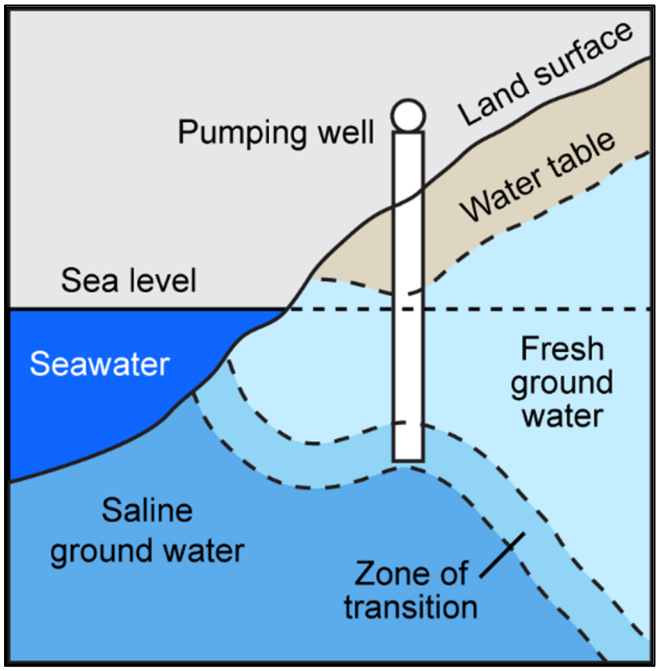

Figure 10: Saltwater Intrusion Process (EPA, 2021)

While climate change is the main culprit of sea level rise, the island of Newfoundland is also affected by isostatic rebound, which is raising the northern section of the province and lowering the southern portion (Batterson & Liverman, 2010, p. 137). Isostatic rebound is a geological process caused by the gradual "bouncing back" of bulges in the Earth's crust after deglaciation following the last glacial period (approximately 10,000 years ago). This process of isostatic rebound will accelerate the rate at which the sea level appears to rise.

The melting of the Earth's current glaciers is the cause for global warming induced sea level rise— the main glaciers of concern are Greenland's and Antarctica's ice sheets. In March of 2022, an ice sheet the size of New York City collapsed in Antarctica's Eastern Peninsula, suspected to be caused by the warming of the ocean after record high temperatures in that part of the globe. This ice sheet was previously thought to be stable (Borenstein, 2022).

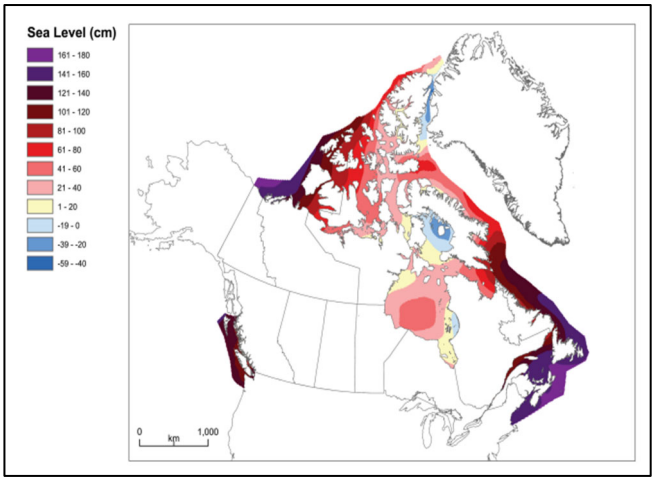

Figure 11: Projections based on IPCC RP 8.5 (James et al., 2021)

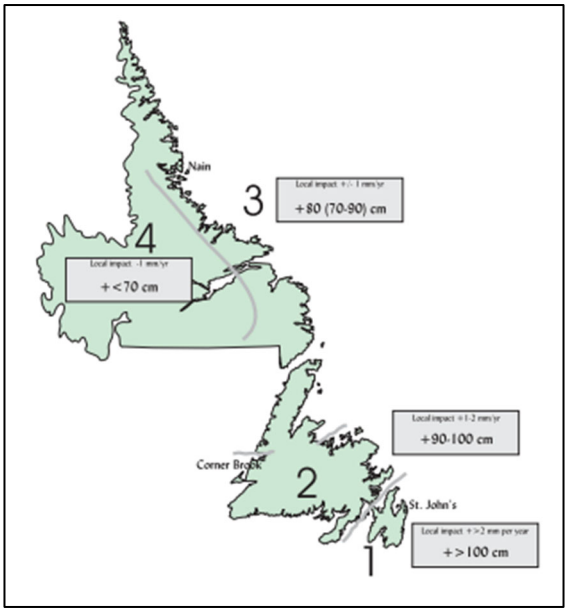

Figure 12: Projections from 2010, in use by the NL government (Batterson & Liverman, 2010)

While global average temperatures are set to raise by a few degrees by the end of the century (+1.5ºC is what the most optimistic studies say) this rising temperature will vary drastically on the local scale, with even some moderate cooling in areas affected by unique geography.

The island of Newfoundland's climate is regulated by its proximity to open water which rarely freezes in winter, called a temperate marine climate. This causes mild winters and cool, wet summers. Average snowfall in St. John's amounts to 322 cm, according to the City of St. John's website.

Community	Period	Winter	Spring	Summer	Fall
St. John's	20th Century	-3.2	1.8	14.1	7.6
	2041-2070	0.2 ± 1.5	3.4 ± 0.9	16.5 ± 1.2	10.9 ± 1.3
	2071-2100	2.1 ± 1.8	5.3 ± 1.5	18.3 ± 1.8	13.0 ± 1.7
Corner Brook	20th Century	-4.9	2.3	15.7	7.5
	2041-2070	-0.5 ± 1.5	5.4 ± 1.3	18.7 ± 1.3	10.5 ± 1.3
	2071-2100	1.9 ± 2.0	7.4 ± 1.5	20.7 ± 1.9	12.6 ± 1.8
Nain	20th Century	-15.5	-5.1	9.3	1.6
	2041-2070	-8.2± 2.1	-2.5 ± 1.8	11.9 ± 1.4	5.2 ± 1.7
	2071-2100	-4.6 ± 2.9	0.2 ± 2.4	14.1 ± 2.0	7.2 ± 2.2

Table 1: Predicted temperature change (Batterson 2020, "Costal Change in Newfoundland and Labrador: A Handbook for Policy Makers and The Public.")

By 2050, the average winter temperature in St. John's is predicted to be above freezing (0.2º +/- 1.5º). This will impact the freeze/ thaw cycle and potentially decrease the amount of snow St. John's gets during the winter.

Batterson also states in *Coastal Change in Newfoundland and Labrador: A Handbook for Policy Makers and The Public* that the number of growing days will be increased slightly, which may increase the amount of vegetation on the coast and may slightly deter coastal erosion.

A higher sea level will also increase the severity of weather events such as hurricanes and wind events, which can create a storm surge along the coast (a storm surge is high waves and rough sea conditions created by wind). The IPCC predicts with high confidence that a higher sea level will also increase the rate of compound events, i.e. coastal flooding due to storm surge combined with pluvial flooding (IPCC, 2021, p. 25). Municipalities in Newfoundland are unprepared for compound events as I found no evidence of preparations in my research, and the informant who works for the government of Newfoundland and Labrador stated that not all municipalities have created their emergency management plans (personal communication, June 2022).

5.2. What Research is being done

Memorial University of Newfoundland (MUN), the only university in Newfoundland and Labrador, is well regarded for its research, and does have projects working to understand the impacts of climate change and solutions for these impacts. Notably, Dr. Trevor Bell, in conjunction with the Nunatsiavut Government in Labrador, created the SmartICE project which integrates Labrador Inuit traditional knowledge with advance data acquisition and remote monitoring technology to provide safety information for local communities, fisheries, and other economic activities. SmartICE has won multiple awards (Green, 2021). Other research on climate change at MUN includes climate impacts on soil formation in boreal forests, climate impacts on ocean currents, and the Civic Laboratory for Environmental Action Research (CLEAR). As I discuss later in this paper, climate change research exists in the province and is relatively well known, however there is a gap that needs closing between the science and using this knowledge to inform policies.

On the provincial government level, the Department of Environment and Climate Change focuses on climate change drivers and impacts in the province. This department is responsible for the Climate Change Action Plan and the "Turn Back the Tide" campaign (which will soon be retired (personal communication, June 2022), as well as the *Management of Greenhouse Gas Act* which was assented to in 2016. The Management of Greenhouse Gas Act regulates opted-in industrial bodies, as well as any industrial body that produces over 25,000 tonnes of GHG, by setting emission reduction targets (Management of Greenhouse Gas Act, 2016).

Figure 13: Winter non-storm conditions outside of Cape Spear, December 2019 (Way 2019).

Other government bodies have tackled climate change adaptation through different channels, such as the toolkit "7 Steps to Assess Climate Change Vulnerability in Your Community" by the former Department of Environment and Conservation. This toolkit was adapted from the National Oceanic and Atmospheric Administration (NOAA) Coastal Service Centre's Community Vulnerability Assessment Tool. Unfortunately, I could not find data for how many municipalities availed of the toolkit, which uses community planning and risk assessment techniques to gather local information on the effects of climate change in small, rural municipalities in the following six categories (Vodden et al., n.d.):

1. Flooding
2. Coastal Vulnerability
3. Slope Movement

4. Drinking Water Supply
5. Winter
6. Wildfire

The toolkit is available on the Department of Environment and Climate Change's website in the resources page, but no data exists on what municipalities accessed the toolkit nor any data from the results of using the toolkit. I believe if the data was made publicly available the findings would help researchers and other municipalities in identifying climate change vulnerabilities in rural areas of Newfoundland.

This toolkit also appears on the website of Atlantic Climate Adaptation Solutions Association (ACASA), which is a "partnership among the provincial governments of Newfoundland and Labrador, Nova Scotia, Prince Edward Island, and New Brunswick, and regional stakeholders including nonprofits, tribal governments, and industry" (ACASA, 2016). The site provides access to ACASA's publications and other research throughout Atlantic Canada.

Dr. Norm Catto, a professor of geography at Memorial University, has four publications on ACASA's website, all of which report on his studies of coastal erosion in Newfoundland. He has studied the rate of coastal erosion on differing types of coast, i.e., bedrock vs. sandy. The research shows that some coasts are not threatened by erosion (0 centimetres per year) while the more delicate sandy coasts are eroding at worrying rates (+100 centimetres per year) which threaten cultural heritage sites, archaeological sites, people's homes, and municipal infrastructure.

While the context is unique to the Avalon Peninsula, rising sea levels is an issue that most countries in the world will have to grapple with. Within Canada, the government of BC produced a report in 2013 to build adaptive capacity in communities along the coast (British Columbia,

2013). This report covers how to build adaptive capacity through planning tools, regulatory means, land use planning, flood protection works, and non-structural soft armouring of coastal features such as wetlands, dunes, and beaches. Measures such as these can help prevent coastal erosion, which is a concern for many municipalities in Newfoundland. This report could serve as a guideline for creating the same adaptive capacity building for the Avalon Peninsula and Newfoundland.

The authors of the report give recommendations for land use planning against rising sea levels include restricting buildings in vulnerable areas, something which the City of St. John's has already begun by denying building permits for flood zones. However, these efforts can be overruled by the provincial government such as in the case of the new hospital being built in St. John's. Other municipalities in the Avalon Peninsula may be able to emulate this strategy, however this would require knowledge of flood zones and vulnerable areas. As smaller municipalities in Newfoundland are often without extra funding for projects such as flood zone mapping, it may be more effective for the federal or provincial government to create flood zone mapping for the entire province.

Figure 14: Example of bedrock coast with vulnerable buildings, Quidi Vidi, August 2021 (Way, 2021)

5.3. “Gon’ be some day on clothes”: Anticipated physical impacts on Newfoundlanders

Interviewing people who lived on the Avalon Peninsula revealed highly varied opinions on the effects of climate change. All parties interviewed believed in climate change and believed that climate change would have terrible impacts somewhere on the globe. Opinions on climate change in Newfoundland however erred on the side of optimism— two informants felt that there would be significant changes to their lives due to climate change, while the other informants felt detached from the effects of climate change.

One informant, who hunts during the winter months, mentioned that because the winter of 2021-2022 had such little snow, prey and game animals were at a disadvantage.

“All those animals that change to white in the winter— because we had no snow this year all the rabbits were bright white on a green background. The same with the partridge, they turn bright white. We were going on the barrens, and we could see them miles away. It was a lot easier for us to hunt those animals. But I'm assuming for coyotes, they can see the animals easier too. I don't know what impact that's going to have on their population” (Personal communication, April 2022).

Another informant echoed a sentiment I heard a lot while growing up in Newfoundland: “I know this is terrible to say but I wouldn’t mind some warmer weather” (Personal communication, May 2022). This was often said when the term ‘global warming’ was more popular than ‘climate change,’ which led to a misrepresentation of the overall impacts of the changing climate. As a province with infamously terrible weather, the idea of a climate that was a little warmer for the island seemed like a silver lining of climate change.

One informant stated that they felt detached from the impacts of climate change due to the urban nature of their surroundings. They worried more about secondary and tertiary impacts to the province, not on their personal life. Concerns they listed were the rising price of gas and the lack of public infrastructure on the island to support public transport, and how those would impact outport communities and the suburbs of St. John's.

Three informants were concerned about rougher weather and rougher seas which will impact supply chains. There was also concern about coastal flooding due to storm surges.

Figure 15: Storm surge conditions outside of Grand Bank, Burin Peninsula (CBC 2018)

6. Cultural Effects of Climate Change in Newfoundland

To interpret how Newfoundland would be affected culturally by climate change, the interview I conducted with the climate change professional within the Newfoundland and Labrador Government was especially helpful.

Sea level rise is documented to contribute to coastal erosion in Newfoundland, and the proximity of many important cultural sites to the shoreline makes place-based and tangible heritage artifacts vulnerable to the rising sea level. This includes settler colonial sites as well as Beothuk, Mi'kmaq, Norse, and Inuit heritage and archaeological sites.

6.1. Slipping quietly into the sea

A small town on the Avalon Peninsula called Tors Cove is experiencing high rates of erosion along the east-facing shoreline, where a previously unknown graveyard was uncovered as the coast crumbled starting in 2016.

At this time, I was working in an archaeology lab at Memorial University, and the main priority during this time for the graveyard was to stop individuals from approaching and taking the bones. A professor I studied with was initially called in to ensure the bones were archaeological and not forensic— something that happened unexpectedly often. As the permits and funds were not immediately available to conduct an excavation, the site was cordoned off and left to erode. Out of morbid curiosity, a friend and I drove to look at the site after it had been taped off. Initially it was interesting, but the longer we stood there looking up at the eroding cliff with bleached bones sticking out of the dirt, the sadder the situation felt.

This situation has continued since 2016, as now full skulls are being found on the beach below the graveyard.

Figure 16: Skull found on beach from Tors Cove cliff erosion (Kidd, 2022)

These individuals were likely settlers in Tors Cove from before the 1870s (Kidd, 2022). Dr. Norm Catto was quoted by The Star saying "…no one has compiled a list of cemeteries at risk in the province and that doing so would be a tall order, because it's a complex matter crossing multiple government departments… If people have attachments to their ancestors and don't want them washed into the ocean then probably the best move is to find another spot to lay the remains to rest" (Kidd, 2022).

A resident of Tors Cove also spoke to The Star "[The resident] has been deep into genealogy of late, and the idea of losing the remains of people she's just getting to know doesn't sit well. 'It's horrible," she says. "I'd love to know what could be done to save it'" (Kidd, 2022).

Losing graveyards has a cultural impact, but also a deeply emotional one, especially if the graves are of recent relations. While there is work to do to protect graves across the island, the constant struggle of municipalities to dedicate funds to more than emergency work remains an obstacle.

Beothuk sites such as the settlement on the Eastport Peninsula are under threat from erosion and wave action as well. The specific site, on an area called the Beaches, holds artifacts from six distinct cultural groups (CBC News, 2013). Dr. Laurie McLean, who has worked with the Beaches site through the Burnside Heritage Foundation, has been attempting to get a retaining wall built around important archaeological sites in the area, but lack of funding has impeded their ability to properly protect the sites. This area also includes a quarry site (Bloody Bay Cove Quarry) where 5000 years of tool making has taken place through multiple cultures (McLean, 1997).

While I was working and studying as an archaeologist in Newfoundland, I spoke with Dr. McLean in 2013 about the Bloody Bay Cove Quarry site. He told me about the sheer amount of history at this site, including half carved bowls, still attached to the rock face (personal communication, 2013). I believe that Newfoundland has a duty to care for these sites, which hold a breathtaking depth of history. The province engineered the cultural genocide of the Beothuk people and denied the Mi'kmaq and Inuit history of the island and participated in the residential school system; allowing them to be erased by erosion and climate change continues the erasure of Newfoundland's Indigenous history.

The government has done studies on how erosion will impact Newfoundland, and data on this was included in the Climate Change Action Plan as a Key Action Area (Newfoundland and Labrador, 2021). The focus of these efforts, however, are on the economic concerns surrounding erosion. As stated in the report: "To further these efforts, in 2018-19 the province entered into a three-year $1.9 million agreement with the federal government to complete a climate change risk assessment for renewable resource industries (i.e., agriculture, aquaculture, fisheries, and forestry) and municipal operations, and to build capacity in key economic sectors, including

renewable resource industries, mining, and tourism" (Newfoundland and Labrador, 2021, p. 5). This focus does not allow for financial support of non-economic projects or anything outside of anything deemed within the scope of tourism— which is largely settler colonial sites in Newfoundland.

Throughout the interviews I conducted, there was a sense of optimism from most of the informants about how Newfoundland will fair during a period of rapidly changing climatic conditions. One informant predicted total societal collapse as a result of capitalism and climate change.

Upon review of my questions, I wish that I had asked more direct questions about cultural impacts of climate change, as I believe this would have provided more related data to this section. Unfortunately, the questions I did ask which I thought would relate to cultural impacts seemed to be more directed towards material conditions, which I did not realise until coding my data for the cultural impacts chapter. If I were to continue this project, I would ensure that my questions covered a broader range of impacts.

Some cultural activities that informants spoke of as being important to them included hunting, berry picking, fishing, hiking, and boating. While I was not able to get information on how the informants believed these activities would be threatened or changed, I can extrapolate how climate change will impact these activities.

Biotic elements of Newfoundland including prey animals, fish, and berries have evolved to the typical Newfoundland climate. Changes to the climate, worsening storms, and eroding coasts will impact these organisms which in turn will impact the activities that interact with them.

7. "That crowd up on the hill": Distrust in Newfoundland Government policies

"A child born in this province today owes debt as a birthright" was part of the concluding statement of the 2021 Budget Speech delivered by Deputy Premier and Minister of Finance Siobhan Coady (Coady, 2021). The outrage to this statement was visceral and fanned the flames of Newfoundlanders' distrust in their government institutions.

On social media, people took to blaming politicians, Nalcor (a crown corporation in charge of hydroelectricity projects in the province), and the upper class for the circumstances that brought Newfoundland and Labrador to this point.

Twitter user @edfromred tweeted in response to a CBC article covering the budget speech "*But the Nalcor crowd who robbed us all blind are still employed and are getting bonuses!?"* (Hyde, 2021).

Twitter user @DanBrown709 tweeted in response to the same article "*Nothing makes me more proud of living here than career politicians getting elected because of name recognition who do nothing but blame everyone for the mess they happily created*" (Brown, 2021). Other responses included people saying they want to move away from Newfoundland due to how badly the government has handled financial affairs, and that the government was made up of "merchant kids." Newfoundland has a long history of deep divisions between merchants and fishermen, but that analysis is outside the scope of this paper. Nonetheless, the social disparity between descendants of the mercantile class and the working class remain and is often blamed during times of economic crisis.

A sense of distrust against the government runs deep in Newfoundlanders and Labradorians. Labrador has had its fair share of punitive policies and unsavory politicians, but within this

analysis I will be focusing on ones that effect the island of Newfoundland, which may or may not include issues in Labrador.

This sense of distrust came up in every interview I conducted— informants spoke of failures, lies, perceived malicious actions, and a lack of education within in ranks of the political bodies that govern Newfoundland.

The Muskrat Falls Hydroelectric Project by the crown corporation Nalcor almost deserves its own section due to the sheer magnitude of missteps and bad decisions surround this project. As one respondent said, "you can hardly speak about it now without sneering" (Personal communication, April 2022). I am not immune to the effect the name of this project has on Newfoundlanders. I grew up through the Danny Williams' government (2003-2010) and became politically aware during the duration of his terms. Promises were made to make Newfoundland and Labrador a "Have" province, that Newfoundland and Labrador would lead the way on green energy through the allocation of oil revenues. The Muskrat Falls project was supposed to move us away from the oil industry, allow the province to shut down the generator station in Holyrood (which supplies the majority of the electricity to the province), and lower the costs of energy in Newfoundland and Labrador. While there was political dissent (especially from Labrador Indigenous Land Protectors), much of the population fully bought into this project and pinned the hopes of economic security, lowered costs of living, and, to an extent, pride in our province on this project. One respondent said, "Muskrat Falls was driven by raw [Newfoundland] nationalism."

The project was given the go ahead by the Williams' government in 2006. Positions within Nalcor were given out to friends of Williams with no previous experience in overseeing projects, hydroelectric projects, dams, or engineering. Appointed CEO and President Edmund Martin was

previously a financial manager in the oil industry, and VP of Lower Churchill Project Gilbert Bennett (who was to oversee the early planning of Muskrat Falls) had no prior experience in hydroelectric or transmission line projects, had no experience in construction management, and had not worked on any megaprojects prior to joining Nalcor (LeBlanc, 2020, p. 4). A public inquiry was launched in 2017 to see what had gone wrong with the project, why it was years past its due date and $5.3 billion over budget. There was no reporting protocol to the government from Nalcor, and what information was given to the government was not fact checked (LeBlanc, 2020, p. 43). It was also found that electricity rates for people on the island of Newfoundland would increase dramatically, putting pressure on an already economically depressed population. Essentially, the Muskrat Falls Project looked like a vanity project full of nepotism hires from the Williams' government.

This sense of betrayal over the failure of this project was deepened during the winter of 2014 when faulty infrastructure relating to the Holyrood Generating station failed and caused tens of thousands of Newfoundlanders to lose power for a week during a period of extreme cold and heavy snow. I had just returned to my hometown for a school break when the event, dubbed #DarkNL, happened. Overnight, we lost power and in the morning a glass of water I had set out had a crust of ice on it. Communities opened warming centers, relatives with wood stoves took in their family members that relied on electric heating, on the radio there were public service announcements telling people the dangers of carbon monoxide poisoning to dissuade people from using gas generators inside. This event was later thought to be part of the reason Premier Kathy Dunderdale resigned that year (NTV News, 2016).

An informant stated that they believed this project was one of the factors that caused Newfoundlanders to 'double down' on the oil and gas industry, as the brief foray into alternative

energy was so disastrous (personal communication, April 2022). The heightened level of distrust in the Newfoundland and Labrador government in recent years has also impacted the ability of public institutions to put forth meaningful changes to the way things are done, including climate change policies.

Figure 17: "Make Muskrat Right" Protest signs outside abandoned property near the dam on the Churchill River, Labrador (Sharpe, 2018)

7.1. Municipalities and lack of Infrastructure

There was also distrust reported by informants in local municipal governments and their ability to handle climate change. Some choice quotes from respondents include:

"…unfortunately most municipal council members don't have the education or the training to understand climate change" (personal communication, March 2022).

“I’m sure they [The City of St. John’s] are planning to reduce paper usage or something useless like that (regarding climate change planning)” (personal communication, March 2022).

The mishandling of climate change concerns on a local level also comes down to the lack of access to funds for infrastructure upgrades. Oftentimes there isn’t money available to repair or make resilient infrastructure, and money only becomes available in emergency situations such as road washouts. This happened often in my town when I was growing up in the early 2000s— the road connecting my house to the town would wash out due to the river, cutting us off until it could be re-built. As a child I was mostly excited about the opportunity to miss a few days of school. The road would never be upgraded— the funds only materialized for repair when needed. And who could blame the town for this? The town didn’t have potable water and no money for upgrades to this basic system, how could you plan for an abstract future problem?

A source within the provincial government echoed this sentiment, mentioning that the provincial government has a grant program for municipalities to upgrade infrastructure, but this often is not enough for major projects and is often not known about (personal communication, June 2022).

8. Planning Context(s):

The state of climate change planning in Newfoundland and Labrador is lacking, however there exists some policy regarding climate change planning.

The government of Newfoundland and Labrador assented to an updated planning act in May 2000, titled the Urban and Rural Planning Act. There are no specific provisions for climate change in the Urban and Rural Planning Act.

The City of St. John's Municipal Plan was updated as of 2021, and explicitly states climate change as an environmental consideration (Section 3.3). It states:

> "The City recognizes that climate change is occurring. Anticipating and addressing impacts of climate change will become increasingly important over the planning period. Of particular importance is the identification of lands that are susceptible to hazards such as low-lying coastal areas, steep slopes, and floodplains. Measures are being taken to address increased stormwater flows by upgrading stormwater detention systems, while other measures will be looked into, in order to increase the city's resilience to climate change.
> 1. Acknowledge that as more information is gathered on climate change and its potential impact on vulnerable areas within the city, structures and buildings may be required to be located and designed to withstand the risks associated with climate-induced impacts.
> 2. As mapping and information becomes available the City will revisit consideration for sea level rise and development."

The City of St. John's has also designated various flood plains within the city boundary as open space land use for the express purpose of limiting the built structures within these flood plains, a climate change planning tactic that works within the current act that does not have specific climate change planning considerations (personal communication, April 2022).

In the provincial climate change action plan, flood risk mapping is cited as a "key adaptation initiative" (Newfoundland and Labrador, 2021). This statement conflicts, however, with the current provincial decision to build major mental health and addictions healthcare infrastructure in St. John's on a wetland (CBC News, 2020). While the replacement for the notorious Waterford Mental Health Hospital is critically needed, criticism for the placement and the future cost of upkeep is widespread.

During my interviews, I was able to speak with three professionals either in planning or in climate change work.

- What drew you into planning?
    - One of three of the planning professionals have a degree in planning, while the remaining two started in the field without any formal planning education. All three professionals stated that they were drawn to the profession through an interest in the way municipalities and provinces are organized and how they enact change.
- What is the City of St. John's/Conception Bay South/Provincial Government's plan for the rising sea level?
    - The City of St. John's does not have a plan for rising sea levels, but does discuss flooding (pluvial, coastal, and riverine) as an effect of climate change. One informal method of planning for this is denying building permits for areas vulnerable to flooding.
    - The Town of Conception Bay South does not have a plan for rising sea levels.

    - The provincial government, as far as I have found in the interviews and my research, does not have an actionable plan for rising sea levels. The province has commissioned flooding studies to be done to identify vulnerable areas, but unfortunately continue to build public buildings on lands vulnerable to flooding, as in the case of the new mental health and additions hospital.

- What do you think of the St. John's (Conception Bay South/Provincial Government's) municipality's climate change action plan? Is it useful? Is it being implemented? Could it be better?
    - All three professionals discussed the difficulty of sticking to a climate change action plan on every level of government involved because of the four-year election cycle. While one government may put forward a plan, goals can be changed or reversed the next time a government is formed.
    - All three professionals were vague in their answers about the usefulness of the various climate change action plans, citing bureaucratic difficulties in getting departments on the same page.
- How do you feel that the St. John's (Conception Bay South/Provincial Government's) municipality's climate change action plan is influenced by local politics?
    - One informant stated that they believed the action plans are directly influenced by the level of government above them (Federal to Provincial to Municipal), and local politicians and politics did not have too much influence over these matters. The two remaining informants discussed how the goals of a government in regards to climate change are directly influenced by who is currently holding

power and their loyalties to various subsets of the population (in Newfoundland, namely the oil and gas industry and the workers therein).

- In your opinion, how would a metre of sea level rise would affect St. John's/Conception Bay South/Newfoundland? How would this effect the weather/ severe weather we get?
    - In St. John's: the informant discussed saltwater intrusion and damage to the wastewater system.
    - In Conception Bay South: the informant discussed damage to the coastline from higher sea levels and more violent storm surges. This included negative impacts on recreational areas, private property, and beaches.
    - Newfoundland: The informant discussed the loss of cultural heritage sites, archaeological sites, private property, industrial properties, damages to the fishing industry, damages to recreational areas, and general damage to coast lines.

In regards to this last question, all three informants had a list of thoughts and concerns about a meter of sea level rise. Most of these concerns are not directly addressed in climate change policies on the municipal or provincial level. While the individuals working in these areas are aware of the impacts of climate change to Newfoundland, our policies and plans have not caught up to this level of detail. There is reluctance in government departments to focus on the effects of climate change, which I believe is directly related to the ties to the oil and gas industry, as discussed on pg. 57 on the vote for the *Just Transition*.

The provincial climate change action plan details the ways in which the province is tackling the causes and mitigating the effects of climate change in Newfoundland and Labrador. According to the informant working with the Government of Newfoundland, in recent years there has been

deep cuts to funding for the Department of Environment and Climate Change which included the removal of many positions within the department and the merging of roles. Most items in the climate change action plan are voluntary and require coordination between departments or requires industrial bodies to opt-in to these measures (personal communication, June 2022).

9. So, is what's being done to combat climate change enough?

Is climate change being taken seriously in Newfoundland? I think that this question is best answered by an event that took place while I was visiting home in May of 2022. I was in the middle of a conversation about climate change in Newfoundland with a friend (ironically) and made a quick social media check and saw the title of an article that had just been written: *Just transition resolution defeated in Newfoundland and Labrador House of Assembly.*

In mid-May 2022, the provincial NDP in Newfoundland put forward a private members resolution (PMR) to support the Just Transition, the act of helping oil and gas workers move to the renewable energy sector. The private members resolution was defeated 31-4.

The private members resolution was regarded as a ridiculous idea. During the vote, members laughed at the NDPs proposal. "'Not even close,' someone laughed, when the House was filled with mostly nays" (Mercer, 2022). What did the NDP expect from the same people who are advocating for the Bay Du Nord project (discussed on pg. 22)?

Jim Dinn, the leader of the Newfoundland and Labrador NDP, reported being dismayed by the result of the vote, quoting to The Telegram "Quite frankly this ignorance to talk about reality is an insult to the people of this province, and future generations who are set to inherit the province and economy we leave for them,' said Dinn" (Mercer, 2022).

The Climate Change Action Plan is not aggressive enough to tackle most of the causes of climate change that Newfoundland and Labrador contributes to. It also fails in preparing the people of Newfoundland for the changes associated with climate change. The climate change action plan sits comfortably within the confines of the imagination of the Liberal government in Newfoundland and Labrador— incrementalism in a time of leaps and bounds. The Minister of

Environment and Climate Change Bernard Davis is short-sighted at best and maliciously incompetent at worst. Davis believes the Bay Du Nord project doesn't directly conflict with the climate change action plan, though the action plan sets carbon reduction targets that the province wouldn't meet even before the Bay Du Nord project was approved. The original action plan discusses the "strides made in decoupling economic growth from greenhouse gases" (Newfoundland, 2019).

"He [Davis] said government is making great progress on implementing its climate change action plan with all 45 items in progress or completed. An update on the plan on government's website says that without additional actions in this decade, the 2030 target may not be achieved, and the province's ability to achieve net zero by 2050 will be challenged. Davis said the province's offshore projects are among the lowest carbon intensity production facilities in the world. He said Bay du Nord is expected to release eight kg of CO2 per barrel of oil, compared to an international average of 16.1 kg. He said his conscience will allow him to see offshore developments in this province because they're much better than those in other countries" (Mercer, 2022). This is in direct opposition of Davis' department's climate change action plan, which states that "the offshore petroleum sector has limited scope to reduce their emissions on-site" and does therefore not support the plan (Newfoundland, 2019). The Department of Environment and Climate Change, under Davis, set up a Net-Zero Advisory Council in 2021, with the aim to provide advice to the government, in order to bring Newfoundland and Labrador to net-zero emissions by 2030, in compliance with the federal government's goals. The Bay Du Nord project is not compatible with the climate change actions taken by the Department of Environment and Climate Change.

It is difficult to take the government seriously about their climate change approaches while the Department of Environment and Climate Change approves projects such as Bay Du Nord. The reliance on the oil and gas industry and the disinterest in transitioning away from this industry makes the efforts to mitigate or adapt to climate change look absurd. According to Dr. Angela Carter, a political science professor at the University of Waterloo and member of the Net-Zero Advisory committee of Newfoundland and Labrador, even money meant to support the transition away from oil and gas, such as the 2020 funding from the federal government which totaled $320 million for Newfoundland and Labrador, was used to create more jobs in the oil and gas industry (CBC News, 2021). This anecdote illustrates the difficulties in mitigating and adapting to climate change within Newfoundland, as many of the people in power are reluctant to even engage in the idea of climate change.

In Robbins 2012 book on political ecology, he discusses the five main theses of what political ecology is attempting to explain— "degradation and marginalization," "conservation and control," "environmental conflict and exclusion," "environmental subjects and identity," and political objects and actors" (Robbins, 2012, p. 22). When looking at environmental politics issues in Newfoundland and Labrador, the last two theses become especially topical. 'Environmental subjects and identity' explains identities of people and social groups, and how they are linked to issues of livelihood and environmental activity. 'Political objects and actors' seeks to explain how socio-political conditions are affected by the non-human actors with which they share the physical space. Robbins states that new actions within the environment create new kinds of people, and that the material characteristics of non-human nature are inherently political. Newfoundland has been embroiled in the oil and gas industry for long enough that it is difficult for politicians and citizens to imagine a Newfoundland that is not based in extraction—

this extraction-based identity is the ’new kind of people’ that Robbins references as being created by conditions within the environment. If oil and gas has become embedded in the Newfoundland imagination as being of Newfoundland, the reactions of the MPs in described in the Just Transition vote begin to make more sense. The NDP attempted to steer the conversation towards leaving the oil and gas industry, but what was *being felt* by the 31 MPs was that the NDP was trying to steer them away from Newfoundland-ness. More research will need to be done on how oil and gas is linked to the Newfoundlander identity, and into how to decouple identity with the oil and gas industry.

10. Conclusions

My research was to identify the concerns Newfoundlander's have about climate change and how it will impact the relationship they have with the island of Newfoundland. As a secondary, but important, part of my analysis, I researched the strategies, plans, and policies the Government of Newfoundland and Labrador is taking towards climate change adaptation and mitigation. Together, these two streams of knowledge will show a more complete picture of the reality of climate change planning on the island of Newfoundland.

How did Newfoundland get to this point? Historical and cultural contexts within colonial Newfoundland encourage Newfoundlanders to be less concerned about climate change due to the "rugged" and "individualist" ideas of what Newfoundlanders are. The cod moratorium was an incredibly significant event for Newfoundland which destabilized the outport and created the shift of traditional fishing jobs into other industries, such as the oil and gas industry. Unwilling to go through another period of job instability, Newfoundlanders cling to the oil and gas industry even as it goes through it's own death throes and even while it actively contributes to climate change. Elected officials are unwilling to engage with climate change, either due to their own ties to the oil and gas industry or due to the wishes of their electorate. This creates a toxic feedback loop in which climate change is a dirty word, where acknowledging the danger has come to mean you oppose jobs and stability for Newfoundlanders. Understanding through political ecology, opposing the oil and gas industry means you are threatening the Newfoundlander identity (as discussed on p.60).

I have come to the following conclusions:

1. Some individuals did report that climate change would alter their relationship with Newfoundland, either through change in activities (such as differences in hunting/fishing)

or through increased isolation and predicted difficulty in living (harder to import goods to the island).

2. Individuals interviewed were interested in climate change and how that will impact the island and their lives, but most view it as a future problem that will be dealt with in time.
    a. There is also a feeling of distrust that government would do anything meaningful about climate change, most see the current efforts as placating or catering to upper class (i.e., installing electric vehicle charging stations at public buildings).
3. There exists research about different parts of climate change, but no real synthesis of results into concrete action in Newfoundland.
    a. Coordination across departments of the government and across public and industrial bodies is difficult as there are conflicting priorities.
    b. This has let down the people of the province, as municipalities are unaware of what impacts climate change will have on their areas and are unprepared for compound climate events.
4. The government is ineffective in dealing with climate change as they are too deeply invested in oil and gas.
5. Planning for climate change in Newfoundland exists but does not seem to be taking enough aggressive action, most likely due to lack of funds and knowledge on the municipal level (i.e., municipalities cannot replace culverts until flooding forces them to, and then they are just replaced to the minimum instead of looking forward into new strategies to deal with increased flooding due to climate change).

Climate change poses an existential threat to the province of Newfoundland and Labrador. While research exists for many facets of climate change in Newfoundland, the research is not useful if

it is fractionated and scattered across government departments and non-governmental bodies. In order to create concrete actions and policies, there must be a more integrative approach to climate change research and action in Newfoundland.

11. Directions for Future Research

There is more work that can be done on this topic in Newfoundland alone. Future research efforts could be focused on any of the below points in order to contribute to the overall picture of climate change and climate change planning in Newfoundland.

1) Use toolkit available on department website (Vodden et al., n.d.) to collect data in a more formal method and release results of the data to help researchers and municipalities identify climate change vulnerabilities in rural areas of Newfoundland and Labrador, in order to see what should be protected from the viewpoint of the community.
2) Creating an integrative system across departments and research bodies to work together to create concrete climate action and change.
3) Introduce more climate change science communication so that communities will understand what the impacts of climate change are to their areas.
4) How the Newfoundlander identity is linked to the oil and gas industry, and how to decouple the two.

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