Thesis: Climate Change's Social Justice Ramifications for NL and Related Policy Implications

(John) Conor Curtis, Student Number: 200952943, May 19, 2020
Supervisor: Dr. Kelly Vodden

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Abstract

Climate change has far-reaching impacts worldwide, and an increasing amount of literature cites the disproportionate burden climate change has on disenfranchised populations and those who have the least means to adapt. Climate change also has ramifications at multiple scales, local through provincial, for Newfoundland and Labrador (NL), Canada. However, while there have been multiple studies of these climate change impacts in NL, there remain gaps in knowledge on how these impacts might affect different groups and communities in different ways, as well as the role provincial policy has and might play in this impact distribution. This thesis assesses potential social justice impacts of climate change for NL. It then examines existing climate change adaption policy in NL, namely the 2011 Climate Change Action Plan and 2019 The Way Forward on Climate Change in NL, and the capacities that these policies have to aid in mitigation of and/or adaptation to social justice implications of climate change. Policy measures that may assist the mitigation of and/or adaption to these implications, including interactions between policy at local and provincial scales, are also discussed.

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Finally, I would like to dedicate this thesis to all those in our province and elsewhere, from community members, journalists, and researchers to activists, planners, policy makers, and civil servants, who are working night and day to address the issues of climate change, social justice, and environmental protection. Their work deserves to be celebrated far more than it is. Some of the people who have inspired me to work on climate change include: Dr. Ian Simpson, Simon Jansen, Katie Temple, Delia Warren, Justin Brake, Nicholas Mercer, Sara Langer, Olivia LeBlanc, Katherine Flores-Hutton, Jordan Chaffey, Lindey Touzel, Melissa Mandala, Kristen Perry, Victor Frankel, David Brake, Angela Carter, Graham Oliver, Marjorie Robertson, Mutchie Bennett, Raymond Cusson, Susan Galloway, Bob Diamond, Aurore Fauret, Cameron Fenton, Ben Donato-Woodger, Jenne Nolan, Sofia Descalzi, Robin Whitaker, Miles Howe, Kerri Claire Neil, Hans Rollman, Kiki Wood, and many more. To have worked with just some such individuals, as these, has been my greatest honour and privilege.

I would also like to dedicate this thesis to the memory of Eileen “Misé” Curtis and Reginald Short, my grandparents, who always encouraged me, and who are greatly missed.

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Chapter 1: Introduction, Climate Change and Social Justice, and Research Questions and Methodology

Introduction

> …you've got your mission, you've got your policy, and you have your directives. If the mission doesn't have any teeth, or is intended to have no teeth, the policy level will be written in order to answer that…. but if you don't have people to implement something and you don't have money for those people to help the small community to adapt, let alone mitigate, you're going to look at a policy book and that's it. 'See we have a policy, one policy,' 'yep what do you do with it?' 'Oh nothing.' 'Do you have money?' 'No, no, no but we have a policy.' We have a policy, we have a policy, we can claim we have a policy. Yep that's about the size of it.
>
> – Interviewee

Climate change has far-reaching impacts worldwide (Watts, et al., 2015; WHO, "Climate Change" n.d.), including in Canada and more specifically Newfoundland and Labrador (Turn Back the Tide, n.d.; Vodden et al. 2012). These impacts occur at multiple scales, with local, regional, and provincial ramifications. An increasing amount of literature cites the often-disproportionate burden climate change impacts have on disenfranchised populations (i.e. populations who have a diminished ability, relative to others, to affect the society in which they live [Cambridge Dictionary, n.d.]) and those who have the least means to adapt (Kasperson & Kasperson, 2001). While there have been multiple studies of these impacts in NL (Catto, 2010; Finnis, 2013; Riedlsperger, 2014; Spooner et al., 2013), there remain gaps in knowledge as to

how these impacts might affect different groups and communities in Newfoundland and Labrador (NL) in different ways. A review of available literature (described further in Chapter 2) further shows that little information exists to specify how these differences in effects might be determined by socio-economic factors such as governmental funding, social mobility, wealth, and related social stigmas. In short, more information is needed on the social justice – or what has sometimes been referred to as 'climate justice' (Bernstein, 2011) – implications of climate change for NL, a gap which this thesis seeks to help address. Similarly, while there is policy aimed at climate change adaptation and mitigation in NL, such as the 2011 Climate Change Action Plan and multiple other policies which incorporate climate change (Department of Transportation and Works 2014-2017 [2014] Strategic Action Plan for example), it is unclear to what extent existing policy contains an in-depth consideration and discussion of social justice issues related to climate change and the role of policy in such issues, another gap which this thesis seeks to help address.

This thesis aims to assess the social justice implications of climate change in NL (based on a review of previous literature) and then assess existing climate change policy in NL, namely the 2011 Climate Change Action Plan and Way Forward in Climate Change in NL, and the ability of said policy to aid in mitigation of and/or adaptation to social justice implications of climate change. Potential policy foci/measures that may assist the mitigation of and/or adaption to these social justice implications will also be discussed, including interactions between policy at local and provincial scales. This will be accomplished with the assistance of a conceptual framework, outlined below, which assesses existing social factors, climate impacts, institutional and policy capacity, and their resulting influence on social justice related outcomes (see figure 1 below).

Climate Change and Social Justice

Social justice has become a key consideration for climate change, and there is an ever-growing body of related research and social action generally encompassed under the umbrella of 'climate justice' (Bernstein, 2011). The term 'climate justice' has sometimes been used to refer to issues of equity surrounding climate policy. The United Nations Framework Convention on Climate Change (UNFCCC) implies that climate justice must be defined on an international basis in terms of pursuit of equity "in accordance with [countries'] common but differentiated responsibilities and respective capabilities" (Bernstein, 2011). Specific definitions and interpretations of climate justice abound. Historically, the term 'climate justice' appears primarily in the context of international literature on the subject, and even then is primarily used in relation to differences between countries, with a focus on relations between "developed" and "developing" nations, rather than to denote justice issues within developed nations (144). In recent years, studies have started to utilize the term 'climate justice' to refer to community level impacts; some authors have even directly argued the climate justice is a scalable term, one that should be applied within states as well as to international relations between states (Agyeman, 2016; Fisher, 2015; Kim et al., 2018). However, upon review of available materials, it is evident that 'climate justice' does not commonly appear in literature on climate change or social justice in NL. Where my thesis specifically deals with social justice impacts of climate change on a provincial and local level, the term 'social justice' is used in this thesis to avoid confusion with broader, international discussions on this topic.

Social justice has been defined in many different ways over time and has been framed through different political ideologies in different regional contexts. As the National Pro Bono Resource Centre (of Australia) states:

> To put it simply, the concept of social justice involves finding the optimum balance between our joint responsibilities as a society and our responsibilities as individuals to contribute to a just society. Many different ideas exist about where that optimum balance lies. (NPBRC, 2011)

Broad international definitions also exist, although they can leave open a great amount of room for interpretation. For instance, in 2006 the United Nations suggested that: "Social justice may be broadly understood as the fair and compassionate distribution of the fruits of economic growth..." (United Nations, 2006). Indeed, the term 'social justice' is tied directly to the context in which it is being applied as a concept.

One way to consider social justice is in terms of the dual streams of distributive and procedural justice, where the former is primarily concerned with the distribution of benefits and burdens in a society and the latter the involvement of society in decision-making processes around that distribution (OUPblog, 2017; Oxford Bibliographies, 2018). The inclusion of both these forms of justice has become particularly important in studies of climate change impact distribution (Fisher, 2015; Thomas & Twyman, 2005). As this thesis is concerned with both policy development and outcomes, it will consider both procedural and distributive justice.

In this thesis I draw from the Public Health Agency of Canada's definition of social justice as "the concept of a society that gives individuals and groups fair treatment and an equitable share of the benefits of society…. Under social justice, all groups and individuals are entitled equally to important rights such as health protection and minimal standards of income" (PHAC, n.d.). I draw from this definition because, firstly, it encompasses multiple aspects of distributive justice including the distribution of economic growth and, secondly, because it is a definition actively used in the Canadian context. I expand upon the Public Health Agency of Canada's definition to

include: rights and access to the means to adapt to climate change, in relation to possible or current impacts and considering the severity and scale of these impacts and how they affect different communities or social groups (i.e. distribution of impacts and adaptive capacity, or distributive justice); as well as the ability of individuals to influence climate policy on the provincial and local scale (i.e. procedural justice). For this thesis both inter- and intra-community distribution of social justice impacts in relation to climate change were considered and the capacity of existing policy to address these impacts in a fair and equitable way.

Vulnerability and Social Justice Dimensions of Climate Change

Climate change impacts can have larger consequences for particular individuals, groups and/or locations depending upon sensitivity, a function of the characteristics of a system and the nature of climate impacts, and adaptive capacity, the capacity to adjust existing practices, system structures, and/or processes in response to current or anticipated climate changes (Kasperson & Kasperson, 2001; Pearce et al., 2015, 236). Vulnerability to climate change is, therefore, defined by Kasperson & Kasperson (2001) as "[the] extent to which climate change may damage or harm a system; vulnerability is a function of not only the system's sensitivity, but also its ability to adapt to new climatic conditions" (3). Those with the least adaptive capacity but the greatest sensitivity are likely to be most affected and thus most vulnerable (3-4).

Global trends, such as increasing inequality, have also had influences on sensitivity and adaptive capacity. According to the work of Adger (2001) the severity and distribution of climate change impacts are deeply tied to vulnerability and to factors that influence vulnerability such as social status/assets like strong informal economies, livelihood diversity, levels of income and distribution of wealth/equity, and institutional forms that influence these factors. These factors are

discussed further below as part of a conceptual framework for this thesis. Assessing vulnerability is paramount for understanding climate change's impacts generally, and social justice ramifications more specifically, and how climate change will interact with other pressures and factors such as globalization that are already exerting stresses on many individuals and communities (Kasperson & Kasperson, 2001).

The Role of Policy and Institutional Factors

Policy has a vital role to play in generating solutions to climate change. On a global scale, there has been a distinctive shift from policy aimed exclusively at climate change mitigation towards policy incorporating adaptation as well (Adger et al., 2006). At the heart of this change in paradigms are increasing observations that the impacts of climate change are already being felt globally and are no longer some distant-future problem to be avoided. For policy aimed at climate change adaptation to be successful it must incorporate into its framework considerations of justice, as discussed above, and considerations of justice can also be used to augment related climate compatible development (Adger et al., 2006; Wood et al., 2018).

Many adaptations to climate change within communities are ultimately spontaneous in nature, while others are the result of planning and policy. Whether in terms of planned or spontaneous activity, vulnerability, related risks, and adaptive capacity depend upon a range of parameters; requiring a consideration of complex economic, social, and institutional factors that extend beyond simple measures such as income per capita alone (Adger, 2001; Adger et al., 2017). Some commentators have pointed to the problems inherent to decision making in mainstream democracy, for example, that can increase such vulnerabilities or prevent mitigation of impacts,

since elites often are allowed as great a voice – or greater – in matters concerning climate change as those most affected (Ren et al., 2015).

Key considerations for successful adaptation include the role played by social and policy learning, and the nature of informal institutions and moral economies/arrangements that can help provide social security (Adger, 2001). However, considerations of levels of formal governance in adaptation to climate change are also crucial, with a multilevel response considered most appropriate (924). Multi-level government response to adaptation can also have particular relevance in creating proactive policy (Amundsen et al., 2010).

Multi-level responses to climate change, and resulting responsibilities for adaptation, can come with significant challenges, however. Inaction on climate change adaptation at higher governmental/institutional levels can effectively leave lower levels with greater responsibilities; while those actions taken by higher levels also influence the alternatives lower levels have available (Paavola & Adger, 2002). While it is local communities who have the least capacity to influence international policies such as emissions targets, for example, they are also the most likely to be affected by climate change. These factors point to the importance of procedural as well as distributive justice, and the role adaptation may play in reinforcing or alleviating both forms of potential inequality (2). Kasperson & Kasperson (2001) suggest that global – and perhaps national, provincial, and local – resilience strategies might include broad sustainability-based transitions to increase adaptive capacity, combined with actions to address other factors such as inequality and institutional knowledge gaps. This suggests that in formulating effective policy aimed at improving the capacity of communities, or an entire province, to adapt to climate change, communication between different levels of government, and with the public, as well as measures aimed at improving overall social well-being are key.

The Canadian Context

Many of the policy-role factors in the previous section reflect priorities in terms of relevant national and provincial government policy in Canada. Indeed, the necessity of multi-level government communication of information and action on climate change in NL appears to be acknowledged in provincial policy; the 2011 Climate Change Action Plan outlines required supports for local level adaptation actions, for example (CCAP, 2011). In the broader, national context of Canadian climate change adaptation policy an emphasis is being placed on identifying vulnerable regions while also addressing socio-cultural determinants of health (both mental and physical) that contribute to an inclusive definition of well-being and related effects of climate change. This national policy emphasis, through documents such as the Pan-Canadian Framework on Climate Change and Clean Growth for, is also paired with a collaborative, multi-level, response to climate change adaptation working with provinces while attempting to address knowledge gaps (Pan Canadian, 2016).

However, in terms of public health adaptation in Canada external to the recent Pan-Canadian Framework on Climate Change and Clean Growth, both provincial and federal governments lack modes of coordination that are institutionalized, working informally through individual projects or civil servant relationships instead (Austin et al., 2018). A lack of clear approaches to collaboration can have negative impacts on local level adaptation. In a British Columbia case study, for example, specific barriers to multi-level (federal, provincial, and municipal) responses in mainstreaming adaptation included the absence of leadership at the senior political level, diminished public awareness, policy misalignment, lacking staff and financial capacity, and inadequate collaboration (Oulahen et al., 2018).

Communication and multi-level approaches to climate change policy in Canada must also be understood in the context of the institutional capacities of those levels of government involved; the function and structure of institutions, and decision makers' abilities to manage information, are key determinants of adaptive capacity (Fawcett et al., 2017). Significant work needs to be done in terms of local community capacity to address climate change across Canada, and in NL in particular. The Federation of Canadian Municipalities (FCM) is currently working to assist over six hundred communities in responding to and addressing climate change nationally, through the Municipalities for Climate Innovation Program (MCIP), valued at seventy-five million dollars over five years. This program not only aims to assist communities with adaptation, but also with the reduction of greenhouse gas emissions as well (FCM, 2018).

The considerations above inform the approach of this thesis, which seeks to analyze social justice outcomes of climate change as well as implications for provincial (and to an extent municipal) policy in NL. This includes understanding what institutional and policy factors might aid or hinder mitigation of or adaptation to social justice impacts of climate change across multiple levels of government.

Research Methodology and Methods

A goal of this research was to examine policy implications and the potential for policy at both local and provincial scales to address the social justice ramifications of climate change in NL. The questions this research sought to answer, therefore, are:

- What are the known and likely social justice ramifications of climate change for NL?
- Do existing climate policies on the municipal and provincial scales account for these ramifications in a way that facilitates mitigating or adapting to them?

- What policy foci or measures might improve upon existing policy in mitigating and/or adapting to any social justice impacts found?

To answer these questions, I first collected and consolidated existing data and analyzed known bodies of literature and resources, with a focus on assessing the existing social justice factors that may influence and be influenced by climate change impacts in NL, both current and predicted (phase one). This first phase included a review of the existing Climate Change Action Plan (2011 plan) and documentation relating to The Way Forward on Climate Change in NL (2019 plan). There is also an ever-increasing body of research into province-wide and to some extent regional impacts of climate change for NL that was reviewed in this phase for information on community and province-wide impacts, and particularly potential social justice impacts of a changing climate.. This thesis first provides an assessment of some of the key current and potential social justice ramifications of climate change for NL based on information in existing climate change literature.

The second phase of this study involved primary research, including a community-level case study of Glenburnie-Birchy Head-Shoal Brook (GBS) and interviews with provincial officials and researchers to provide further insights into social justice factors, impacts, and the 2011 Climate Change Action Plan and related policy. It is hoped this case study can help identify social justice implications of climate change that may be present other communities provincially. Further details of the methods employed in both phases are provided below.

Conceptual Framework

To aid in understanding impacts of climate change for social justice, and how social justice factors can influence the impact of climate change, I developed a conceptual framework for

assessing climate change impacts in terms of their social justice ramifications, to be applied to both the assessment of provincial policy and the community case study. This framework is presented in Figure 1.

Figure 1: Framework for assessment of social justice impacts of climate change

Given the importance of adaptive capacity at the local-level identified in literature, the framework draws its inspiration from a conceptual framework for assessing community capacity developed by Beckley et al. (2008), as well as the work of Adger, Paavola, and Kasperson noted above. Beckley et al.'s emphasis on capacity building in communities and noting of communities as dynamic systems also helps inspire the proactive nature of this work to go beyond simply considering weaknesses in communities but understanding strengths as well (59). However, where the Beckley et al. model sought to assess impacts on community capacity as a whole, the framework above seeks to assess particular impacts of climate change and how these might be distributed amongst the population of the case study community and across the province of NL, placing a particular focus on social justice considerations.

Like the Beckley et. al. framework, the framework for this thesis can be expanded to consider consecutive or cumulative impacts over time (see Figure 2). This takes into account that social justice impacts of climate change may affect future social justice and institutional/policy conditions, and in turn future adaptive capacity and therefore vulnerability. This is particularly

important as factors affecting vulnerability and adaptive capacity are often dynamic and may even be intergenerational in nature (Goldhar et. al., 2014; Pearce et. al., 2015).

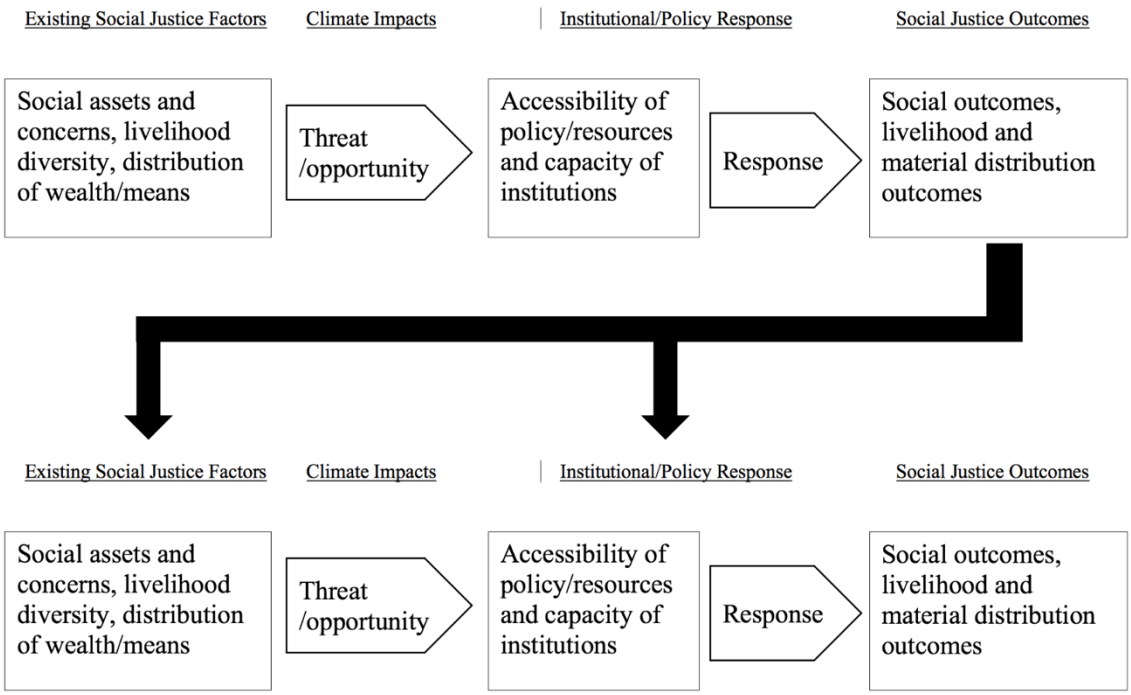


Figure 2: Framework for assessment, including consecutive impacts

The framework begins by examining the existing characteristics of the community/province in terms of social assets and their influence on climate change vulnerability and impacts. Distribution of wealth/means and equity and diversity of livelihoods are also included as they are identified by Adger as crucial indicators of vulnerability (Adger, 2001). Table 1 lists indicators and factors of consideration used in assessing social assets and concerns as well as livelihood diversity and distribution of wealth and means in the social justice factors component of the conceptual framework.

Table 1: Indicators and factors of consideration used in assessing social assets and concerns

	Social assets and other influencing factors	Livelihood diversity	Distribution of wealth and equity
Indicators and factors of consideration	• Community belonging • Population age • Population change • In- and out-migration • Technology • Accessibility of social services • Presence of volunteer organizations	• Dependency on particular sectors • Technology • Levels of formal education • Employment rate • Employment insurance prevalence	• Personal income per capita • Family income • Progressiveness /regressiveness of taxation • Levels of formal education • Self-reliance • Poverty levels • Gender pay equity

Social assets and related concerns, for instance, include demographic changes – such as outmigration – that can have a crucial role in determining available social capital and have been shown in some cases to have significant ramifications for community-level adaptation, particularly for adaptation which takes place outside formal institutions (McLeman & Ford, 2013, 74-76). Certainly, outmigration has been linked to issues of community capacity in NL specifically (Irvine et. al., 2016), discussed further in Chapter 2. Age is also identified by Pearce et al. (2015) as an important component of exposure-sensitivity in relation to climate change in the context of Inuit Nunangat in Arctic Canada (Pearce et al., 2015). Mobility impediments (and restricted access to resources), as well as physiological changes, can diminish adaptive capacity for older people (Filiberto et al., 2009-2010). Meanwhile, informal institutions and economies, such as those tied to volunteer activities, are identified in literature as an asset in terms of climate change adaptation (Adger, 2001).

Livelihood diversity was considered a key factor of consideration in assessing how impacts related to climate change may be distributed differently in NL. Understanding the vulnerability of livelihoods to certain climate change impacts can be key to understanding how certain societal groups may be affected in different areas where different types of livelihood exist (Hahn et al., 2009). Livelihood is also thus a key component of exposure sensitivity (Pearce et al. 2015). During a severe storm, for instance, there may be greater disparity between inhabitants living close to the shore and those farther inland due to coastal flooding. Such an impact might not result in this increase in disparity, however, if it were also found that those living close to the shore had access a set of livelihood options less vulnerable to the storm than those inland (perhaps the inland community is highly dependent on agriculture and crops are destroyed as a result of the storm for example). Thus, regional dependencies on certain industries were examined in this research, along with access to technology, education and employment levels. Levels of education, technology, human capital, and the distribution of resources are also noted as determinants to adaptive capacity by Fawcett et al. (2017), along with perceptions of the sources of stress.

Distribution of wealth/means was assessed by examining poverty rates and income levels since each of these implies a particular distribution of means or the ability to access certain resources from the private or public sector. Poverty rates were considered to be of particular importance given the potential of climate change to put increased stress on the economically disenfranchised (Filiberto et al., 2009-2010). Gender pay equity was also a factor of consideration with regard to wealth/means distribution, given the importance of issues of gender equity in relation to climate change adaptation, and the prevalence of gender pay inequity in NL relative to the rest of Canada (UN WomenWatch, 2009; Neil, n.d.).

Forse et al. (2016) point out that only analyzing the determinant factors and related objective indicators of a situation, as discussed above, does not necessarily lend insight into the judgements people come to about how socially-just that situation is. While objective indicators can shine some light on the 'justice' of a situation, an analysis of the sentiments a group holds towards social justice, and related inequalities, can complement the study of objective indicators such as poverty rates. To this end interviews with participants also informed further research into other indicators and factors of consideration. Themes noted by interviewees that informed research into further indicators in addition to, or concurrent with, those noted above, included community networks and belonging, education, volunteerism, income levels, taxation, the accessibility of services, dependency on certain sectors, and personal economic independence (self-reliance, employment insurance prevalence). These indicators were, therefore, included in the framework as the research evolved and are also included in Table 1 under their respective columns.

The framework then assesses the consequences that climate changes and related impacts (for instance extreme weather events, rising sea levels, and related threats and opportunities) might have for these social factors. Then the framework accounts for institutions and policy responses to these impacts and consequences. In particular, the framework addresses the accessibility of policy responses and associated resources as well as the capacity of these institutions, resources, and policies to address the impact. In terms of climate impacts on communities the availability of appropriate institutions is of paramount importance, as discussed above (Adger, 2001; Fawcett et al., 2017). Finally, the framework calls for consideration of resulting social justice outcomes (i.e. how the prior elements of the framework have, or may, affect livelihood options, the distribution of material means, and any other relevant social outcomes).

Glenburnie-Birchy Head-Shoal Brook (GBS) Case Study

This research is concerned with the study of provincial level policy and, to an extent, interconnections with municipal policy and so also contains a case study component. This choice of approach to this topic was informed by other related research that places emphasis on multi-level government responses to climate change and has at times utilized similar case studies (Adger, 2001; Amundsen et al., 2010; Austin et. al., 2018; Oulahen et al., 2018). The case study component of this thesis is thus a means to gain greater insight into specific considerations of social justice impacts on a community scale and into interactions between local and provincial-level climate policy in a case where a climate change adaptation plan already exists (as a mechanism for reflecting and putting into action municipal climate policy). While NL represents a specific case within Canada as a whole, the province is itself made up of numerous communities, each with specific case situations. Case studies can be highly beneficial since they allow phenomena (such as climate change) to be understood in their context even if boundaries between the context and the phenomena are unclear (Rowley, 2002). Nonetheless case studies sometimes carry with them a level of ambiguity in terms of qualitative or quantitative qualities and focus (Badie, 2011).

GBS, located on the southern shore of Bonne Bay on route 431 (maps of the community are included in Appendix A), was selected as the case study community. The GBS Climate Change Adaption Plan is useful, not only in that it sets out a framework for municipal adaption to climate change, something which could indirectly inform local and provincial policies aimed at diminishing climate change's social justice ramifications, but also in that the plan itself identifies multiple localized climate change impacts which could have direct ramifications for social justice. These impacts range from coastal flooding to increased risk of geo-hazards (Manuel & Herring vol. 2, 2010). It was created in 2010 by Patricia Manuel and Sarah Herring after extensive

consultations in the area, as well as geo-physical analysis. Given that GBS has an Adaptation Plan while many other communities do not it was chosen because it may be viewed as a "best case scenario" for a rural community within the province (in terms of current level of planning for climate change), illuminating both opportunities and challenges for other communities and for the province as a whole.

Once separate communities – Glenburnie, Birchy Head, and Shoal Brook – were amalgamated in 1978. The population of GBS hovers at around 250 individuals, substantially increasing due to part-time summer residents and tourism during the summer (Town of GBS, n.d.; Summers, 2012). While Shoal Brook and Birchy Head take their names geographical features, Glenburnie (a Scottish place name) is named as an homage to its first inhabitant, Hugh McKenzie's, original homeland (Town of GBS, n.d.). The three communities, founded late in the 19th century, developed around local fisheries (Summers, 2012). Fisheries continued to employ 17% of the regional workforce of Bonne Bay between processing and harvesting as of 2005 (Lowitt, 2013), and GBS has also been known to practice subsistence gardening (Summers, 2012). Tourism is also a core part of the regional economy and GBS hosts Middle Brook Cottages and Chalets (Middle Brook Cottages & Chalets, n.d.). Trends relating to social justice factors in GBS are discussed in greater detail in the following chapters.

The case study research included a mixture of qualitative and quantitative components, discussed further below. A great deal of quantitative data exists on GBS and the surrounding area, stored on Community Accounts. Interviews with government representatives, specialists in climate change research in NL, and community members provided further insight into the case study and qualitative factors affecting social justice, climate change, and multi-level policy response.

Overview of Data Collection and Analysis

From a methodological standpoint the research is largely qualitative in its approach, drawing from some quantitative data (see Tables 1 and 2 for quantitative indicators and related sources) to help provide context in assessing existing social justice factors, analyzing the potential ramifications of climate change's social justice impacts for NL, as well as the effectiveness of related policy. This approach is taken mainly for two reasons. First, I make the assumption in this research that social justice issues are often hard to measure and depend upon local context and personal experience and sentiments as suggested by Forse et. al. (2016), and thus a largely qualitative approach allows for a flexible and situation-based interpretation of social justice impacts. Second, while strong evidence exists to demonstrate that NL will experience the ongoing effects of climate change, such future effects are hard to predict in a specific and quantitative way. For instance, while increased precipitation in the form of rain, instead of snow, has the potential to increase infrastructure damage and related costs, it is difficult to predict exactly where this damage might occur, and to what degree, years in advance. Instead adaptation policy is often more generalized, utilizing implementation tools such as geo-hazard zones (Manuel & Herring, 2010).

Table 2: Data sources for each element of the conceptual framework

	Existing social justice factors influencing vulnerability	**Climate change impacts**	**Institutional/policy factors and responses**	**Social Justice Outcomes**
Case study/ community scale	• Community Accounts • Municipal documents and data • News coverage • Community/ regional-level interviews	• GBS Adaptation plan • Community/ regional-level interviews • Academic literature • News coverage	• Community/ regional-level interviews • Community accounts/databases/ municipal docs • GBS Adaptation plan	Conclusions incorporating data from previous framework elements
	• Provincial gov. interviews	• Provincial gov. Interviews	• Provincial gov. interviews	Conclusions incorporating

Provincial scale	• Provincial gov. documents and data • Vital Signs • Statistics Canada • Researcher interviews • Academic literature • Think Tanks • News coverage	• Provincial gov. documents and data • Researcher interviews • Academic literature • News coverage	• Provincial policy documents and analysis • Researcher interviews • Academic literature • News coverage	data from previous framework elements

Table 2 below provides an outline of the sources that have been used to collect data relating to each relevant stage of the conceptual framework at local and provincial scales. A more in-depth discussion of sources used is included below.

Document and Secondary Source Review

The first phase of this research focused on gathering secondary data related to social assets and factors and existing literature on climate change, followed by a review of key policy documents. While the primary focus was on academic and government literature surrounding the topic, other sources of information included news articles that provided additional context to the research. A great deal of the research for this thesis focused on collecting baseline data on existing factors that influence vulnerability and social justice impacts both on a provincial and case-study scale. Quantitative data on the case-study community was gathered largely from the database Community Accounts (Community Accounts GBS, 2015), and other sources identified by interviewees. This included data on indicators, as noted in Table 1.

Data on existing social justice factors related to the research on a provincial scale was largely drawn from provincial government resources (e.g. Community Accounts), Statistics Canada, think tanks, and academic literature on the subject, as well as any findings which were uncovered as a result of interviews with climate change researchers or government representatives.

On a case-study scale data was primarily drawn from existing databases like Community Accounts, any municipal documents available, as well as interviews. The Community Foundation of Newfoundland & Labrador and Memorial University's Harris Centre published a Vital Signs report in 2016 specifically dealing with the differing experiences of rural and urban areas in terms of demographic changes, such as aging, the industries that drive different regional economies, and some of the social-cultural assets in the province (Vital Signs, 2016).

Climate change impacts are often anticipated and assessed by relying upon particular climate models. Of particular importance to this thesis were the impacts noted by the provincial government in their ongoing analysis of climate change, as well as the most recent research on climate change impacts for NL (see Chapter 3). As such, no singular model was chosen but rather a picture of more broadly projected impacts noted across existing research and policy was assembled and then assessed in terms of varying types of impacts and degrees of projected severity. Emphasis was placed on anticipated climate change related impacts in GBS and the surrounding region. For instance, Sea Level Rise (SLR) is considered within the GBS Adaptation Plan to most likely reach an increase of 30cm to 80cm (Manuel & Herring vol. 2, 2010). Thus, within the GBS context, the impacts of SLR were assessed for their social justice ramifications and implications for related policy at local and provincial levels. Interviews, at both the case study level and provincially, revealed additional current or potential impacts or lines of inquiry, ranging from water runoff to local species distribution as discussed in the thesis' findings (Chapter 4).

An analysis of related secondary sources, in conjunction with interviews, helped provide insight into the context behind the development of the Province's existing Climate Change Action Plan and Way Forward on Climate Change in NL and what ramifications these plans have had,

and may have in the future, for policy and institutional factors and responses on the provincial and local level that influence climate justice outcomes.

Interviews

Secondary sources are used in conjunction with interviews with community members and governmental/institutional individuals. Specific individuals were targeted for interviews related to provincial and case study considerations of social justice, policy, and climate change, utilizing a targeted (purposive), combined with a snowball, method of gaining interviewees (Ritchie & Lewis, 2003; Stehlik, 2004). At the provincial-level, targeted individuals consisted of individuals involved with the formulation of the 2011 Climate Change Action Plan or 2019 The Way Forward on Climate Change as well as climate change researchers who have contributed to climate change research provincially. These individuals were also asked to identify others who may have additional knowledge or contributions (snowball technique). A targeted (purposive) combined with a snowball method was also used in the community case study to identify interviewees. This was to ensure that potentially crucial sources within GBS were contacted, and that they were able to identify additional individuals living within – or with assets within – areas that have been or are likely to be affected (e.g. geohazard zones or those dependent on assets at potential flood or erosion sites).

The snowball method is well suited to finding interviewees who may be highly dispersed (Ritchie & Lewis, 2003). Potential problems with the use of snowball sampling as outlined above include the potential to produce bias or to mis-represent what might be considered 'typical' viewpoints (Stehlik, 2004). However, it must be kept in mind that this research is not concerned, centrally, with determining what viewpoints might be typical, but rather attempts to assess how

different people might be more or less vulnerable to climate change impacts, which necessitates a focus on identifying and capturing the viewpoints of those most involved with the impacts, as well the viewpoints of informed individuals on the subject. Snowball sampling, and similar methods, have shown potential in this respect when used in relation to other environmental impacts, and help to overcome some of the barriers which can otherwise occur in attempting to engage community members (39). The benefit of snowball sampling is that it helps to capture dispersed or relatively small populations, particularly if the selection criteria might not be disclosed by individuals themselves (Ritchie & Lewis, 2003), as one could expect when attempting to select individuals who may be facing social justice impacts from climate change or assisting with efforts to adapt to such impacts. Similarly, when attempting to find researchers in the field of climate change, it is reasonable to assume that this involves a relatively small population who may be dispersed across different fields. These considerations informed my decision to use a mixture of targeted and snowball sampling.

The following is a list of initially targeted interviewees (not the final list of participants):

Provincial:

- Provincial government employees involved in the Climate Change Action Plan or The Way Forward on Climate Change in NL 2011: 2
- Climate change researchers ('Researcher interviews'): 4

Case study:

- GBS municipal government: 2
- GBS Climate Change Adaptation Plan : 2
- Qalipu First Nation: 1

- Other GBS community-level interviews: 5 (e.g. fish harvesters, other businesses that may be affected, community organization representatives particularly those representing vulnerable or marginalized groups)

Of the above a total of 5 provincial-level interviewees, and 8 case study-level interviewees were reached (a total of 13 interviewees). Case study interviewees lived within the case study community and/or were directly involved with the local economy and local policies, or had conducted research on local climate impacts. Provincial interviewees had been involved with relevant policy or climate change research. While several interviewees identified further potential interviewees to be contacted, in many cases both targeted prospective interviewees, and those identified through the snowball method, either could not be reached or did not return messages despite multiple attempts being made to make contact.

Where possible, interviews were conducted face-to-face (or by teleconference if not possible), in a venue chosen by the interviewee, utilizing audio recording as is preferable in qualitative research (Ritchie & Lewis, 166-167). Interview length ranged from 13 minutes to one hour and 20 minutes, and averaged approximately 30 to 40 minutes. Interviews were completed in 6 months. In general, trips conducted as a part of research (for interviews or to access resources) were scheduled to try and minimize the amount of travel to and from sites required, thus further reducing any associated emissions-related environmental impact.

While the questions asked followed the same basic format (following the research framework) for all respondents, questions were tailored to the community or provincial scope. (A list of interview questions is included as Appendix C). The interview format was spread into four components, relating to the components of the conceptual framework (social justice, climate change impacts, and policy and institutional response), as well as a general response question

which allowed respondents to state any cumulative or additional comments concerning the research topics (including any suspected outcomes or insights missed in the earlier sections).

Participants within the case study community were asked a set of questions relating to their thoughts on climate change impacts (specifically centering around vulnerability, sensitivity, and adaptive capacity), factors of social justice and vulnerability within the community (concerning factors such as social assets/concerns, livelihood diversity, and distribution of social economic changes), what connections between these categories they saw as existing – if any, and policy/institutional response. For the provincial level of the study, selected government representatives or specialists in terms of climate change were similarly asked a set of questions relating to their research/work on climate change impacts or related policy (specifically centering around vulnerability, sensitivity, and adaptive capacity), factors of social justice within the province as a whole (concerning factors such as social assets/concerns, livelihood diversity, and distribution of social economic changes), what cross-relevance they saw as existing if any, and policy/institutional response.

Data Analysis

Data obtained from textual sources or databases (such as the policy documents in question, municipal records, Community Accounts etc.) was analyzed for key indicators which point to existing social justice factors provincially or on the municipal level, climate impacts, or the capabilities of institutions and existing policy to address these impacts (using the above described framework). Data on livelihood diversity provincially and in GBS, for instance, was assessed and consideration was given to what role such diversity might play in terms of impacts and adaptation.

Assessment of climate policies, in Chapter 3, is conducted through the lens of a policy cycle, with stages reflecting available information, and informed by W. A. Rosenbaum and the NL policy cycle (Rosenbaum, 2011; PolicyNL, n.d.). Provincial policies are analyzed through the stages of agenda setting (how policies came to be a priority), formulation (the generation of policy solutions), legitimation (how policies were conveyed to the public), implementation (how policies were carried out) and evaluation (how policies were analyzed and improved upon). Each stage of policy cycle analysis is examined for any insights into the accessibility and capacity of said policy and related resources.

Interviews were transcribed and analyzed to identify any consistent or recurring themes, or specific concerns which might be highly relevant to the research. For example, particular impacts are mentioned across multiple interviews. This helped point to focus areas. Interviews were also analyzed for any discrepancies or unique instances which might point to areas for further study (both for the thesis, but also possibly for subsequent research). For instance, where community members noted an existing social justice factor that had not otherwise appeared, this may indicate the need for further investigation. Findings from interviews at the case study-level and those at the provincial-level were also compared with each other to help identify potential gaps, or perception gaps, in terms of factors like institutional and policy capacity.

Ethical Considerations and Potential Limitations

Core to the thesis research to be conducted were ethical considerations, such as confidentiality for interview respondents and community access to the resulting research. All interview data in this thesis is presented anonymously, with interviewees' identities being referred to only by a generalized title at most (i.e. 'Thesis Research Interviewee') if quoted. This intended

to prevent the resulting findings from negatively impacting specific participants from the case study community or any provincial-level by helping to lower the social risks of participation, and allowing participants to feel more comfortable in the content of their responses. Snowball sampling could represent a limitation as an approach in this respect, as targeted interviewees who recommend further sources may suspect (based upon the final thesis) who may have subsequently participated in interviews. Careful attention was thus paid to ensure exclusion of any potential identifiers in using any direct quotes from interviewees, particularly regarding any content that may have anticipated repercussions.

Another key consideration was potential to generate bias, particularly during the interview component of the process. As the researcher for this thesis I, John Ciaran Conor Curtis, took on the role of the interviewer. However, I have also been a public figure, both as a candidate in a 2015 provincial election, and as an activist, spokesperson, citizen journalist, and writer on climate change and other environmental and social issues. While it is unclear exactly how well known my non-academic activities might have been to interviewees, the research conducted for this thesis aimed to avoid this influence as much as possible. This factor was also noted throughout as a continuing consideration when interpreting the research findings. Further, those interviewed were informed that this study is concerned only with collecting their own viewpoints, and any mention by participants of my background was noted as a potential factor affecting the reliability of the information subsequently gathered.

Dissemination

Once a final copy of the thesis is completed copies will be sent to the case study community, the provincial and federal governments, and Qalipu First Nation, and attempts will be

made to publish the thesis in an publicly available format. It is also hoped that meetings with provincial government, Qalipu First Nation, and GBS municipal government representatives can be arranged to receive any final feedback on the findings. Finally, short editorials may be written to local media summarizing the findings of the thesis. It is hoped that this will allow the findings to be as accessible as possible to the public and policy makers.

Thesis Layout and Connection to Conceptual Framework

The conceptual framework for this research is reflected in the organization of the thesis and the organization of the findings and concluding chapters. The second and third chapters of the thesis are concerned with a review of current literature related to social justice factors and climate change impacts in NL (Chapter 2), as well as a review of the 2011 Climate Change Action Plan and 2019 The Way Forward on Climate Change (chapter 3). These reviews of available literature and policy then informed the interviews and, together with the interview responses, provided answers the research questions and the conclusions ultimately presented in chapters 4 and 5. Figure 3 below outlines the content order of the thesis document and how it relates to the framework.

Figure 3: Thesis layout in relation to conceptual framework

Chapter 2: Literature Review on Climate Change, Social Justice Factors, and Related Impacts in NL

This chapter reviews literature and secondary sources related to social assets, livelihood diversity, and distribution of wealth/means, as well as literature on climate change impacts in Newfoundland and Labrador. The first element of the conceptual framework for this study includes research into factors affecting social assets and vulnerabilities in NL, such as demographics (e.g. aging populations, outmigration) and livelihood options. Literature on the subject of climate change in NL ranges in scope from general province-wide predictions, to findings from regional workshops, to specific local-scale community case studies and analyses. While knowledge gaps remain, enough information exists on climate change impacts to begin an examination of current and potential climate justice ramifications for NL.

Climate Change and Its Impacts in NL

Provincial Overview

NL is unique in how it has, and will continue to be, impacted by climate change. Climate change impacts that have been noted in academic literature include but are not limited to: changes in precipitation, sea level rise and coastal erosion, shifts in the distribution of species, changes in plants, increasingly severe storms and hurricanes, changing geo-hazard risks, rising temperatures, changes in infectious disease vectors, and sea ice loss (Catto, 2010; Finnis, 2013; Fisheries and Oceans Canada, 2014; Turn Back the Tide, n.d.). The province is highly coastal with rural and remote communities spread out along the coastline, each with unique bio-physical characteristics (Grenfell & GMCA, 2018). NL also contains the two distinct regions of Labrador, which is

connected to mainland Canada, and the island of Newfoundland. Both have unique characteristics which further influence the impacts of climate change on these regions respectively. Labrador faces particular challenges, which are examined in the next section in detail, but which include rapid rises in temperature and the loss of ice in the Labrador Sea among other factors (Sea Ice, 2018.; Durkalec et. al., 2015; Turn Back the Tide, n.d.).

The reality of climate change has been noted by the Government of NL, which over the past several years has developed a series of initiatives aimed at climate change adaptation (discussed further in Chapter 3). Turn Back the Tide, one such initiative which provides information via a website, gives a relatively comprehensive overview of current and future climate change impacts currently acknowledged by the NL provincial government. These include the emergence of Lyme disease in the province since 2004 (likely the result of warming temperatures), and degraded sea ice in Labrador – which plays an important part in resource and food gathering activities and inter-community transport particularly for Indigenous communities (Turn Back the Tide, n.d.). Turn Back the Tide also highlights likely future impacts, which range from impacts to transportation in the province, to potential impacts for important existing industries noted above such as fisheries and tourism (Turn Back the Tide, n.d.).

The former NL Department of Environment and Conservation (now Department of Municipal Affairs and Environment) and others have also used a 7-step guide, 7 Steps to Assess Climate Change Vulnerability in Your Community. The guide assists communities seeking to assess vulnerability to Climate Change in NL and was developed by a team led by Dr. Kelly Vodden, Memorial University. Step 4 of the guide's process, which covers topics ranging from coastal vulnerability to wildfires, is specifically aimed towards helping communities to identify those most affected by the respective impacts. For instance, with regard to step 4, chapter 3 on

slope movement and climate change cites considerations including isolation of location and considerations of elderly inhabitants as important factors in assessing vulnerability (Vodden et al. 2012). These considerations offer insight into focus areas (and even potential policy solutions) which are directly relevant to assessing social justice impacts of climate change for communities and the province of NL. Slope failures across Atlantic Canada remain a key issue, for example, and have historically been prevalent in NL, with a long history of impacts on infrastructure, community development and loss of life. Climate change, and the changes in factors such as precipitation it creates, could contribute to these hazards, which are well noted in Western Newfoundland particularly (Spooner et al., 2013) and are also prominently mentioned in the case study community as discussed below.

Dr. Norm Catto has done extensive work with respect to climate change research for the province of NL. A 2010 review of literature on climate change impacts for NL, written by Dr. Catto, lists impacts ranging from increased coastal flooding to changes in biodiversity. Most relevantly, however, Dr. Catto's review of existing literature examines the need for greater research into the distribution of climate impacts for the province (Catto, 2010). Dr. Catto points primarily to potential differences between the adaptive capacity of rural versus urban communities, as his review points out:

> Communities differ widely demographically and socio-economically, with substantial differences existing between rural and urban communities and within each of these categories. Adjacent communities may be exposed to a particular climate-related hazard to the same degree, but differences in their available human and economic resources may result in great differences in sensitivity, and hence in vulnerability and adaptive capacity. (Catto, 2010, iv)

Thus, questions of adaptive capacity in relation to social justice, as described in climate justice literature, have already been cited as potential considerations for climate change adaption in NL. This includes issues facing urban versus rural and remote communities and highlights the importance of the differing situations of the two.

Dr. Joel Finnis has similarly studied the projected implications of climate change for NL, examining 19 key climate indices including everything from descriptions of temperature to agricultural potential. The impacts listed in Dr. Finnis' work range from increases of precipitation in the form of rain to projected large warming increases during winter months for Northern Labrador (5-6 degrees centigrade), with economic and transport implications among others as a result. Dr. Finnis also highlights that changes in temperature may have a larger impact on day-to-day activities in different regions of the province (Finnis, 2013). It is this last point that emphasizes the need for greater information on other factors influencing climate change impacts, such as social-economic factors, since – as previously mentioned – these factors could influence the ability of populations to cope with varied day-to-day climate changes.

Research on the GBS Climate Change Adaption plan has also be been conducted by John Conor Curtis (the author of this thesis) as part of a community development course at Grenfell Campus of Memorial University. This effort involved interviews with four persons within the community or otherwise connected with the plan, utilizing a snowball sampling method. In general, this research found that while the GBS plan itself was comprehensive and showed significant potential to help the community adapt to current and future impacts, the plan has remained largely unimplemented, and its reception in some cases was mixed. Obstacles identified that may have contributed to a lack of implementation included a "deficit of human and economic capital," and the research suggested several recommended policy foci at the municipal and

provincial- level that might aid in implementation (Curtis, 2015, 15-16). This previous research helped to inform and provide a starting point for the thesis research.

A symposium entitled 'Coastal communities in a changing climate: impacts, challenges, and solutions for Gros Morne,' was held in mid-May 2018, at both Corner Brook and Rocky Harbour (which is in the same region as, and located near, GBS). The central aim of the event was to gather community members, as well as national researchers and practitioners to expand upon and share their knowledge of climate change's impacts for coastal communities, and intersections between socio-economic impacts, climate change modeling, and infrastructure (Grenfell & GMCA, 2018). Additional goals were to expand the NL specific knowledge network on climate change and to create a venue in which adaptation tools, techniques, options, and a related framework could be generated in a public forum. Programs relevant to topics such as asset management and forest-related climate impacts, such as Assessing Climate Change in Ecological and Social Systems (ACCESS) and BAM! NL, were also discussed. The BAM! NL presentation highlighted the ongoing work of Municipalities NL to help improve asset management in provincial communities, with a particular focus on how this asset management work could be applied to increasing capacity in the face of climate change, given the limited institutional capacity of communities. In NL, 25% of municipalities are limited to only a single regular staff person, making the existence of such programs particularly relevant. Meanwhile ACCESS highlights the importance of regional assessments of climate change's likely impacts for forests and the forest sector in Canada, and aims the address this need through a multi-disciplinary approach taking place in part in Corner Brook, on the West Coast of Newfoundland (Grenfell & GMCA, 2018).

Many other potential impacts of climate change, such as impacts on ocean conditions – with relevance for the fishery in the province (Fisheries and Oceans Canada, 2014) – are not fully

discernable or need more investigation, and further research may unveil even greater ramifications for social justice provincially. In general, changes in ocean temperature appear to be more beneficial for Atlantic cod but may negatively impact species such as shrimp and snow crab (Turn Back the Tide, n.d.). Fisheries, for instance, are still a very important source of employment in NL, and changes in the marine environment could have greater impacts for communities which are particularly dependent on the fisheries for their livelihoods. Climate change is not only a concern for oceanic fish species. Several species of freshwater fish in NL, such as Arctic Char, Atlantic Salmon, and Lake Trout, are potentially vulnerable to climate change, as Hope Olusanya and Dr. Michael van Zyll de Jong, point out in their argument for active management responses to impacts on freshwater fish. They emphasize that climate change "would likely outpace the ability of some species to shift to suitable habitats and genetically evolve…" (Olusanya & van Zyll de Jong, 2018, 7-10).

There are also indirect economic impacts related to climate change mitigation that could be relevant to NL's future. Christopher McGlade & Paul Ekins (2015) concluded that, prior to 2050, 74% of known Canadian oil reserves would be unburnable if the world is to stay within 2 degrees centigrade of warming above pre-industrial levels. The effects of a global shift away from the use of oil and gas on the future NL economy, as the global community seeks to mitigate climate change, represents something of gap in terms of academic literature in NL. There is, however, noted potential for the generation of green jobs provincially (NLFL, 2009). Likewise, student and citizens awareness groups focusing on climate change and green economics, such as Divest MUN and Climate Watch NL, have cited the global shift away from fossil fuels, and the resulting implication of a majority of known fossil fuel reserves becoming stranded assets, as reasons for NL to hasten the development of a green economy and reduce provincial reliance on oil and gas

extraction (Divest MUN, 2015; The Telegram, February 26 2018). These groups cite provincial plans to further oil and gas development as contradicting global climate targets and connected research, such as that conducted by McGlade and Ekins.

A growing body of literature thus exists to indicate that the province of NL is directly in the path of, and already experiencing, multiple climate change impacts and may face indirect impacts as a result of necessary global climate change mitigation. However, while multiple authors, such as Norm Catto and Joel Finnis, cite the likelihood that these impacts will be felt differently in different parts of the province and by different groups of people, little scholarly literature has directly addressed the distribution of these impacts in terms of social or climate justice specifically.

Impacts in Labrador

Labrador represents a unique and distinct region within NL, with a specific set of climate change impacts. As mentioned in the previous section Labrador is seeing some of the fastest warming in Canada combined with the rapid break down of sea ice in the Labrador Sea (Sea Ice, 2018; Durkalec et al., 2015; Turn Back the Tide, n.d.). Permafrost in Labrador is also degrading in all permafrost zones and is expected to continue to degrade as the climate warms (Way, 2017). These changes in the bio-physical environment continue to have direct repercussions for communities in ways ranging from water security to mental health.

In Labrador, Dr. Trevor Bell et al. (2008) have worked with communities to identify current and potential future impacts of climate change, particularly with regard to existing local practices and economies. Challenges identified included better understanding changes to harvest species as a result of climate change, and travel and infrastructural safety issues related to

changing weather conditions, among others. Priorities identified ranged from improvements to infrastructure, to increased sustainability and collaboration amongst communities, to increased education on climate change (Bell, et al., 2008). Projected changes in Nunatsiavut, which are directly related to winter trail activity and travelling, also include a shorter period of snow cover, thinning of the mean annual snowpack, and increased precipitation (Riedlsperger, 2014). These impacts in turn, and in combination with other socio-economic factors, can have serious social cultural implications and policy ramifications for communities in Labrador, as has been explored by Rudolf Riedlsperger as part of his research on the communities of Makkovik and Postville (132-138). Together these studies reinforce the need to understand how social and policy factors affect adaptation to climate change.

Christina Goldhar and colleagues examined changes in freshwater and the related vulnerability of residents in Rigolet, Nunatsiavut, while considering human experiences around climate change. Challenges identified included the inability to access food and drinking water sources, and resulting financial barriers. Key factors that assisted in the community's adaptive capacity included experience-based knowledge and resource flexibility (Goldhar et al., 2014). Sherilee Harper and others have conducted additional research in the Nunatsiavut region into climate-sensitive health priorities, resulting in the identification of food and water security, mental health and well-being, health services and delivery, and hazards and safety concerns as priorities (Harper et al., 2015). Water security in the Nunatsiavut region could be compromised by high impact weather events, algae growth, as well as other factors, in the future as the local climate continues to change – concerns which have been noted by both community members and government officials alike (10-11).

Other factors were also explored by Harper et al. For instance, regular and safe access to land was linked directly with mental health by interviewees and to resulting concerns in the face of changing climatic conditions (11-12). The research suggested the incorporation of EcoHealth concepts into adaptation policy, including principles of social and gender equity. The research also pointed to a deficit in existing climate change policy provincially in terms of areas such as the mental health implications of climate change (15). Furgal Durkalec et al. have similarly noted the importance of sea ice (which is threatened by climate change) to freedom, mental, and physical health for Inuit in Nain. That research found that climate change was contributing not only the physical injuries but to further environmental dispossession in Nain (Durkalec et al., 2015).

Ashlee Cunsolo and others have specifically explored how climate change impacts are related to issues of mental health in Labrador. Their research indicates that climate change is a mental health stressor in Northern communities, such as the five Nunatsiavut communities. Rapid changes in weather, vegetation and wildlife patterns, as well as the stability of snow and ice are actively disrupting cultural identity and land-based activities and contributing to ecological grief (Cunsolo & Ellis, 2018). The mental health ramifications of these impacts are extremely concerning and include increased family stress and the amplification of previous traumas. These environmental changes were also implicated in having increased the potential for suicide ideation and drug and alcohol use (Cunsolo Willox et. al., 2012; Cunsolo Willox et. al, 2013a; Cunsolo Willox et. al., 2013b).

The negative impacts of climate change for mental health are an important challenge being faced by Indigenous northern and circumpolar communities in general. Further research by Cunsolo and others notes how bio-physical and physical health can affect mental health in terms of climate change, as well as the potential indirect impact of the media. This research also points

to the need for culturally relevant and locally responsive mental health programming and resources, research, and policy to address this challenge (Cunsolo Willox et. al., 2015; Cunsolo Willox et. al., 2012; Cunsolo Willox et. al., 2013b).

Existing Social Justice Factors

Social Assets and Other Influencing Factors in NL

The conceptual framework developed for this thesis required research into the underlying social assets and vulnerabilities present in NL. Several sources of information on social assets and other factors (particularly related to demographic change), livelihood diversity, and distribution of wealth/means in NL exist which have provided information in this respect. For example, Vital Signs 2016 states that rural communities' populations are aging at a far faster rate than in urban areas (Vital Signs, 2016). Indeed, aging is a significant obstacle at both the provincial and case study-level, as demonstrated in Table 3 below.

Data suggests that significant outmigration continues to be an issue for GBS (Community Accounts GBS, 2015, n.pag.). Many demographic changes in GBS, such as out-migration, also reflect changes happening at the provincial scale (see Table 3). Alvin Simms and Jamie Ward have explored regional population projections in NL, from 2016 to 2036. They note significant changing demographics in NL, such as youth out-migration, aging populations, and migration from rural areas and the potential trajectories of these changes. Their models indicate that trends in these demographics, particularly declining and aging populations, are likely to continue to pose significant challenges for most regions in NL with the partial exception of parts of Labrador (largely due to higher birth rates) and the North East Avalon (due to in-migration) (Simms & Ward, 2017). These demographics are an additional challenge for communities already operating on

limited resources. Indeed, the staff capacity of the vast majority of NL's municipalities is severely restricted (Grenfell & GMCA, 2018). Irvine et al. (2016) note that significant out-migration from rural and remote NL has had a direct impact on many communities in terms of capacity. It important to note the overlap of the demographic changes shown in Table 3, which are particularly prominent in rural and remote communities, with the capacity issues rural and remote communities are facing in terms of climate change and adaptation.

As Irvine et al. point out, adaptation in NL is hindered by a lack of formal planning experience and capacity (Irvine et al., 2016). Climate change can be seen as lying outside of communities' mandates and capacities, and awareness of the issue was often low. NL, having a significant number of municipalities and distinctive features and history, provides a unique backdrop in relation to adaptability to climate change. Lack of funding for municipal planning has added to these factors, with a low number of communities having emergency-preparedness or capital works plans. Further, few of the integrated community sustainability plans developed over this period (2010) took climate change into account. Like Catto (discussed in the previous section), Irvine et al. note differences in the capacity of larger centers versus smaller municipal ones, along with the need for integration of climate change adaptation into existing planning processes, instead of as an entirely new process, given existing strain on capacity (Catto, 2010). The importance of facilitators to future work and use of the tools created was also emphasized (Irvine et al.).

Data on other social factors relates to other potential assets in NL, such as potential obstacles to the accessibility of certain social services (SafetyNet & COD-NL, 2016). While sense of belonging in NL is high, volunteerism in the province declined between 2001 and 2013 (Belonging, n.d.; Community Sector Council, n.d., n.pag.). Technology also seems to be playing an important role in peoples' lives in terms of communication, creativity, time management, and

decision-making, which is relevant because technology levels can be a determinant of adaptive capacity (Fawcett et al., 2017; Use of Tech, n.d.). This data, displayed in Table 3, may have relevance for the informal and formal economies of communities, which are noted as potential assets in terms of climate change adaptation (Adger, 2001).

Table 3: Social assets and other influencing factors

	Province	GBS – Case Study
Community belonging	In 2013 the following percentages of NL residents reported a sense of belonging to the following: 66% to Canada, 65% to NL, 47% to local communities (the highest sense of belonging to community across Canada, Sense of Belonging, n.d.).	GBS was in the top 27.3% of communities, at 89.3% in terms of sense of community belonging for 2013/14. This might be the result of multiple factors such as the perseverance of community traditions and activities (Community Accounts GBS, n.d.).
Population age	Since the 1970's the population of those aged 0-24 has decreased dramatically, while those aged 40+ has increased (Population by Age, n.d. n.pag). In 2016 227,997 people were over the age of 50 (approx. 43.0%), and 142,490 above 60 (26.9% of a total 530,305).	Of 220 people responding to the 2016 census in GBS, 135 were over the age of 50 (61.4%), while 60 people (27.3%) were over the age of 65. (Community Accounts, GBS, n.d.)
Population change	Even under a best case scenario, NL may see a population decrease of approximately 13,000 from 2016 to 2036. This could range up to a decrease of approximately 50,000 (Simms & Ward, 2017).	GBS is within the bottom 25.8% of NL communities in terms of population change at -14.7% over a 5-year period 2011-2016 (Community Accounts, GBS, n.d.).
In- and out-migration	Interprovincial in-migration has fluctuated from approx. 6,000 to approx. 10,000 per year since the 1970's, but has remained in the lower range of 5,500 to 7,500 from 2012/13 to 2016/17	GBS is in the bottom 25.2% of communities in terms of migration, with a 6.4% in-migration rate over 5-years to 2016 (Community Accounts, GBS, n.d.).

	(Interprovincial In-migrants, 2017)	
Technology	In 2016, 73.0% of NL residents said that technology always or often helped them to communicate, while 37.7% said it always or often helped them make more informed decisions and 36.0% indicated it sometimes did. 27.4% Stated technology always or often helped them be more creative, while 41.8% stated it sometimes did. Further, 60.7% stated that it always or often saved them time (Use of Tech, n.d.).	Quantitative data was not found. This remained a factor of consideration at this level during interviews.
Presence of volunteer organizations	Over 3,200 community organizations are formally registered in NL. From 2007 to 2013 the number of provincial residents aged 15+ who volunteered decreased from 52.1% to 46.4%., and average hours-per-volunteer decreased from 154 to 151 (Community Sector Council, n.d.).	Nine organizations or facilities dedicated to volunteer activities existed as of 2010 (Manuel & Herring vol. 1, 2010)
Accessibility of social services	Broad, quantitative, data on the accessibility of services is lacking. However, specific studies of certain aspects of social services have identified issues for consideration such as deficient supports and services coordination, support continuity, the accessibility of information and ability to navigate information, as well as training and education (with regard services for those with disabilities; SafetyNet & COD-NL, 2016).	Quantitative data was not found. This remained a factor of consideration at this level during interviews.

Livelihood Diversity

Community Accounts, like Vital Signs, offers detailed, regionally or locally specific, information on regions and communities including the case study community of GBS, and broader region of Bonne Bay. Importantly, Vital Signs explores the differing dependencies of rural and coastal economies on fisheries and construction versus the centrality of oil and gas in the provincial capital of St. John's (Vital Signs, 2016). This is particularly important given the potential impact of climate change on fisheries (Fisheries and Oceans Canada, 2014). There is the potential for global decarbonization, undertaken to mitigate climate change, to have an impact on the provincial oil and gas industry (discussed in Chapter 4). These regional dependencies are thus important to note.

Perceptions of livelihood options can also be as crucial to the continuity of local industries as the actual presence of livelihood options. While sectors such as fisheries continue to play an important role in rural NL, changes and collapses in fisheries have had significant ramifications for communities. For example, Power et al. (2014) have explored how long-term fishery closures in coastal communities in NL have affected youth perceptions of employment in fisheries. Power et al. found that while youth in NL largely acknowledged that fisheries continue to be important in coastal communities, youth perception of livelihood options in fisheries was largely negative (Power et al. 2014). Fisheries are likely to be impacted by climate change, as ocean conditions change (Fisheries and Oceans Canada, 2014; Turn Back the Tide, n.d.), and this suggests that fisheries impacts could have longer lasting ramifications for social situations in communities.

Table 4 below outlines some of the available information on indicators or factors of consideration for this thesis at both the provincial and case study-level related to livelihood diversity. Unemployment levels have remained relatively high in NL, while education levels note the prevalence of college-level education across the province. While education at or above the

bachelor-level remains low, college-level education in NL is strong relative to other provinces (Highest level of educational attainment, 2016). Conversely, the case study community of GBS sat at the upper mid-range in 2011 for people possessing a bachelor's degree or higher 2011, but in the bottom range for possession of a high school diploma or higher (Community Accounts GBS, n.d.). Some of the potential connections of these factors to livelihood options in communities are illuminated by interview data and are further discussed in Chapter 5. While it remains unclear exactly how livelihood options may interact with climate change, high unemployment rates suggest constrained options for employment. This data also suggests that college-level educational opportunities (trades, for example) are generally important to livelihood options in NL.

Table 4: Livelihood diversity in NL

	Province	Case Study
Dependency on particular sectors	The St. John's region is highly dependent upon the oil and gas industry (Vital Signs, 2016). Provincially, 17,500 are employed in the entire seafood industry (Fisheries, n.d., n.pag.). Rural regions continue to rely heavily on the fishing, aquaculture, and seafood processing industries, as well as construction (Vital Signs, 2016). In September 2018, 180,300 people were employed in the services-producing sector, followed by the goods-producing sector (46,600), health care and social assistance (40,000), and wholesale and retail trade (37,800) (Employment by industry, n.d.)	Little quantitative data was found on GBS itself. Regionally, fisheries employed 17% of the regional workforce (Bonne Bay, processing and harvesting) as of 2005 (Lowitt, 2013), and GBS hosts Middle Brook Cottages and Chalets as well as other tourism locations (Middle Brook Cottages & Chalets, n.d.).
Technology	See Table 3	See Table 3
Levels of formal education	As of 2016 NL had the second lowest attainment of "university certificate, diploma or degree at bachelor level or above" at 18.3%. However, NL had the highest	GBS was in the upper mid-range in 2011 for people possessing a bachelor's degree or higher, at 9.8%, only 45.8% in 2011 had a

	attainment of "college, CEGEP or other non-university certificate or diploma" at 28.5% (Highest level of educational attainment, 2016, n.pag.)	high school diploma or higher, putting the community in the bottom 25.1% of communities (Community Accounts GBS, n.d.).
Employment rate	NL has had one of the highest unemployment rates in Canada since 2013, sitting at 16.1% as of February 2018 (Unemployment Rate, 2018, n.pag.). It had also "consistently ranked as the province with the lowest proportion of its working-age population holding a job" as of 2007 (Employment Rates, 2007. n.pag.).	An employment rate of 17% (for ages 15 and over in 2011), puts the community squarely in the bottom 25.1% of communities (Community Accounts GBS, n.d.).
Employment insurance prevalence	Between January 2013 and December 2018 Employment Insurance Claims received in NL fluctuated between 8,000 and 11,000 (Employment insurance claims, 2018.)	Employment insurance prevalence was at 58.6% in GBS for 2016 (Community Accounts GBS, n.d.).

Distribution of Wealth/Means in NL

Indicators concerning the distribution of wealth/means in NL were drawn from multiple sources including Community Accounts, Statistics Canada, the Government of NL, and the Conference Board of Canada. Broad, quantitative, data on the accessibility of services is lacking. However, specific studies of certain aspects of social services have identified issues that were kept in consideration (SafetyNet & COD-NL, 2016). Where quantitative data does exist, interpretations of data sometimes differ by region. For instance, the Conference Board of Canada views the problem of poverty in NL as more serious in comparison to the provincial government's assessment (Conference Board of Canada (Poverty), 2017; Investing, October 16 2015). Taxes in NL have received criticism for lacking progressivity (The Independent.ca, April 14 2016), and the 2019 highest bracket of income tax in NL remains below that of New

Brunswick (20.3% for over $157,778), and Nova Scotia (21% for over $150,000), at 18.3% for over $187,913 (Prov. Tax Rates, 2019, n.pag.). Gender pay equity is also a particularly important concern in provincially (Neil, n.d.). Similarly, while personal income per capita has increased in NL since the 1980's, the case study community of GBS remains below the median of NL communities in terms of personal income and in the lower quarter of communities for family income.

The below table outlines some of the available information on indicators or factors of consideration for this thesis at both the provincial and case study-level on distribution of wealth/means. Factors such as self-reliance (as opposed to reliance on government assistance), which was low in the case study community, poverty, and gender equity are important when considering the potential implications of climate change. Climate change is expected to put increased stress on economically disenfranchised populations (Filiberto et. al., 2009-2010; Forse et. al., 2016). Gender inequality globally is also noted as a key consideration in terms of how inequality may interact with climate change (UN WomenWatch, 2009). These considerations are discussed further in Chapter 4 in relation to feedback from interviews.

Table 5: Distribution of wealth/means in NL

	Province	Case Study
Personal income per capita	Personal income per capita has increased in NL since the 1980s peaking at 2007 at $50,080 and increasing again after a small decline to $46,088 in 2016. ("US$ at purchasing power parity, constant prices", Conference Board of Canada (Income), 2017. n.pag.)	GBS personal income per-capita was at $29,400 in 2015, below the median of communities (Community Accounts GBS, n.d.).
Family income	The NL median total income for couple families in 2016 was $88,360 and $40,930	Family income was $78,800 in 2015 putting GBS in the lower 25.8% of

	for lone parent families, compared with $89,610 and $45,220 respectively across Canada (Distribution of Total Income, 2016).	communities (Community Accounts GBS, n.d.).
Progressiveness/regressiveness of taxation	NL income tax rates for 2019: "8.7% on the first $37,591 of taxable income, + 14.5% on the next $37,590, +15.8% on the next $59,043, +17.3% on the next $53,689, +18.3% on the amount over $187,913" (Prov. Tax Rates, 2019, n.pag.).	Quantitative data not found. Remained a factor of consideration at this level during interviews.
Levels of formal education	See Table 4	See Table 4
Self-reliance	The 2015 NL self-reliance ratio was 82.2%, versus 17.8% from transfer sources (Community Accounts, n.d.).	Economic self-reliance in GBS in 2015 was 68.1%, putting it in the lower 25.8% of communities (Community Accounts, GBS, n.d.).
Poverty levels	In 2015, the then Government of NL announced that "Newfoundland and Labrador [had] Lowest Level of Poverty in Canada," with only 6.4 per cent of the population receiving income support (Investing, October 16 2015, n.pag.). However, the Conference Board of Canada has given NL a "C" grade with a 12.1% poverty rate (Conference Board of Canada (Poverty), 2017, n.pag.)	Quantitative not data found. Remained a factor of consideration at this level during interviews.
Gender pay equity	NL had the largest gender pay gap in Canada in 2014 with women earning 66% of average male salaries (Neil, n.d.).	Quantitative data not found. Remained a factor of consideration at this level during interviews.

Indigenous Leadership and Sovereignty

In discussing demographic characteristics and existing social justice factors of importance in NL it is essential to note the role of Indigenous leadership and sovereignty within the province, and in understanding and responding to climate change and its impacts. There are several Indigenous governments and groups located across NL.

On the island of Newfoundland, the Qalipu Mi'kmaq First Nation was established in 2011 and includes 67 traditional Mi'kmaq communities throughout Newfoundland. The First Nation provides services including environmental monitoring, health benefits and services, tourism development, education and training, employment programs, culture and heritage, community economic development, and registration assistance, as well as seasonal programs (Qalipu First Nation, 2016, n.). Miawpukek Mi'kamawey Mawi'omi (First Nation Reserve) has a membership of over 2,500 and provides services such as health and social services and education. The reserve is located at Conne River on Newfoundland's south coast (Miawpukek Mi'kamawey Mawi'omi, 2020). There are also many independent First Nation Mi'kmaq groups in NL (Memorial University of Newfoundland, 2020).

In Labrador, the Nunatsiavut Government was the first Inuit region to achieve self-government in Canada in 2005, after decades of negotiations with the Government of Canada (Nunatsiavut Government, 2020). With a population of 2600 beneficiaries living in five coastal communities – Nain, Hopedale, Postville, Makkovik, and Rigolet – the Nunatsiavut Government has authority over areas including community matters, health (shared with the provincial government), justice (shared with the provincial and federal governments), culture, and language. The Innu Nation of Nitassinan's mandate is to "protect the interests of the Innu people and to oversee all its political and business affairs" (Innu Nation, n.d.). The Nation represents

2,200 persons and is currently undertaking self-governance and land claim negotiations with both the provincial and federal governments. It was recognized in 2006 under The Indian Act of Canada (Innu Nation). The NunatuKavut Community Council (NCC) represents approximately 6,000 Inuit in central and south Labrador as a governing body. NCC provides programs ranging from medical transportation and home care to infrastructure, community grants, employment, training, and business development (NCC, 2020).

These governments and groups provide essential services and programs to communities, and in many cases rural and remote communities, throughout NL. This is particularly important as Indigenous communities, including Northern and remote Indigenous communities, often face additional obstacles in terms of economic disparity and access to resources (The Way Forward, 2019, 10; Furgal and Seguin, 2006). In Labrador, for example the provision of health care services in rural and remote communities, and especially Indigenous communities, is already hindered by factors such as hazardous weather, increased travel costs, geographic isolation, high staff turnover, and small population sizes (Harper et al., 2015). It is important to note that these additional factors of accessibility and disparity, as well as the role of services provided by Indigenous governments and groups, are likely to play a crucial role in determining how the social justice factors discussed above are distributed within the province.

Summary and Relevance to Conceptual Framework

Available literature on both social assets and vulnerabilities in NL, as well as current and expected impacts of climate change, indicates that NL is undergoing significant social change at the same time as climate change is becoming an ever-increasing concern for everything from mental health to provincial infrastructure. In relation to the first two components of the conceptual framework for this thesis these intersecting realities, as presented in the literature, indicate that

social justice factors may contribute to increasing vulnerability to climate change, particularly where communities are faced by aging and diminishing populations. Indigenous, rural and remote communities, particularly in Labrador, already face significant challenges in terms of social justice and climate change; unequal climate change impacts are, in turn, exacerbating existing social justice and equity issues. Climate change impacts are likely to be highly varied, and continuing research is needed to understand the full extent of some impacts, such as those for fisheries, which are a key sector in many rural and remote communities. In general, available literature and data suggests that rural and remote communities are likely to have a harder time adapting to climate change impacts, and that this situation could get worse as demographic changes such as outmigration continue.

Chapter 3: Review of Climate Change Policies in NL

The focus for this research is upon provincial policy, including connections to municipal policy, in NL, as these are the levels of government most directly concerned with governance over areas likely to be affected by climate change in the province of NL, such as infrastructure, health care, and local economic policy. This section provides an overview and analysis of the 2011 Provincial Climate Change Action Plan and The Way Forward on Climate Change in NL (2019).

As discussed in Chapter 1, the following analysis of both the plan and strategy follow the format of the policy cycle (agenda setting, formulation, legitimation, implementation and evaluation), highlighting any similarities or connections between the two. In the process, this analysis also examines the accessibility and capacity of said policy and resulting resources (as per the research framework). While information regarding The Way Forward on Climate Change in NL is understandably lacking in the final stages of the policy cycle (it is too early to evaluate most of the strategy's implementation, for instance, as that has not yet occurred), there are a series of three reports that shine significant light on the implementation and evaluation of the 2011 Plan. Additionally, the Provincial Government of Newfoundland and Labrador has released, as of October 23rd, 2018, a carbon pricing plan which has been ratified by the federal government which will also be analyzed since it is now incorporated into The Way Forward on Climate Change. This analysis helps inform the insights gained from interviews in Chapter 4.

Agenda Setting

The 2011 Climate Change Action Plan was preceded by a 2005 plan of the same name and a 2007 Energy Plan. The Way Forward on Climate Change in NL is likewise intended as a

follow-up plan building upon the 2011 Plan. Key drives for the implementation of the 2011 Plan were considerations of growing evidence of provincial climate change impacts such as coastal erosion and flooding, as well as the desire to mitigate provincial greenhouse gas emissions (Paddon, 2017). The Province of NL, acting as a member of the Conference of New England Governors and Eastern Canadian Premiers in 2001 committed to reduce regional GHG emissions by 2020 to 10% below 1990 levels, a commitment reaffirmed in the 2007 and 2011 plans (97-112).

Impetus for provincial climate change policy after 2011 has come both from a growing realization of local impacts and as a result of regional and national climate change policy. Indeed, since the 2011 Plan was put into implementation the Government of NL has signed on to the *Pan-Canadian Framework on Clean Growth and Climate Change*, which is intended to "to meet our [nation-wide] emissions reduction targets, grow the economy, and build resilience to a changing climate," therefore increasing policy capacity on climate change in Canada (Pan Canadian, 2016, n.pag.). The framework is based on a series of pillars ranging from adaptation to putting a price on carbon pollution with provincial ramifications for capacity and accessibility, such as annual provincial-territorial-federal government joint progress reviews (Pan Canadian, 2016).

Formulation

Organizational and individual input has also helped set the agenda and influence the formulation of provincial climate policy. Consultations, which took place in the spring of 2010, with individuals and non-governmental entities were cited by ministers Ross Wiseman and Shawn Skinner as having "provided important insights" with the ministers further stating that "the input received was central to the development of this [2011] plan" (Skinner & Wiseman,

2011). However, exactly how these consultations specifically affected the 2011 Plan is left somewhat ambiguous.

The provincial government outlined its intention to develop a new climate change strategy in a document entitled *The Way Forward: A Vision for Sustainability and Growth in Newfoundland and Labrador*, reiterating its 2001 GHG reduction commitment (The Way Forward, n.d., 39). As with the 2011 Plan, prior to the development of the 2019 The Way Forward on Climate Change in NL the Government of NL conducted public and stakeholder consultations from June to September 2016. These included public consultation sessions, written submissions, and meetings with stakeholder groups (Climate Change Consultations, 2016). Twenty stakeholder meetings were held with businesses and industry associations, Indigenous organizations and governments, and advocacy organizations (What We Heard, n.d.). Forty-three written submissions were also submitted by individuals and several groups including industry associations like CCAP and climate change advocacy organizations such as Divest MUN (Submissions by Organizations, n.d.).

The result of these consultations was a summary document entitles *What We Heard: A Summary of Input from Climate Change Consultations*. Feedback was summarized in this document into eleven theme categories, and a series of common phrases and thoughts found throughout consultations was compiled:

- *We need bold action, now.*
- *Implement net metering – we're one of the few places in North America not doing this.*
- *Develop other alternative energy sources, like wind, solar and tidal.*
- *Government needs to be brave enough to put a price on carbon.*
- *Need a positive focus – more carrots, fewer sticks.*

• *Electric cars will be a big opportunity when Muskrat Falls comes online.*

• *Don't reinvent the wheel, look at success stories from around the world.*

• *We need more education and awareness to create a cultural shift away from oil.*

• *Partner with experts, communities, and local groups.*

• *Government needs to walk the talk and be greener.*

(What We Heard, n.d., 6-16)

Thus, The Way Forward on Climate Change in NL (2019), while still informed by national climate change policy and past provincial policies including the 2011 Plan, finds a more discernable impetus in public and stakeholder viewpoints and mindsets regarding climate change and related issues of green energy and community-provincial relations. This appears to reflect an increased degree of accessibility to the policy process (procedural justice), and could increase policy capacity by providing knowledge and enhanced buy-in. It is unclear however how this may translate into the accessibility and capacity of the 2019 plan's implementation (distributive justice) at this stage.

Little information is available on the exact process by which climate change policy is formulated in NL, but it is important to note that climate change policy formulation in the case of the 2011 and 2019 policies is happening under Conservative and Liberal leaderships respectively. Political party positions can heavily influence agenda setting and legitimation, as well as formulation, but they are discussed here as one means to gain insight into formulation, since debates between the parties seem to highlight relevant perspectives on the formulation of policy.

Major divisions in thought between the two parties revolve around potential costs to the public because of both action, and inaction, on climate change, a reality that can be discerned

from recent debates on carbon pricing (NL House of Assembly, 2018). Carbon pricing was the first component of The Way Forward on Climate Change in NL to be implemented and therefore could be argued to be the most established component. The current Liberal Provincial Government, along with the opposition NDP, who both support the implementation of carbon pricing have pointed to the financial and social damage done to NL's citizens by climate change as justification for action on climate change and a carbon tax. Meanwhile, the current Conservative opposition, who formed government under then premier Cathy Dunderdale when the 2011 Plan was formulated, claim that NL has done its part to curb GHG emissions and have expressed concern over the impact of a carbon tax itself on NL's citizens. While these debates are largely focused on issues of mitigation, they also affect and include issues of adaptation as well (NL House of Assembly, 2018).

The issue of capacity to adapt to climate change has made an impact on debates between provincial political parties on the formulation of climate policy. Liberals and NDP have cited recent (January 2018) weather events in a sitting of the NL House of Assembly where a motion to oppose a carbon tax was being discussed. These events, which led to heavy rainfall and widespread flooding on the West Coast of Newfoundland (including in GBS), were noted as central to Liberal and NDP concerns regarding climate change and desire to raise revenues for green initiatives and adaptation. The NDP also cited citizen groups such as Iron and Earth East and Climate Watch NL which were actively involved in promoting action on climate change. In response to arguments that a carbon tax would cause financial harm to individual citizens, the NDP suggested idea of a carbon tax rebate for low income individuals in NL (NL House of Assembly, 2018).

I therefore conclude that, while little information is available on the exact formulation of climate change policy under consecutive Conservative and Liberal provincial governments, there is evidence to suggest that the two parties have approached issues around costs and revenue generation in terms of climate change through different lenses and with differing views of what has, and needs, to be accomplished. However, the provincial government has expressed a potential willingness to oppose a carbon tax if it is not applied across all Canadian provinces (The Western Star, Sept. 3 2018; Carbon Pricing Release, 2018).

Legitimation

With the 2011 Plan, the Government of Newfoundland and Labrador portrayed its aim as not only seeking to be ahead of climate change's impacts but to be a leader in climate change policy. Importantly, the introduction to the 2011 Climate Change Action Plan stated that:

> Government recognizes that climate change is not just an environmental issue – it is equally an economic and social issue that can impact the province and present opportunities for job growth, innovation, and clean energy development. (Introduction, Charting Our Course, 2011, 2).

This statement indicates that in selling climate change policy to the public the provincial government was concerned with depicting the issue as important to the social framework of the province. It is unclear specifically where this impetus originates, although it is conceivable the highlighting of social concerns may have been seen as a way for government to convey the seriousness of climate change.

The release of the 2019 The Way Forward on Climate Change in NL mentions issues of public health and climate resilience, along with outreach and education on climate change, and the development of green economies transport networks (CBC, March 1 2019). Given the

emphasis on public consultation ahead of the 2019 plan's development, as noted above, it is unsurprising that a significant component of the subsequent legitimation process in the media has revolved around depicting the plan as being accountable to the public, emphasizing that a progress report will be available two and a half years into the plan and after its completion (The Telegram, March 1 2019). Indeed, the framing of the 2019 plan as being inclusive in development and formulation has been a core component of messaging well prior to its release, that even shows up in an introduction letter from MHA Eddie Joyce in the final (December 2017) report on the 2011 Plan (Final Progress Report, December 2017).

Additionally, the NL carbon tax plan released by the provincial government on October 23rd 2018, subsequently a part of The Way Forward on Climate Change in NL, was framed as having balanced a mixture of social, environmental, and inter-governmental concerns. The accompanying release to the carbon tax plan states:

> The Provincial Government's Made-in-Newfoundland and Labrador approach to carbon pricing minimizes the impact on residents and maintains the province's economic competitiveness. The plan reflects the importance of reducing greenhouse gas emissions and the province's efforts to produce green, renewable energy. (Carbon Pricing Release, 2018, n.pag)

In terms of the social justice dimensions of climate change policy, we can infer from the above that the legitimation of climate change policy in NL has focused on emphasizing an awareness of social issues, such as employment, and their connection to climate change and has involved an increasing emphasis on public consultation as a core component of policy legitimation.

Implementation and Evaluation

Where The Way Forward on Climate Change in NL has not yet been implemented in full, it is largely impossible to assess the implementation stage or subsequent evaluation directly. However, insights can be gleaned from an analysis of the evaluation and implementation stages of the 2011 Plan, and it is then possible to compare these insights against what The Way Forward on Climate Change in NL sets out to do.

Evaluation of the 2011 Climate Change Action Plan has taken several forms. An Auditor General's *Report to the House of Assembly on Performance Audits of Departments and Crown Agencies* from June 2017 presents several findings on the efficiency and effectiveness of the plan in terms of mitigation and adaptation. The report found that "Government has taken measures intended to adapt to the impacts of climate change" but that the government was not on track to reach its 2020 emissions target, stating: "While Government implemented the 2011 Climate Change Action Plan (Action Plan) to guide the Province towards reduced greenhouse gas emissions, most of the individual action items were not expected to contribute significantly to greenhouse gas emissions reductions" (Paddon, 2017, 98).

The report indicates that the adaptation-focused components of the 2011 Plan were substantially more effective than those aimed at mitigation. Of the 75 action items in the 2011 Plan, 18 were focused on adaptation. The report examined 8 of these 18 items and determined that all had been implemented and were being monitored by the Office of Climate Change, though their effectiveness was yet to be determined. Further, the report concluded that the Office of Climate Change had reported to the public on action items related to adaptation, a key component of government accountability (101-102).

While the Auditor General's report does not include detailed information on the effectiveness of the adaptation action items contained in the 2011 Plan specific tools and resources produced by the Office of Climate Change have been assessed in the past by other reports. Amec Foster Wheeler, a multinational engineering, consultancy, and project management company with headquarters in the United Kingdom, also conducted a report on the uptake and use adaptation tools and resources developed by the then Office of Climate Change and Energy Efficiency for the said office. From December 2015 to February 2016, Amec consulted 69 representatives from municipalities, Provincial Government and Municipalities NL departments and agencies, regional health authorities, the Nunatsiavut government, and engineering consulting firms. Particular tools and resources assessed included:

- The Climate Data Information Portal.
- 2015 updated Intensity-Duration-Frequency (IDF) Curves.
- The report *Projected Impacts of Climate Change for the Province of Newfoundland and Labrador.*
- Flood Risk Mapping.
- The Hurricane Season Flood Alert System.
- Coastal Erosion monitoring studies.
- Sea-Level Rise predictions for the province.
- Community Climate Change Vulnerability Risk Assessments.

(Amec Foster Wheeler, 2016, 1)

Despite the positive review of adaptation efforts in the 2017 Auditor General's Report, with the exception, to some extent, of the Flood Alert System and Flood Risk Mapping, the earlier Amec report found that awareness and use of these tools was low across all groups

interviewed. The report found multiple reasons why uptake was diminished in each case. Amec's findings shed light on issues of accessibility and capacity with respect to policy and programs in NL. For municipal representatives, who mostly relied upon Environment Canada and the Gander Weather Office for information, the tools were something they either simply were not aware of, were aware of but lacked the resources or in-house expertise to use, or assumed that the engineering contractors they hired would be aware of the tools when implementing contracts concerning adaptation. Said representatives emphasized the need for more accurate weather forecasting and past data, better provincial direction on on-site storm management and development in flood prone areas, and expressed concern about the differing standards of development best practices in urban versus rural and remote communities. Representatives also emphasized the possibility that municipal regulations could deter developers (1).

Consulting firms interviewed by Amec generally noted that most of their municipal clients did not ask them to address severe weather events of climate change, and so unless said firms incorporated climate change adaptation as a default in their work it was not usually a factor in projects. The firms were to a certain extent aware of the 2013 Climate Change Projections and 2015 IDF Curves, however, they did not use them often, instead sourcing data or projections from the City of St. John's, Environment Canada, or developing their own. Consultants echoed municipal concerns about the cost of adaptation-related regulations to developers and expressed interest in guidance and better data related to adaptation efforts. Further, the Amec report concluded:

> Municipalities may ask to have infrastructure made larger to address a particular issue but developers seek the lowest cost solution to meet minimum regulations. Where specific direction is not given, consultants are at risk of under designing or

overdesigning infrastructure and some include a climate change factor as a default. (2)

Provincial officials were to some extent aware of Coastal Erosion and Vulnerability Risk Assessments, 2013 Climate Change Projections, and Climate Portal but noted that outside of broad initiatives they were not normally directed on the incorporation of climate change in operations. Importantly those officials noted that a potential adaptation concern was the differing regulations and design standards at the provincial and municipal levels. This last point appears to reinforce the argument for a multi-level integrated approach to adaptation (3).

In general, the AMEC report recommended that the following themes be addressed to increase awareness and uptake of Provincial climate change tools and resources:

- "Increase awareness – Stakeholders' knowledge of CCEE and the resources they provide was identified as the largest gap.
- Develop regulations and common understanding – Feedback indicated that the lack of consistent requirements for infrastructure design and a "level playing field" is a major barrier to utilization of the tools. Lack of communication, on climate change adaptation, between municipalities and consultants has contributed to this issue.
- Develop training – For those stakeholders who were aware of and wanted to use the tools, there was a general lack of understanding of how the tools could be best used
- Improve tool and resource format and accessibility – Once users have the capability and desire to start using the tools, the focus should be on making the resources easier and less confusing to access

- Priorities for new tools and resources – Once stakeholders have begun developing experience with the resources and tools, there is opportunity to obtain effective feedback and enhance those resources."

(Amec Foster Wheeler, 2016, 4)

In December 2017, a year and a half after the Amec report and 6 months after the Auditor General's report, the Provincial Government's final report on the 2011 Plan announced that of the 75 action items included in the plan 26 had been completed, 3 were in progress, and the other 46 were operational. This final report presents a number of highlights concerning the 18 action items aimed at adaptation, all of which, it states, were either operational of completed as of December 2017 (Final Progress Report, December 2017). Among these highlights are publicly available climate projections of frost, temperature, and precipitation amounts downscaled to 50 by 50 km grids up to the year 2050; high-resolution flood risk maps plotting climate projections, water speed, and depth; the establishment of 116 sites monitoring rates of coastal erosion; a Climate Information Portal on both the Community Accounts and on the Water Resources Portal; and decision tree and climate vulnerability tools to help communities tailor adaptation to their communities (5-6).

Importantly, the final report notes particular resources intended to improved planning and decision making, including training aimed at incorporating climate change considerations into infrastructure risk assessments; integrating climate change into municipal infrastructure decisions; climate change as part of communities' Hazard Identification and Risk Analyses (HIRAs); and the Hurricane Season Flood Alert System which issued 94 flood alerts and generated more than 9,630 forecasts in 2016 (7).

Regarding the monitoring of the uptake of said resources, the final report references the establishment of an adaptation network including industry, government, and Memorial University representatives to share information and best practices around decision making on climate change and to identify research needs. It also references the provincial governments' participation in the federal Adaptation Platform, operating in a similar way but on a national scale, and cost-benefit analysis research into adaptation solutions to coastal erosion and flooding conducted in partnership with the Atlantic Coastal Adaptation Solutions Association. The final report nonetheless notes "A number of adaptation tools exist, however their application, uptake and suitability is not always well understood" (8). This comment raises significant questions as to capacity and accessibility of the tools in the 2011 Plan.

As mentioned above, in the lead up the province's 2019 action plan (The Way Forward on Climate Change in NL), the Government of NL has announced a carbon pricing plan which may form a core component of larger strategy under the title "Carbon Program" (The Way Forward, 2019, 15). While this plan has not yet been fully implemented, prescriptive information (i.e. information on the expected outcomes of the plan) on its implementation shine doubt on its potential effectiveness (especially in terms of significantly mitigating any global or local climate change impacts). In total, the anticipated environmental outcomes of the tax as described in the document are relatively minimal: "Cumulative direct on-site GHG reductions below business-as-usual are projected to total up to 1.7 MT between 2019 and 2030" (Carbon Pricing Plan, 2018, 7).

Between 2005 and 2016 provincial annual emissions for NL increased 8.7% from 9.9 (Mt CO2 eq) to 10.8 (Emissions by Province, 2018). The ideal scenario for projections, under the province's initial 2020 target, would have seen annual emissions reduced from the 1990 level by

10% through other mitigation measures by the end of 2019, and maintained at those levels. Even if the 2020 target could be met, the carbon pricing plan's reduction of a cumulative 1.7 MT between 2019 and 2030 would account for a reduction of only an approximate 1.85% of the total cumulative emissions that would otherwise be produced.[1] Thus, when put in the perspective of even the most ideal conditions, the carbon tax plan can be argued to have fulfilled the bare minimum of calls for a price on carbon recorded in the initial public consultations conducted for The Way Forward on Climate Change in NL (What We Heard, n.d.). The NL carbon pricing plan, while exempting home heating fuels from taxation, also additionally lacks low-income and rural and remote rebates which might otherwise have lessened or nullified the impact of the tax on low income households and individuals (Carbon Pricing Plan, 2018).

Public critiques of the 2019 plan have indeed centered on the seeming disconnect between emissions targets and measures taken under the plan to reach them, as well as the province's simultaneous plans to further double oil production (VOCM, March 5 2019; The Independent.ca, March 5 2019; CBC, March 1 2019). The Way Forward on Climate Change sets an ambitious target of reducing emissions by 30% below 2005 levels by 2030, but to date there is insufficient publicly available information to determine how this reduction will be achieved by individual action items under the plan (such as carbon pricing) (The Way Forward, 2019, 1-52). Additionally, action items commonly lack specific deadlines or measurable outcomes. For example, the 2019 plan expands upon efforts in the 2011 plan to mitigate climate change by emphasizing the need to electrify transportation, but does not provide detail on how electrification will be achieved and by when (The Way Forward, 2019). Transportation is

[1] 9.30Mt per year - ((9.30Mt per year/100)*10)= 8.37Mt per year ∴ 8.37Mt per year *11 years [2019 to 2030] = 92.07Mt ∴ (1.70Mt/92.07Mt)*100% ≈ 1.85%

particularly significant in this regard, since it is the province's second highest cause of greenhouse gas emissions at 34% (The Way Forward, 2019).

Infrastructure, development, and planning as well as health and well-being are key adaptation foci under The Way Forward on Climate Change in NL. The adaptation measures proposed under the 2019 plan importantly include work on a multi-level Northern Adaptation Strategy including Labrador, a region identified in climate change literature as of particular concern for adaptation (The Way Forward, 2019; Cunsolo Willox et. al, 2013a; Cunsolo Willox et al., 2015; Bell, et. al., 2008; Riedlsperger, 2014; Goldhar et. al., 2014; Harper et. al., 2015). Action items under the 2019 plan also include efforts to "Ensure climate change is a core consideration in the development and implementation of asset management" and to "Raise awareness, increase understanding and build capacity of external stakeholders and governments to integrate climate change into decision-making on infrastructure and planning" (The Way Forward, 2019, 40). Given the obstacles the prior 2011 plan faced in terms of adaptation tool uptake centered on awareness, community capacity, and the integration of climate change into planning these are particularly relevant action items.

From a public health perspective, the 2019 plan aims to incorporate climate change into health planning and alert systems while monitoring for the spread of Lyme disease. The plan also aims to "Apply a climate change lens to implementing Indigenous commitments in the Mental Health and Addictions Action Plan in developing programming in Indigenous communities" (The Way Forward, 2019, 44). The spread of Lyme disease as well as the potential impact of climate change on mental health in communities are both key concerns addressed in the literature on climate impacts in NL, making these important action items (Turn Back the Tide, n.d.;

Cunsolo Willox et. al, 2013a; Cunsolo Willox et al., 2015; Cunsolo Willox et. al., 2012; Cunsolo Willox et. al., 2013b).

However, as with the mitigation-focused action items in the 2019 plan, the action items aimed at climate change adaptation appear to lack measurable goals and timelines. For example, awareness raising in particular, one action item goal, would seemingly imply the need for a communications effort, though the exact objectives that this action item aims to achieve in terms of communication are not stated (The Way Forward, 2019). Successful communications, and the building of strong reputational relationships with communities, requires the setting of measurable objectives, the establishment of bridging two-way communication channels, and the presence of formal reporting mechanisms to evaluate communications outcomes (Cardin & McMullan, 2015; Doorley & Garcia, 2015). This lack of measurable adaptation and mitigation outcomes is also concerning given the reporting structure of the 2019 plan. As noted above, the Government of NL expects to report on progress towards completing action items in The Way Forward on Climate Change in NL twice over a five-year period (The Telegram, March 1 2019). This would seemingly provide only one opportunity for the public to evaluate outcomes during the actual implementation of the 2019 plan. This reporting structure also appears to be incongruous with federal policy on climate change. As mentioned above, the Pan-Canadian Framework on Clean Growth and Climate Change incorporates annual provincial-territorial-federal government joint progress reviews (Pan Canadian, 2016). While the framework is a national policy, given the importance of multi-government responses to climate change discussed in Chapter 1, it is curious to see that The Way Forward on Climate Change in NL does not adopt an annual reporting structure that would run parallel to the federal-provincial policy collaboration under the Pan-Canadian Framework.

To summarize, while the 2011 Climate Change Action Plan undoubtedly was successful in creating a series of adaptation-focused tools and resources for communities in NL, success in reaching targets relating to mitigation remained ambiguous at best as of June 2017 according to the Auditor General's report released at that time. Ambiguity also exists concerning the actual uptake and use of adaptation tools and resources by relevant parties. The very format of climate change information, and its accessibility, are key to determining its uptake as indicated above.

In terms of climate change policy capacity and accessibility, we can conclude that major obstacles revolve around the communication on policy tools and resources. These obstacles appear to have been exacerbated by the very specific situations communities find themselves in in terms of climate change awareness and capacity. While provincial government policies have attempted to provide overall support for communities, contractors who work with communities seem to have varying experiences and communities appear to have taken very different approaches depending upon their knowledge of the topic as well as their interest in, and ability to use, government resources. In general, provincial government capacity to aid in adaptation to climate change seems to have outpaced its capacity to mitigate climate change.

While is it difficult to evaluate The Way Forward on Climate Change in NL (2019) it is reasonable to conclude that it will have to overcome the obstacles and any internal deficiencies of the 2011 Plan, in terms of both mitigation and adaptation resource uptake, to be successful. This research was primarily concerned with adaptation issues; however, it assumes that mitigation to climate change may also have ramifications for adaptation – as communities will be asked to do both under provincial climate policy. The NL carbon pricing program may signal to consumers a need to switch to lower carbon options, but its impact on actual emissions reductions appears to be minimal. Other mitigation action items lack measurable outcomes that

could help determine the potential of the 2019 plan to reach climate targets. Further, while the 2019 plan does aim to address some of the obstacles the 2011 plan faced in terms of adaptation, action items aimed at adaptation do not describe measurable goals with time-based outcomes. It is, as such, unclear as to whether The Way Forward on Climate Change in NL may remedy these obstacles.

Chapter 4: Interview Findings in Relation to Secondary Sources

This chapter outlines findings from interviews at the provincial and community case study-level. As noted in Chapter 1 above the case study community component of this research was intended to serve as a means to understand how social justice and climate change interact on a local-level in relation to provincial policy and perspectives. Interview findings are also discussed here in relation to findings from secondary sources, which were examined as part of phase one of this research and are elaborated on in the previous chapters, and according to each element of the conceptual framework. Underlying social assets and conditions that affect climate change impacts and responses are first discussed, followed by interview respondents' observations regarding potential climate changes and how they relate (or may relate in the future) to these changes. Finally, responses to questions on policy and climate change resources are discussed in relation to existing and recent provincial policy.

Social Justice Factors

Social Assets and Other Influencing Factors

On a case study-level respondents cited considerations including older citizens, volunteers, supportive infrastructure, social networks and communication and collaboration as sources of community strength, while on a provincial-level respondents cited considerations relating to networks, cohesiveness, heritage, and values as shown in Table 6.

A strong sense of community belonging in GBS might be the result of multiple factors such as the perseverance of community traditions and activities; GBS was in the top 27.3% of communities, at 89.3% in terms of sense of community belonging for 2013/14 (Community

Accounts GBS, n.d.). Other factors are likely at play here as well. Two case-study interviews noted dedicated groups of people as a core social asset in the community, two noted a regional approach to problems and regional networks as social assets, two noted clubs and organizations, and two noted good community communication, all of which could potentially influence sense of belonging. Case study interviewees further noted that these social assets did not occur in a vacuum, with physical spaces, like the GBS community center, and regional approaches also being important for the community in terms of its social assets.

Two interviewees from the case study noted that the presence of an older population was a positive social asset for the community as these individuals provided valuable knowledge and traditional skills to the younger generation of the community. Traditional knowledge and skills could manifest themselves in any number of ways in the community. The ability of older individuals to provide experience-based knowledge has, for example, been noted as key to adaptive capacity with regard freshwater and climate change in Rigolet (Goldhar et. al., 2014; Harper et. al., 2015).

The community had as many as nine volunteer organizations or facilities as of 2010 (Manuel & Herring vol. 1, 2010). Understanding age in this context is potentially important. For example, while fewer older people in NL volunteer compared to younger age groups, they often personally devote more hours per year to volunteering than their younger counterparts when they do volunteer (Community Sector Council, n.d.). Again, it is worth noting the importance of moral economies to climate change adaptive capacity, as it would seem one of GBS's greatest assets is the dedicated groups of individuals and volunteers and their ability to communicate (Adger, 2001).

Two provincial-level interviewees noted 'networks' as a social asset and traditional values and knowledge were also mentioned, though primarily in terms of Indigenous cultures. Other factors, from cohesiveness to national/provincial pride, that were mentioned at the provincial-level also generally speak to the perceived importance of the different forms of identity and communication in NL as social assets. Evidence supports the notion that sense of belonging locally, provincially, and to Canada is high in NL and that many volunteer organizations exist, implying that networks are likely important to provincial residents. However, a decline in volunteerism in recent years may be cause for concern (Community Sector Council, n.d.; Sense of Belonging, n.d.). With respect to communication, technology also seems to be playing a potentially beneficial role in people's lives provincially, and therefore could be playing a role in provincial networks as well (Use of Tech, n.d.).

Table 6: Social assets mentioned in interviews

Level of Interview	Considerations cited by interviewees and number of interviewees who mentioned a consideration (# if more than one)
Case Study Question: 'What do you feel are GBS's social assets?'	• Regional networks and regional approach to problems (2) • Having elderly people who can continue on traditions and have knowledge (2) • Dedicated groups of people (2) • Physical facilities and supports for social assets (2) • Clubs and organizations (2) • Good communication within community (2) • Still some young people who can help in time of need • Interplay of different groups and ages • Social cohesion • People with knowledge of construction and equipment • Fairly active community • Venues, like the national park
Provincial Question: 'What do you feel are NL's social assets?'	• Networks (2) • Sense of connectedness or cohesiveness (2) • Connection to place or outdoors (2) • Indigenous values, heritage, and rights • Sense of community • Sense of identity

	• Obligations • National/provincial pride

Respondents most commonly cited demographic changes as a concern in GBS, particularly the aging population. Of 220 people surveyed in GBS for the 2016 census, 135 were over the age of 50, while 60 people (over 25%) were over the age of 65.

At the provincial-level respondents most commonly cited considerations including demographic changes (see Table 7), access to social services, and livelihood related concerns such as the demise of the fishery. Five noted demographic changes as a social concern, and two noted access to social services and depopulation as social concerns. Two provincial-level interviewees also noted the demise of the fishery as a social concern, a factor not mentioned by case-study interviewees in their answers to the same question.

Table 7: Social concerns mentioned in interviews

Level of Interview	Considerations cited by interviewees and number of interviewees who mentioned a consideration (# if more than one)
Case Study Question: What do you see as the main social concerns in GBS?	Demographics (6): • Outmigration (6); • Aging population (4); • Not many new families and less opportunity for population growth (2) • Less people able to purchase things • Less age diversity • Wear out from amount of people able to do work and from amount of work • Not a lot of young children so activities for them are centralized in Woody Point • Lack of new volunteers available to step up to municipal council or committee • Draining of human resources Economic/livelihood related (3): • More people retired/off work/dependent on government • Reliance on tourism and its lower wages • Internet is questionable • Geographic isolation

Provincial Question: What do you see as the main social concerns in NL?	Demographic changes (5): • Depopulation (2) • Aging Economic/livelihoods (3): • Demise of fishery (2) • Provincial economic situation • Psychological impact of provincial economic downturn • Unemployment in rural areas • Higher energy prices Services and infrastructure (2): • Access to social services (2) • Transportation (2): ferries, transportation • Lack of rural investment • School closures • Post office closures Other: • Demise of rural way of life • Rural hardships • Connectivity to other communities • Interested in moving • Climate change • Isolated rural geography • Health issues (diabetes, obesity)

The social justice factors noted above by interviewees are numerous and at times seemingly contradictory. For instance, the presence of an aging population can be seen as having a positive or negative impact on the case study-level depending upon the lens through which it is viewed. Four case-study interviewees noted that the presence of an aging population is a social concern for the community of GBS, and two noted a lack of young families. As one interviewee noted of GBS and other small communities:

> …there's a draining out of a lot of the human resources… there seems to be a declining social structure within these communities…. you have a much older population now than you would have had 30 years ago or 60 years ago, on

average. And so there's more off work, more retired people, more dependent upon government services, and social services…

Outmigration was the most mentioned social concern in GBS, with six interviewees noting it as a factor. GBS is within the bottom 25.8% of communities in terms of population change at -14.7% over a 5-year period (to 2016) and is in the bottom 25.2% of communities in terms of migration, with a 6.4% in-migration rate over 5-years to 2016 (Community Accounts GBS, n.d.).

NL's population has aged as a whole (Population by Age, n.d.), a problem that has been noted by officials in Ottawa as an ever-present financial obstacle for the province (CBC, October 7 2017). Broad quantitative data on the accessibility of social services in NL is lacking but certain groups do face barriers when attempting to use services. For those with disabilities in NL, access to social services, and particularly those services related to labour, can be hindered by factors such as deficient supports and services coordination, support continuity, the accessibility of information and ability to navigate information, as well as training and education (SafetyNet & COD-NL, 2016). Outmigration throughout NL has similarly been an ever-present problem, and one that is likely to continue to stress rural and remote communities, as people move to larger centers, youth leave the province, and birth rates decline (Simms & Ward, 2017). Further, Irvine et al. directly note the connection between outmigration and diminished capacity to deal with climate change (Irvine et. al., 2016).

Livelihoods and Livelihood Diversity

There is data from secondary sources to suggest that livelihood options in GBS are significantly constrained. As outlined in Chapter 2, an employment rate of 17% (for ages 15 and

over in 2011), puts the community squarely in the bottom 25.1% of communities in NL (Community Accounts GBS, n.d.). Personal income per-capita was also below the median of NL communities in 2015, while average family income was $78,800 in 2015 putting GBS in the lower 25.8% of communities. Low family income could also be a potentially significant disincentive for new families forming in, or joining, the community. At the same time employment insurance prevalence was at 63.4% in GBS for 2018 the lower-middle 48.5% of communities. Education is another indicator worth noting, given its potential impact on livelihood options in terms of employability and entrepreneurism, which were factors noted by case-study interviewees. While GBS was in the upper mid-range in 2011 for people possessing a bachelor's degree or higher, at 9.8%, only 45.8% in 2011 had a high school diploma or higher, putting the community in the bottom 25.1% of communities (Community Accounts GBS, n.d.).

On a case study-level respondents commonly cited the presence of vehicle and excavation stations, tourism, the number and type of jobs, affordable housing, and entrepreneurial skill as considerations that could affect livelihoods and livelihood diversity in GBS. Case-study interviewees provided further evidence of considerable employment constraints such as a lack of year-round employment and a need to commute elsewhere for work. This feedback is captured in Table 8. Stations and businesses relating to trucking or other forms of transport and excavating were mentioned by three interviewees as key factors of employment, suggesting that GBS as a community draws heavily from these sectors in terms of local livelihood options. Tourism, likewise, was mentioned as a notable source of employment, given the location of the community within Gros Morne National Park, though that employment is seasonal in nature. Interestingly, affordable housing was also noted as a key concern in terms of livelihood options.

Table 8: Livelihood options considerations mentioned in interviews

Level of Interview	Considerations cited by interviewees and number of interviewees who mentioned a consideration (# if more than one)
Case Study Question: What factors would you say affect livelihood options in GBS?	Assets and opportunities (5): • Skidoo, gas station, excavating, machine and truck stations (3) • Tourism is very important (2) • Internet and telecommuting • Accommodation services (B and Bs) • Positioning as sustainable community • Training is on-site for tourism • Local hiring of construction; fisheries • Small businesses in proximity to the park Constraints (8): • Not much year-round employment, seasonally dependent employment (3) • Distance from larger centers such as Corner Brook (3) • Tourism puts strain on community human capacity and resources (2) • Hard to find affordable housing (2) • Not much opportunity (2) • Few and far between actual jobs from the park • Different social network, lifestyle, environment from summer to winter • Weak internet access, ability to work remotely • Loss of jobs in forestry and fisheries • Declining social structure and economic opportunities • Most jobs are in tourism • Few year-round rental opportunities • Fear of lack of educational opportunities at the school for children • Limited jobs in administration • Lack of industry • Construction companies require workers to work away during season • Aging population and physical health Other: • People commute for work/going elsewhere for certain months (4) • Number of jobs, range and type of jobs (2) • Entrepreneurial skill (2) • Small businesses retaining the same employees for a long time • Skill levels of people • Geographic location relative to Corner Brook • Positive and negative effects because of Parks Canada and Gros Morne
Provincial Question: What factors would you say affect	Assets and Opportunities (2): • Megaprojects (2) Constraints (5):

livelihood options in NL?	• Size of population and spread out population (2) • Mobility • Availability of employment • Isolated geography • Demographic changes • Inability or difficulty in providing economic stimulus • Willingness to leave family • Bad inter-provincial deals • Inadequate transportation networks • Unaffordable transportation networks • Location of large work projects (not adjacent to many rural communities) • Effects on social cohesion and fabric • Lack of money • Brain drain to other provinces. Other: • Multiple homes

Provincial-level interviewees noted several factors that may correlate to concerns around livelihood options being experienced locally in GBS. This feedback is also captured in Table 8. These included mobility, unaffordable transportation networks, isolated geography, and the location of employment-related projects, such as 'mega-projects' (not located nearby many rural areas). Other potentially relevant provincial-level factors mentioned included willingness to leave family to seek employment elsewhere and the so called 'brain drain' of educated and/or specialized individuals to other provinces. That livelihood options are constrained provincially is evidenced. NL has had one of the highest unemployment rates in Canada since 2013, sitting at 16.1% as of February 2018 (Unemployment Rate, 2018). It had also "consistently ranked as the province with the lowest proportion of its working-age population holding a job" as of 2007 (Employment Rates, 2007 n.pag.). Between January 2013 and December 2018 Employment Insurance Claims received in NL fluctuated between 8,000 and 11,000 (Employment insurance claims, 2018). Provincially, as of September 2018, 180,300 people were employed in the services-producing sector, followed by the goods-producing sector (46,600, health care and

social assistance (40,000), and wholesale and retail trade (37,800). However, though these figures paint a broad picture of employment, dependencies on industries differ by region.

The factors mentioned by provincial-level interviewees have many effects on livelihood options in rural and remote versus urban areas. With the collapse of fisheries, the growth of the offshore oil and gas industry, and provincial investment into major projects like Muskrat Falls, the economies of smaller rural and remote communities like GBS, once based upon fisheries, have seen significant change. For youth in NL government policy and shifting views of employment have been significant factors in encouraging people to enter work other than fisheries, with resulting effects on intergenerational community resilience (Power et. al., 2014). Muskrat Falls alone has been estimated by the Government of NL to create 8,600 person-years of direct employment provincially, with 5,400 person-years concentrated on construction at sites in Labrador (Backgrounder, n.d.). In terms of industry and economic reliance the St. John's region is likewise highly dependent upon the oil and gas industry, and in cities and regional town centres generally oil and gas, petroleum refinement, and iron ore were the most significant industries upon which other local industries relied (Vital Signs, 2016). However, with 17,500 people still employed provincially in the entire seafood industry, fisheries are still a notable source of employment across the province (Fisheries, n.d.). Many rural and remote regions continue to rely heavily on the fishing, aquaculture, and seafood processing industries, as well as construction (Vital Signs, 2016), making these sectors a particularly important consideration in terms of the livelihood options of communities in those regions. Climate change, as noted in previous chapters, could further impact fisheries in NL though there are significant unknowns (Fisheries and Oceans Canada, 2014).

Brain drain, where educated individuals leave for larger centers or other provinces in search of more applicable opportunities, has been noted as a key concern for periphery regions of the province since 2003 (Locke & Lynch, 2003). The topic of brain drain, particularly given the current fiscal situation of the province, has also been a contemporary topic of discussion in mainstream media with students aiming to enter to workforce expressing concern about the lack of opportunity provincially and NL's uncertain future (The Packet, March 29 2018). Education in NL is a unique situation. Despite having a low attainment of qualifications in the category "university certificate, diploma or degree at bachelor-level or above," NL had the highest attainment nationally of "college, CEGEP or other non-university certificate or diploma" at 28.5% (Highest level of educational attainment, 2016). It is also possible the technology may play an increasing role in livelihood options in NL, given its seemingly positive impact on creativity, communication, decision-making, and time-management (Use of Tech, n.d.), particularly if people in remote regions choose to work by distance as was noted by interviewees.

As covered in previous chapters, livelihood options can be affected by climate change and can also affect adaptive capacity (Adger, 2001; Hahn et. al., 2009). It is therefore foreseeable that many of these factors that affect livelihood options in NL may well intersect with climate change impacts and adaptive capacity at different times. It is difficult to determine exactly how, when, and where livelihood may intersect with climate change. Feedback from interviews and secondary sources none-the-less appears to identify large scale projects like oil and gas, commuting employment, as well as more spread out industries like fisheries and tourism, as key areas for future observation and analysis. Indeed, as discussed in Chapter 2 fisheries are likely to be impacted by changing ocean conditions, and as interviewees note the presence of construction

or excavation equipment and individuals with related expertise can be a major asset to a community in terms of climate change adaptation.

Distribution of Wealth/Means and Equity Considerations

On the case study community-level half of the respondents to the question 'How equally do you think the impacts of social or economic changes (positive or negative) in GBS are distributed?' felt that impacts are unequally distributed while only two felt they are equally or fairly equally distributed (see Figure 4). On a provincial-level, however, all five respondents felt that the impacts of social or economic changes (positive or negative) are unequally distributed in NL (see Figure 5).

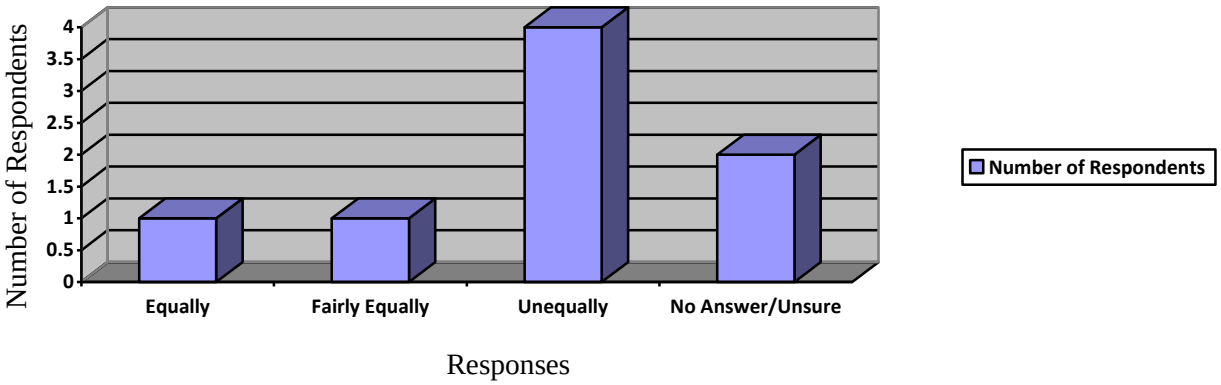


Figure 4: Equality of social or economic change - case study

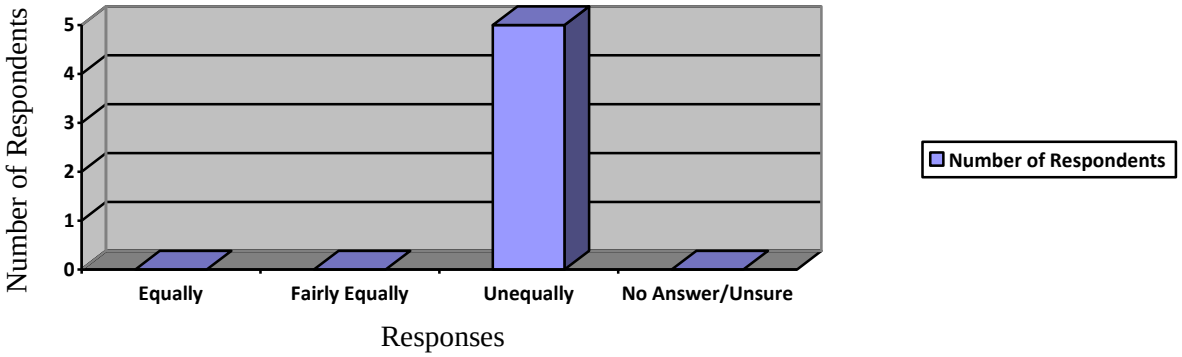


Figure 5: Equality of social or economic change – province

General data on the distribution of social and economic change as it relates to the province's overall economic situation has been a topic of debate. Personal income per capita has increased in NL since the 1980s, peaking at 2007, and increasing again after a small decline in 2010's (Conference Board of Canada (Income), 2017). In 2015, the then Government of NL announced that "Newfoundland and Labrador [had] Lowest Level of Poverty in Canada," with only 6.4 per cent of the populations receiving income support (Investing, October 16 2015). However, since that time critics have pointed to potential flaws in government data and there is evidence to suggest that poverty in NL was on the rise in 2017 and the Conference Board of Canada gives NL a "C" grade in terms of poverty (CBC, November 26 2017; Conference Board of Canada (Poverty), 2017, n.pag.). Other commentators have in the recent past pointed to a shrinking middle class and stagnation of income gains at lower levels, even during recent periods of economic sustainability from oil and gas booms, as indicative of a growing problem of general economic inequality (CBC, December 8 2014). It is again important to note the potential of climate change to put increased stress on the economically disenfranchised and the importance of poverty as a factor in social justice (Filiberto et. al., 2009-2010; Forse et. al., 2016).

Still other commentators have criticized the NL tax system as deficiently progressive in comparison to other provinces (The Independent.ca, April 14 2016). The 2019 highest income tax bracket in NL remains below that of the neighboring provinces of New Brunswick and Nova Scotia (Prov. Tax Rates, 2019).

Gender pay inequity, a factor not raised by interviewees, is also a significant issue in NL which had the largest gender pay gap in Canada in 2014 with women earning 66% of average male salaries (Neil, n.d.). The UN has identified climate change as having potentially adverse effects on gender inequality globally, and particularly in the developing world, as gender

inequalities depress women's adaptive capacities to climate change and climate change in turn worsens those inequalities (UN WomenWatch, 2009), but further research is needed on how climate change might affect gender inequality in NL specifically.

Table 9 below outlines the factors that interviewees believed affected the distribution of economic and social change. Case-study interviewees noted a wide array of contributing factors to the distribution of economic and social changes, including volunteerism and unpaid/alternative economies. Mention of the role of informal and moral (volunteer or justice-focussed) economies by case study interviewees, and the social security role those economies often play, is particularly relevant given that Adger (2001) point to the latter as a key consideration in successful climate change adaptation. It is worth noting that declining trends in volunteerism noted above as a social concern could play a factor in the future of moral economies through NL as well and therefore in social and economic inequities (Community Sector Council, n.d.).

Table 9: Social and economic change considerations mentioned in interviews

Level of Interview	Considerations cited by interviewees and number of interviewees who mentioned a consideration (# if more than one)
Case Study Question: What factors have affected this distribution (of GBS social or economic changes (positive or negative))?	Social or Demographic Related • People who help out are aging too and have other responsibilities (2) • Pure necessity (2) • People with equipment and knowledge of how to use it is high • Everybody feels positives and negatives due to closeness and size of the community • Community is very small so hard to say how social and economic change are distributed within the community • Population decline and impact on job opportunities, schools, growth, local businesses • Summer population has been increasing • People, particularly older people, try to support local businesses • Fear of coming back to GBS given positives elsewhere • Aging population and focus on older population • Aging population has fixed incomes • In some situations people should be treated equal, other situations not, older generation should be given more breaks • People help others in the community and vulnerable people are cared for • Individualistic way of thinking seeping in

	• • More throwing things into garbage, less traditional recycling • More people hiring construction and maintenance companies than relying on individuals
	Economic or Geographic Related • Volunteerism and the unpaid economy • Locations of spending of public money, services, and the tourism market • Park decisions on where to build, more park jobs on the north side of the park • People would say some parts of the park get better support, but trout river GBS get less • Lack of bank accounts and small business index card system/informal economy • Tourism growth • Number of business/number of jobs • Internet access • More opportunities for people to come back • Distance from major centers and services • Changes in taxes • Growing cost of town plot rights
Provincial Question: What factors have affected this distribution (of NL social or economic	Social or Demographic Related • Immigration and migration to different areas (2) • Demographic changes • Money and education • Health issues and disabilities • Outmigration

changes (positive or negative))?	Economic or Geography Related • Closeness to Canada/U.S. (2) • Location of ferry terminals (2) • Adjacency to fisheries • Efficiency provincially • Lack of economic diversity (oil, fisheries) • Mining resources • Mineral resources • Hydro development • Coastal resources • Closeness to airports • Closeness to construction locations • Location of deep water ports • Location of deep water construction sites • Rural/urban differences • Lack of employment • Core/periphery divide • Geography

Locations of public investment, and investment by Parks Canada in particular, were also raised as a factor affecting distribution of benefits and costs of socio-economic change. In a general way government support plays an important role in GBS. Economic self-reliance in GBS in 2015 was only 68.1%, putting it in the lower 25.8% of communities in NL, and suggesting that many in the community are reliant on government aid for survival (Community Accounts, GBS, n.d.). Investment in park infrastructure and development was also highlighted as a regional concern in the larger Bonne Bay area through recent media coverage. The mayor of the community of Trout River, near GBS, has argued, for example, that the south side of Bonne Bay has not received fair treatment from Parks Canada with respect to development and investment. Further, the mayor argued that destructive rock processing and removal undertaken by Parks Canada has been allowed to take place at the geologically unique Tablelands nearby, when local residents would have been charged for undertaking those same activities (The Western Star, July 27 2018). There are even potential connections between government investment (in this case

federal investment through Parks Canada) and local moral/volunteer economic activities that are present with regard to these concerns. Indeed, processing and removal at the Tablelands was cited as having occurred shortly after volunteers, local businesses, and the municipality of Trout River had dedicated significant efforts and in-kind contributions to rebuild and refurbish local park trails which had been in a state of decay (The Western Star, July 4 2018). This likely added to resident perceptions of unfairness around local investment and park protection following the discovery of Parks Canada's activities.

Some interviewees pointed to a changing social fabric and character within the community of GBS, linked to shifting demographics, as significant factors in how the impacts of changes are distributed, including a shift to more individualistic rather than community-oriented thinking, and increasing use of contractors rather than skilled local individuals, as one noted:

> …there's been a fair bit of construction in the [past] few years that we've certainly noticed, and a good part of the work has been done by local people or local businesses. It might have been families that were building houses at one point in time – different family members – but now more people are actually hiring. A few years ago people were still helping each other with roof construction – re-roofing – but now the past six years I'd say… People who have a roofing business, even in the Gros Morne region, then they're the ones being called to come and do the roofs. Just again part of the aging situation, and the numbers of people who are in the communities at that younger age and willing to do that.

Interviewees noted that the people who help others in the community are also aging and have other responsibilities. This could be a potential detriment to the community's well-being

given the aging nature of GBS's existing population. As discussed above, in terms of GBS as a community with an aging population, livelihood options also appear to be significantly constrained while income levels are lower on a per-capita and family basis than other communities provincially. This may be indicative of an unequal distribution of social and economic benefits to GBS as a community. However, many case study interviewees noted the actions of residents as key contributors to an evening-out of negative social and economic impacts. Indeed, inter-dependence among community members (an asset noted earlier by respondents) was cited as a particular driver of social cohesion for both GBS and other small communities by one respondent:

> …there's a social cohesion in small communities – its not just GBS – common to small communities like that in a lot of places. Because you have to rely on one another and rely on your neighbors.

Provincial-level interviewees likewise mentioned demographic changes as key factors in the distribution of impacts resulting from social and economic changes across the province such as immigration and migration to different areas. Closely resembling their responses on factors affecting livelihood options, interviewees at this level also highlighted geographic location of communities, resources, transportation points, and employment-creating projects and proximity to centers and other provinces and the United States as factors that have significant ramifications in this respect. As one respondent stated:

> As in all areas there's going to be a large discrepancy in terms of how those things play out, and in most parts of the OECD and most developed countries it [social and economic change] does apply more so to urban areas than to rural, and that certainly would be the case here [in NL] as well.

As noted above in terms of the rural and remote-urban or core-periphery divide there are significant additional factors such brain-drain and a shift of labour to urban centers or large-scale energy projects to suggest that rural communities may be at a distinct disadvantage in terms of livelihood options and therefore the ability to take advantage of, or adapt to, social and economic change. Rural and remote communities, such as GBS, are also at a potential disadvantage in terms of potential changes given their populations are aging at a much faster rate than in urban areas (Vital Signs, 2016), which may consequently diminish the ability of such communities to take advantage of positive socio-economic changes or mitigate the impacts of negative changes, or may increase certain aspects of adaptive capacity such as traditional knowledge.

Climate Change Impacts

Environmental Concerns

In order to better understand the relevance and importance of climate change for respondents, they were first asked a general question on what environmental concerns they saw as pressing in general to help ascertain where climate change fell in terms of these concerns. Interviewees indicated that a range of varying environmental concerns were important at both the case study and provincial-level, which are outlined in Table 10 below. Interviewees at the case study-level predominantly cited climate change-related impacts such as coastal erosion and sea level rise as the main environmental concerns affecting GBS. Indeed, two interviewees mentioned climate change in general as a core environmental concern for the community. There is the potential that such responses were biased to some degree by the fact the interviewees entered the interview knowing it was concerned primarily with climate change impacts. There is also a chance that major flooding that occurred throughout Western Newfoundland (CBC,

January 15 2018), when these interviews were being conducted (October 2017 – April 2018), may have affected the nature of respondents' subsequent answers. This is, nonetheless, significant evidence to suggest that climate change, and related environmental impacts, are key environmental concerns for those interviewed as part of the case study. The most noted impacts were higher tides, sea level rise, and/or coastal erosion, followed by the more general statement that differences in water levels were occurring generally in the community and that weather was changing, followed in turn by statements that sea ice was thinning or disappearing. Most of the noted concerns are inherently water related.

Mapping of vulnerable slopes, erosion susceptibility, and sea level rise (under 30cm, 80cm, and 2m scenarios), undertaken as part of the development of the GBS Climate Change Adaptation Plan, supports interviewee responses that indicate these water-related impacts are potentially significant (Manuel & Herring vol. 2, 2010, included as Appendix A). Indeed, the plan states that:

> Sea level rise will lead to coastal flooding. Current research indicates that there will be an average 0.8 metre change in the location of the coastline over the long term. Storm waves and storm surges will reach further inland and will do so more frequently both in the immediate future and in the long term (9)

And that "increased precipitation and milder winters could create conditions of ground saturation that has the potential to destabilize steep slopes, leading to landslides and slumps" (10). This suggests that water and coastal management within the community could be a focus for related planning and policy development or refinement.

Table 10: Environmental concerns mentioned in interviews

Level of Interview	Considerations cited by interviewees and number of interviewees who mentioned a consideration (# if more than one)
Case Study Question: What do you see as the main environmental concerns affecting GBS if any?	• Higher tides, sea level rise, and/or coastal erosion (5) • Difference in water levels (4) • Differences in weather (4) • Sea ice thinning or disappearing (3) • Climate change - general (2) • Flooding and infrastructure damage (2) • Rising water temperature affecting fish (2) • Rain and snow melt (2) • Water, runoff, and slopes (2) • Washouts, roads, and steep embankments on land (2) • Storms, potentially less or more • General erosion • Side of the road cutting, soil erosion • Inability to reach resources like wood due to weather changes • Possible drinking water contamination • Pollution in the bay area • Winds getting stronger and old versus new homes • Water and sewage systems capacity • People do not want to move to higher ground from their property • Development practices removing vegetation and hydrology impact
Provincial Question: What do you see as the main environmental concerns in NL?	• Climate change (3) • Marine conservation • Habitat destruction • Lack of terrestrial conservation areas • Fracking • Sustainable resources • Local access to resources and processing • Oil rig safety • Lack of response from environmental organizations • Lack of learning about the effects of overharvesting

Provincial-level interviewees similarly highlighted climate change as a key concern for the province, with three mentioning it directly. Again, there is the chance these responses were biased by the nature of the interview taking place and its declared focus on climate change, as well as the fact that provincial-level interviewees sought out were mostly working in fields directly or indirectly related to climate change. However, provincial-level interviewees also

mentioned many other environmental concerns for the province which, though potentially related to climate change, are none-the-less distinct issues. This suggests that although climate change was perceived by provincial-level interviewees as an important concern, it was not perceived as the exclusive environmental concern for the public. How climate change policy interacts with other environmental policies provincially may, as such, be another important focus for policy development and refinement. The issue of hydraulic fracturing, for example, has seen public mobilization in the form of fracking awareness groups throughout the province and particularly on the West Coast of Newfoundland and has been a major issue of public environmental concern in recent years (Cusco & Carter 2017, 99). Indeed, fracking awareness activists have specifically noted their concerns on hydraulic fracturing in relation to coastal erosion, where several abandoned sites of oil and gas exploration in the Port au Port region form the 1800s and the 1960s are now suspected to be underwater (The Western Star, September 30 2017), representing a possible connection between concerns over climate change-related impacts and the issue of hydraulic fracturing.

Current and Future Impacts of Climate Change

Responses highlighted a number of different ways that climate change could impact both the case study community and province as a whole, shown in Table 11. Prominent issues noted included sea level rise and coastal erosion, as well as more severe storms, among other potential impacts.

Table 11: Impacts of climate change mentioned in interviews

Level of Interview	Considerations cited by interviewees and number of interviewees who mentioned a consideration (# if more than one)
Case Study Question: What sort of impact do you see climate change as having in the future of GBS?	• Sea level rise (4) • Coastal erosion (3) • Warming weather conditions (2) • More rain (2) • Low lying areas are at risk of rising water (2) • Will affect businesses and fish plant; • Impacts on roads and infrastructure • Melting conditions (snow/rain) • Landslides • Stronger storms • Less predictable snow cover • Will make environmental concerns worse • Need for zoning • Winds getting faster • More water more frequently • Increasing inland water levels • More sea ice concerns • Residents will have to think more about alleviating impacts • Better drainage will be needed • Government won't have enough money to protect all the small communities • Impacts, positive and negative, on tourism • Extended summer tourism season, summer recreational activities • Less season for winter recreational activities.
Provincial Question: What sort of impact do you see climate change as having in the future of NL?	• More severe storms (3) • Will amplify social stressors/issues (2) • Ocean productivity and fisheries (2) • Ocean species movement (2) • Warming temperatures (2) • Sea level rise (2) • Agriculture may expand/longer growing seasons (2) • Will impact transportation • Wet conditions • Weather patterns • Flooding and mudslide events • Ocean chemistry change • Impact energy efficiency • Impact country-food access • World shifting away from oil and gas • Storm surges • Permafrost melt

	• Sea-ice conditions • Coastal erosion • Forestry extended season • Fishing/aquaculture seasons may extend • Shorter seasons for winter tourism • Temperature change in northern Labrador • Will impact poverty

GBS interviewees noted a wide array of ways they felt climate change might impact the future of their community, ranging from impacts to businesses, tourism and the fishery (noted as important to livelihoods as previously discussed), to impacts on seasonal activities. Interviewees most commonly noted sea level rise, followed by coastal erosion as concerns with respect to climate change, followed in turn by more rain, warming weather conditions, and low-lying areas as being at risk of rising water. Respondents expressed particular concern for the impact these factors could have for local infrastructure and property.

These responses suggest that weather and water conditions are a consistent concern for local residents, both in terms of the general environment and specifically in terms of climate change. As one respondent stated:

> I guess the town and the residents themselves are going to have to think much more about what's needed to alleviate the effects of climate change with regards to whether it is alleviating around your property, better water drainage, better protection what have you. The town council are going to have prepare for that much more and put more resources and money into that as well.

As discussed above, the GBS Adaptation Plan does support this public concern over water related impacts and changing precipitation and weather conditions. Impacts on seasonal activities, including a longer summer season and shorter period for winter activities with resulting potential opportunities for summer tourism in the area are likewise mentioned by the

plan as well as the need for recreational infrastructure to accommodate four-season activity (GBS, Vol. 2). Fishery impacts across NL are still not fully understood, as pointed out in the literature review, but are nonetheless a potential cause for concern and require further investigation (Fisheries and Oceans Canada, 2014). Further, coastal communities in Atlantic Canada, such as GBS, are often affected by sea level rise, coastal erosion, and storm surges (Grenfell & GMCA, 2018).

Provincial-level interviewees' responses to the second question in this section likewise resulted in a wide array of impacts being mentioned for the province of NL. These ranged from the world shifting away from oil and gas to mitigate climate change, and resulting impacts for the provincial economy, to climate change's potential ramification on ocean productivity and fisheries. The most commonly mentioned impacts of climate change on the future of NL were more severe storms, followed by suggestion that climate change will amplify social stressors/issues, result in warming temperatures, change ocean productivity and affect fisheries and ocean species movement, result in sea level rise, and may expand agricultural growing seasons. Many of these concerns, such as sea level rise, warming temperatures, and changing weather reflect impacts noted at the case study-level, though agriculture and ocean related impacts were more commonly noted at the provincial-level.

Many of the impacts noted at the provincial-level by interviewees are also supported by findings from literature about climate change in NL. For instance, the research of Ashlee Cunsolo and others on climate change's impacts for mental health, Rudolf Riedlsperger's research on social impacts of climate change in Northern Labrador, and Trevor Bell's work on climate change in relation to local practices and economies, certainly indicate that climate change could amplify social stressors in that region and lead to significant mental health impacts

(Cunsolo Willox et. al, 2013a; Cunsolo Willox et al., 2015; Cunsolo Willox et. al., 2012; Cunsolo Willox et. al., 2013b; Harper et. al., 2015; Riedlsperger, 2014; Bell et al., 2008). Changes to ocean conditions and impacts on fisheries in NL are a potential cause for concern as mentioned above. Coastal erosion and sea level rise, as well as changes in biodiversity, weather, and seasons are noted separately as significant climate change impacts for consideration by researchers as well as by government sources (Catto, 2010; Finnis, 2013; Turn Back the Tide, n.d.). Indeed, Turn Back the Tide states that sea level rise "could be as high as 40 centimeters by 2050, and 100 centimeters by 2100 (compared to 1990 levels)" (Turn Back the Tide, n.d.).

As noted in a review of available literature (Chapter 2), how a global shift away from the use of oil and gas might impact the future of the NL economy is a topic that requires further academic study. As one respondent stated:

> You know we depend on oil and gas revenues [and] those will decrease in a world that is decarbonized because the only oil that we are going to use is going to be the oil that we sue to build things…. But in a fully decarbonized economy everything where something moves by something turning, that thing will be turned by electrical power, not by oil and gas.

Forest-related impacts of climate change, specifically the possibility of longer forestry seasons, were mentioned by one provincial-level interviewee. A case study interviewee did also identify a loss of jobs in forestry as a factor relevant to livelihood options in GBS in the Social Justice section of the interview. As discussed in Chapter 2, ongoing research is being conducted to better understand how climate change will affect forests, and has so far determined that focused regional analyses of the impacts of climate change on forests is needed.

Distribution of the Impacts of Climate Change

On a case study-level in response to the question 'How equally do you think climate change impacts (positive or negative) in GBS might be distributed in the future?' respondents' answers are outlined in the below graph. One respondent noted that impacts would be distributed fairly equally among smaller communities generally.

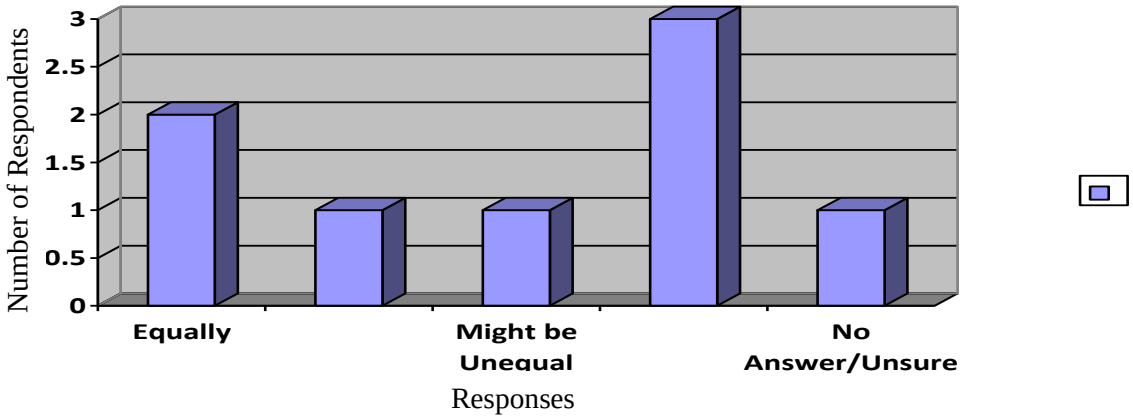


Figure 6: Equality of future climate impacts - case study

On a provincial-level in response to the question 'How equally do you think climate change impacts (positive or negative) in NL might be distributed in the future?' respondents' answers are likewise outlined in the below graph.

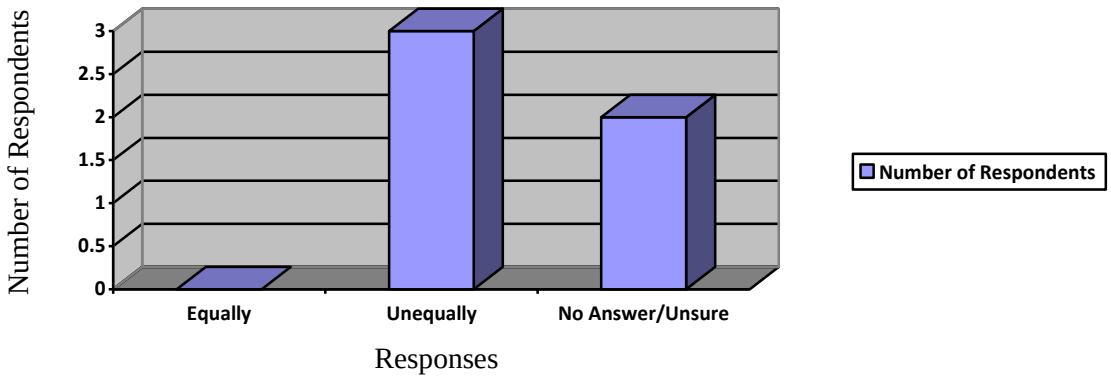


Figure 7: Equality of future climate impacts - province

Distribution of Prior Environmental Impacts and Burdens

On a case study-level in response to the question 'In terms of prior environmental or climate impacts to GBS, how equally do you feel resulting burdens were distributed?' respondents' answers are outlined in the below graph. Respondents spoke both about distribution of impacts within their community and between GBS and other communities. One interviewee remarked they felt GBS has been in a better position in terms of climate change impacts relative other communities thanks to the existence of their community-level climate change action plan.

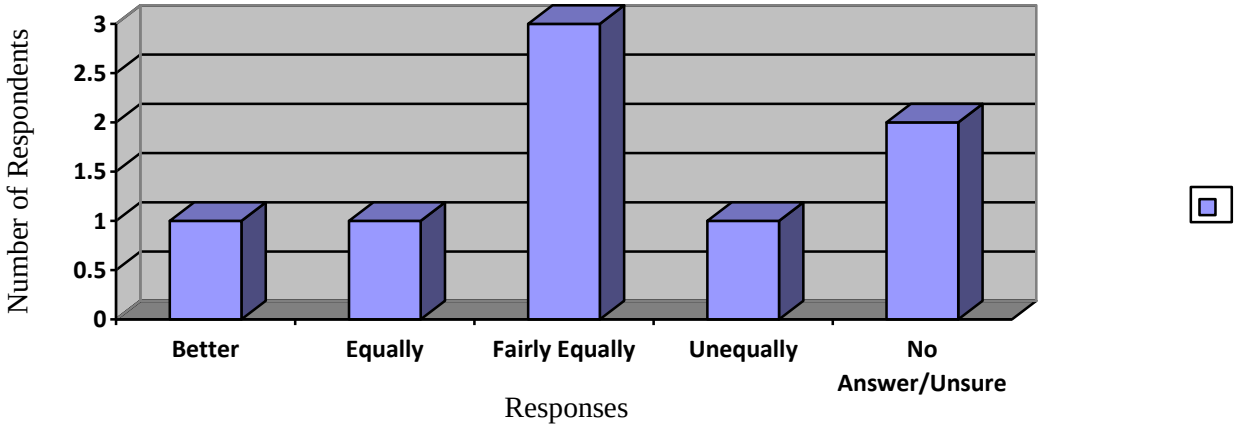


Figure 8: Prior environmental burdens - case study

On a provincial-level in response to the question 'In terms of prior environmental or climate impacts to NL, how equally do you feel resulting burdens were distributed?' respondents' answers are likewise outlined in the below graph.

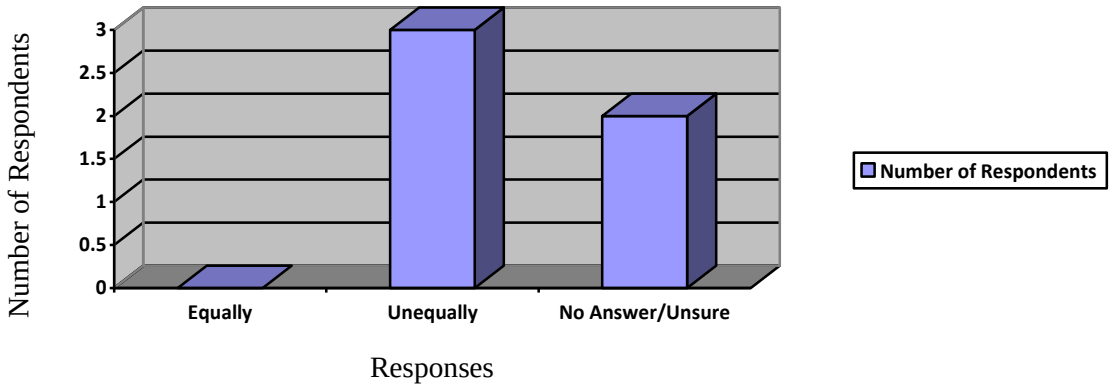


Figure 9: Prior environmental burdens - province

When asked what factors had affected the distribution of prior environmental or climate impacts and burdens respondents noted a series of factors, outlined in Table 12, that varied from socio-economic, to demographic, to geographic in nature.

Table 12: Factors affecting distribution of environmental/climate impacts and burdens

Level of Interview	Considerations cited by interviewees and number of interviewees who mentioned a consideration (# if more than one)
Case Study Question: What factors have affected this distribution (of prior environmental or climate impacts to GBS and burdens)?	**Social Related** • Level of income may affect equality (2) • Fairly young town • Age of individuals • Age of the community may affect equality • People took care of issues in the past as a community • New people entering are those affected • Ability to access climate change information • Ability to keep the community and its infrastructure up to date • Occupations, fair-sized tourism town but not many people involved in tourism • Social networks within the community and to other communities • Equipment, and people able and available to fix things in communities • Less people to pay taxes in smaller communities
	Biophysical Related • The singular road means all communities need it (2) • Changing fish stocks and fishermen • Distribution of climate change impacts

	Policy or Institutional • Lack of resources for council • Having a climate change plan has put GBS ahead of other communities in being able to address risks • Politicians priorities and support, fortunate to have strong politicians supporting the area • Decision making priorities of government based in part on population, voters present, and tax payer numbers • Slower response to/less support for impacts in smaller communities compared to urban • Council never showed favoritism
Provincial Question: - What factors have affected this distribution (of prior environmental or climate impacts to NL and burdens)?	**Social Related** • Culture and values (2) • Are individual cases and needed to be treated that way • Poverty • Larger businesses taking advantage of smaller businesses in dire straits • Accumulation of wealth • Demographics • Employment • Economic situation • Education • Food insecurity • Transportation • Existing social issues and challenges
	Biophysical Related • Changing climate (3) • Geographic distribution and terrain (2) • Location relative to impacts
	Policy or Institutional Related • Connections of large business community to government and policy bias • Ability to recognize vulnerabilities

While case study interviewees most commonly mentioned levels of income and the singular road into town as factors affecting prior distribution of impacts, provincial-level interviewees most commonly cited geographic distribution and terrain, culture and values, and a changing climate. Communities with a singular road connecting them, such as GBS and communities along the southern shore of Bonne Bay, were noted as a concern across both the

case study and provincial-levels. Levels of income in GBS, as discussed above, are also lower than elsewhere in NL (Community Accounts GBS, n.d.).

Additionally, case study interviewees also individually mentioned social-cultural factors as important to the past distribution of burdens, such as social networks within the community and to other communities. This echoes statements by provincial-level interviewees that culture and values are a factor in this distribution, and it is conceivable that GBS' generally high sense of community belonging (2013/14) has contributed as a social-cultural factor to, or is a result of, a fairly equal distribution of prior burdens (Community Accounts GBS, n.d.).

While income levels were mentioned by multiple case study interviewees as factors affecting the prior distribution of environmental burdens, provincial-level interviewees instead separately mentioned factors related to income such as poverty, employment, and the accumulation of wealth. As mentioned in the Social Justice Considerations in Relation to Additional Secondary Sources section of this thesis there is data to suggest that livelihood options in GBS are significantly constrained and that poverty in NL may be on the rise, making these core concerns for future implications of climate change, where a lack of adaptive capacity may lead to increased vulnerability (Kasperson & Kasperson, 2001).

Climate change was mentioned separately by case study interviewees, and by directly by multiple provincial-level interviewees as a factor affecting the distribution of prior environmental burdens. As to how equally the impacts of climate change might be distributed in the future, case study interviewees were relatively split between believing they may be equally or unequally distributed. This contrasts with case study perceptions that prior environmental burdens had been distributed in a 'fairly equal' way. Provincial-level interviewees were predominantly of the belief that future impacts of climate change would be unequally distributed

with two unsure as to what the distribution might be, which is consistent with provincial-level answers on prior environmental burden distribution. Case study interviewees' change in responses between distribution of prior environmental burdens, and future climate impacts, might be explained in part by uncertainty around climate change and related policy as discussed further on. Case study interviewees could also potentially be more concerned about equality around future climate change impacts given the changing social demographics of the community and factors such as significant outmigration (Community Accounts GBS, n.d.), which could diminish the community's capacity to deal with future impacts.

Policy and Institutional Response

Preparedness to Climate Change

On a case study-level in response to the question 'How prepared do you see GBS as being in terms of climate change?' respondents' answers are outlined in the below graph. Three interviewees noted that the preparedness of GBS depends upon the use of information from GBS Climate Change Adaptation Plan and other relevant resources, while four felt that the community is generally unprepared.

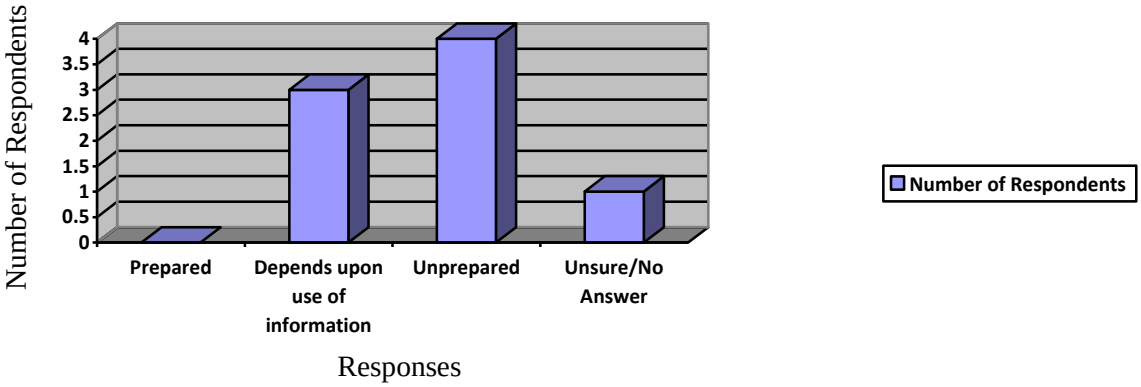


Figure 10: Preparedness for climate change - case study

On a provincial-level in response to the question 'How prepared do you see NL as being in terms of capacity to adapt to climate change?' respondents' answers are likewise outlined in the below graph. While two interviewees were unsure as to the preparedness of the province, three indicated they saw the province as being unprepared.

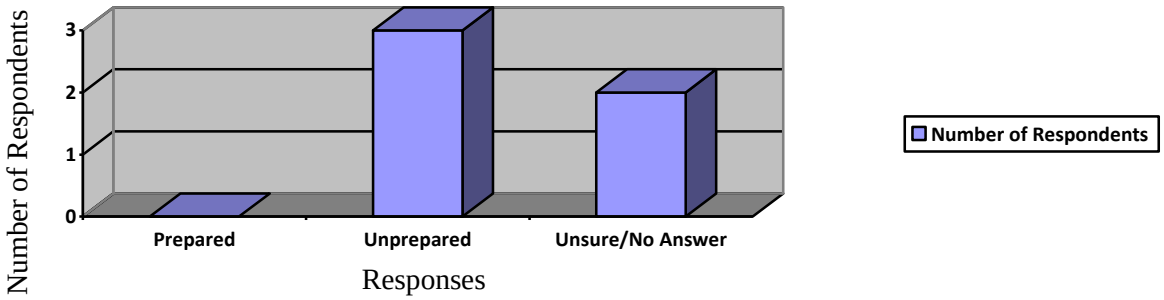


Figure 11: Preparedness for climate change - province

Disturbingly no participants at either the case study or provincial-level outrightly described either the community of GBS or the province of NL, respectively, as prepared for climate change. Most participants at the provincial-level characterized the province as unprepared. This expression of a belief in general unpreparedness was echoed at the case study-level where half of respondents noted GBS as unprepared in terms of climate change. though three case study interviewees noted that GBS' preparedness is dependent upon its successful use of adaptation resources from the GBS Adaptation Plan or other sources at the provincial-level.

Thus, we can conclude that for those interviewed there was a great deal of doubt about preparedness across both levels in terms of climate change and that those who expressed certainty on the issue saw their respective level of government and community as being unprepared. In turn, this would seem to suggest that the sort of multi-level response, described as most appropriate to effective adaptation by Adger (2001), between the province and the community of GBS has either not happened or not been judged to have been highly successful by

those interviews since these views were prevalent at both levels of inquiry. As discussed in the policy analysis section of this thesis (Chapter 3), while adaptation tools developed the 2011 Provincial Climate Change Action Plan were successfully implemented, their uptake among those they were designed to be used by was often low (Paddon, 2017; Amec Foster Wheeler, 2016), which could account, in part, for general perceptions of unpreparedness. Concerns about the consistency of the provincial response for different communities, given the differing levels of climate awareness and related action in those communities were also raised, again seemingly emphasizing the importance of multi-level response. For instance, a provincial-level respondent stated:

> They may have provided the tools but I think actually managing those action plans has been left up to the communities – that's my experience. So GBS – Glenburnie Birchy Head Shoal Brook – they have people who are very proactive in the community, so they have their climate change action plan in place I believe. They've worked with the government they've worked with planners and done things. And so what that mean is that communities with activist oriented people in the community are going to be better prepared than those communities without people – actors like that.

Differing and diminished community capacities in terms of policy implementation are a definitive concern in NL. Multiple staff members exist in only one quarter of municipalities in NL, which means that service levels are frequently below other jurisdictions in Canada. Different organizations have, or are, at work on programs aimed at increasing knowledge and therefore capacity to help address this issue; including programs which also incorporate climate change adaptation as a core consideration. For example, BAM! NL, a capacity-building and asset

management awareness campaign launched recently by Municipalities Newfoundland and Labrador and partners focusses on attempting assist communities with asset management as now mandated by the Canadian Gas Tax Agreement.

The Way Forward on Climate Change in NL (2019) similarly prioritizes capacity building in communities and better integrates climate change into decision making and planning, though it is unclear how progress towards these goals will be measured (The Way Forward, 2019). Similarly, significant questions remain concerning greenhouse gas emissions targets set in the 2019 plan and how these targets are to be achieved. The province's 2019 plan emphasizes creating increased awareness on climate change impacts and solutions, awareness that could also help manage expectations and influence perspectives of preparedness in the future (40). However, this potential to manage expectations could also be undermined by the ambiguity of the plan itself and its reporting structure as discussed in Chapter 3.

Accessibility of Climate Change Resources and Related Factors

On a case study-level in response to the question 'How accessible are municipal and provincial resources relating climate change?' respondents' answers are outlined in the below graph.

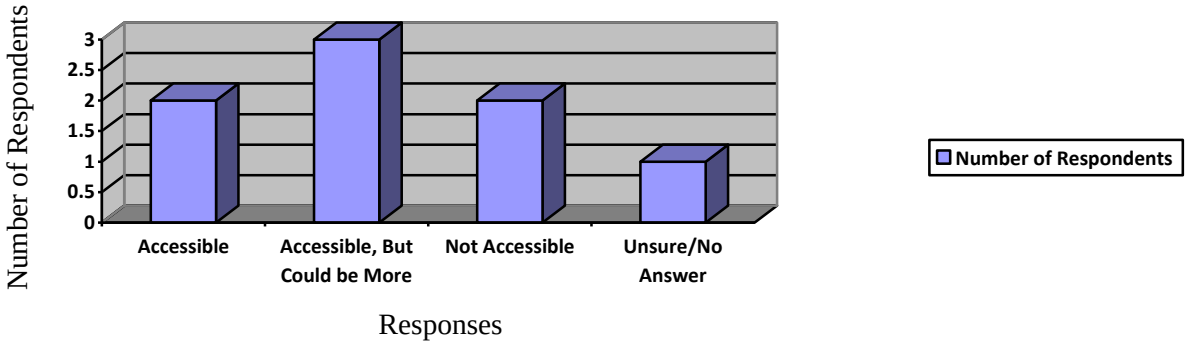


Figure 12: Climate change resource accessibility - case study

On a provincial-level in response to the question 'How accessible do you think municipal and provincial resources relating climate change are to communities or groups that might be affected?' respondents' answers are likewise outlined in the below graph.

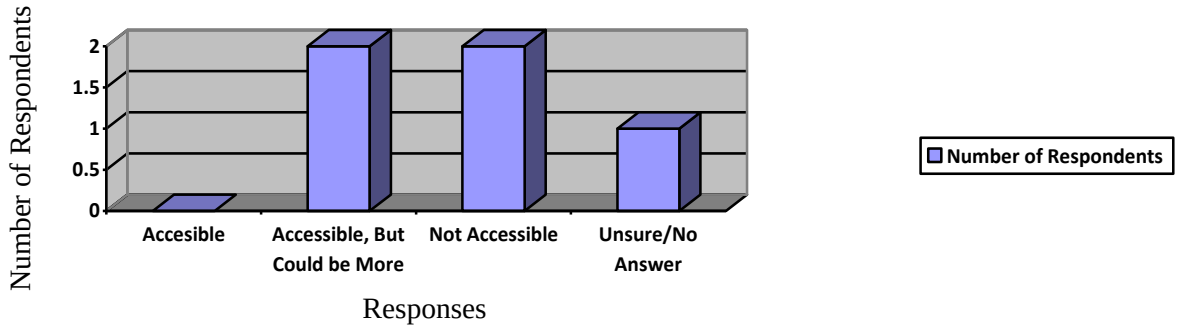


Figure 13: Climate change resource accessibility - province

When asked what factors could affect the accessibility of municipal and provincial climate change resources respondents noted a series of factors, outlined in Table 13 below. Paradoxically to most responses on preparedness, most case study respondents did suggest that climate change resources were accessible to some degree within their community or the Western Newfoundland region, even if that accessibility could be improved; with only two interviewees at that level stating they were inaccessible and one being unsure. However, it is important to remember that accessibility of resources and unpreparedness are not mutually exclusive if said resources are themselves judged to be lacking in effectiveness. Provincial-level respondents were split on the question of accessibility with two stating that they were accessible, but could be more so, and two stating they were inaccessible, as well as one being unsure. Thus, there may be signs of a divide in the perception of accessibility between the two levels. On the provincial-level, the relative split between those who saw resources as accessible, and those who did not, leaves open more of a possibility that inaccessibility was a key factor in concerns about a lack of

climate change preparedness. Whereas at the case study-level the very emphasis on the, at least partial, accessibility of resources may suggest respondents were less likely to see current available resources as constituting 'preparedness.'

Table 13: Factors affecting the accessibility of resources mentioned in interviews

Level of Interview	Considerations cited by interviewees and number of interviewees who mentioned a consideration (# if more than one)
Case Study Question: What factors do you feel might affect the accessibility of municipal and provincial climate change resources?	• Community attitudes toward climate change, environment, and choices (3) • GBS' administrative capacity to seek out resources is limited or implement them (3) • GBS has limited community capacity in terms of municipal resources (3) • Decent internet access or cell phone reception (2) • Money (funding) is particularly accessible for adaptation • Legislative change to make resources more accessible • Severity of climate occurrences prompts provincial government to act • Having advocates in the community who bring in knowledge • Water conditions and ability to access resources from other communities • Availability of information, its location, and format of information (i.e. social Media versus other means) • Geographic location • Declining population • Lack of money to back policies • Less tax money from cannabis, oil and gas revenues, declining population, outmigration, federal transfer payments • Communities need someone to come assist them • Municipalities union runs training sessions • Ability to regulate and monitor individuals' activity in the community • Municipalities NL only produce documents and don't send people to help • Climate change documents compete with other documents for priority • Lack of resources to allow people to change to low carbon footprint (like geothermal) • Library access • Provincial resources available but only accessible if publicized
Provincial Question: What factors do you feel might affect the accessibility of municipal and provincial climate change resources?	• Lack of capacity in communities to take advantage of resources available (4) • Knowledge necessary to find or use resources lacking (4) • Attitudes towards climate change and the green economy (2) • Might not be called climate change resources but may still exist • People demanding resources/social pressure • Emphasis in public mind on mitigation rather than adaptation • Box ticking as a priority whether or not effective • See AMEC 2016 study on uptake

	• In some ways NL is leading

Increased perceptions of accessibility in the case study may also result from the relatively high presence of climate change policy in GBS, such as the GBS Adaptation Plan, which could foreseeably generate knowledge of climate change resources in GBS that are above the provincial average; making resources at least appear to be more accessible than they would appear to be elsewhere across the province. As Paavola and Adger (2002) point out, inaction on adaptation at higher institutional levels can effectively leave lower levels with greater responsibilities, but it is reasonable to assume that different communities might have varying perceptions of the accessibility of adaptation resources needed to assist communities in meeting these responsibilities (1). Without concrete data, it is difficult to compare the accessibility of provincial resources in GBS versus other communities. However, an interviewee stated that a combination of the presence of a local climate change adaptation plan and local knowledge has potentially improved the options for related resources in GBS relative to other communities:

> I think again the fact that we have a background report and a reputation has helped us prepare. At least – and I use the terms prepare very loosely because unless a council is willing to use the information that they actually have then – but we do have the tools I guess that have actually identified some of the areas that have, and some of the potential strategies…. You know those are things that possibly could be looked at and those are things that in the average community would have to be looked at.

In terms of what factors respondents saw as affecting accessibility, however, there is a far greater indication of consensus between the provincial and case study-levels. Respondents' most frequent answers, at both levels, as to what factors affect accessibility center around the capacity

and knowledge to acquire or learn about climate change related resources (internet connectivity, knowing where to find resources), attitudes towards climate change and environmental issues, and capacity to put resources, once found, into action. These responses also directly reflect multiple barriers, and subsequent suggestions, noted by Amec, in their analysis of the uptake of adaptation tools from the 2011 Plan, such as the need to increase awareness of the tools, increase ease of access, and to develop greater training opportunities so that said tools could be effectively used (Amec Foster Wheeler, 2016).

Incorporation of Social Justice in Climate Change Policy

On a case study-level in response to the question 'Do you feel current climate change policy in NL incorporates social justice considerations relating to climate change's impacts effectively?' respondents' answers are outlined in the below graph. On interviewee noted that they believed climate change policy was 'headed in that direction' (i.e. towards incorporating social justice considerations effectively).

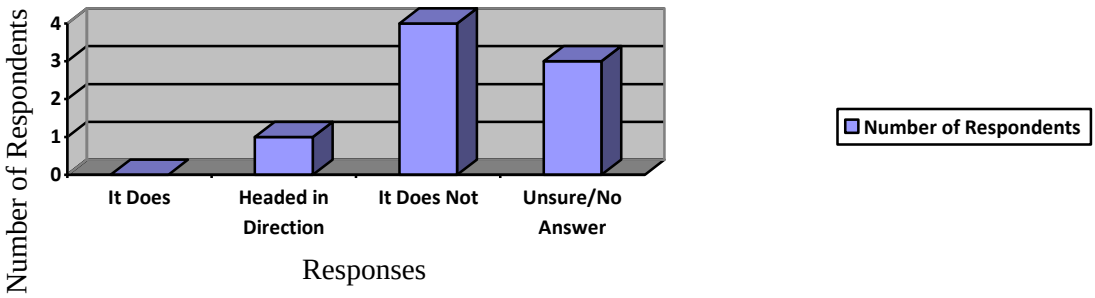


Figure 14: Incorporation of social justice in climate policy - case study

On a provincial-level in response to the question 'Do you feel current climate change policy in NL incorporates social justice considerations relating to climate change's impacts effectively?' respondents' answers are likewise outlined in the below graph. One interviewee

noted that current climate policy 'does [incorporate social justice considerations relating to climate change's impacts effectively], but under different terminology than "social justice."'

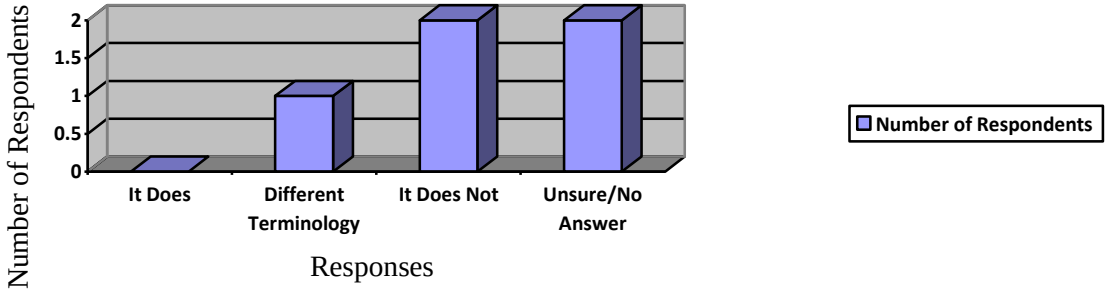


Figure 15: Incorporation of social justice in climate policy - province

Respondents at both levels largely either did not believe that climate change policy in NL accounted for the social justice impacts of climate change effectively or were unsure if it did. One respondent at the provincial-level stated that existing policy did account for these impacts but under a different name and one respondent at the case study-level indicated that policies were headed in the direction of addressing social justice. While it is impossible to draw a universal conclusion as to why respondents felt social justice was not effectively dealt with in current climate change policy, it seems reasonable to conjecture that concerns over the effectiveness of said policy to prepare communities and the province for climate change, as well as concerns over the accessibility of said policy expressed throughout the interviews, could be contributing factors to this perception. If, as Kasperson & Kasperson suggest, those with the least adaptive capacity but the greatest sensitivity are likely to be most affected and thus most vulnerable to climate change (3-4), then in NL there is clearly a perception that said vulnerability is not being adequately addressed.

Importantly, The Way Forward on Climate Change in NL directly references the disproportionate impact of climate change on Indigenous and Northern communities, and sought direct input on these communities' specific needs, stating:

> Taking action on climate change is a priority for Indigenous peoples and northern communities of the province that are most impacted by the warming of the Arctic. During the consultation process, we engaged in dialogue with Indigenous governments and organizations and with northern community leaders to better understand their unique challenges and opportunities.
> (The Way Forward, 2019, 10)

This quotation reflects findings, in Chapter 2, from literature on climate change in Indigenous and Northern communities in NL (Cunsolo Willox et. al, 2013a; Cunsolo Willox et al. 2015; Bell, et. al., 2008; Riedlsperger, 2014; Goldhar et. al., 2014; Harper et. al., 2015). The provincial government's emphasis on both communication with these communities, and the implementation of tools specifically aimed at assisting these communities, appears to indicate a focus within the 2019 plan on considerations of both procedural and distributive justice in regard to Indigenous and northern regions (The Way Forward, 2019).

Inclusion in Decision Making

On a case study-level in response to the question 'Do you feel you have been included in decision making around climate change policy?' respondents' answers are outlined in the below graph. Three interviewees noted that they were either 'working on being included or have to work to be included,' while one interviewee noted they were 'included in other parts of the process, but not decision making.'

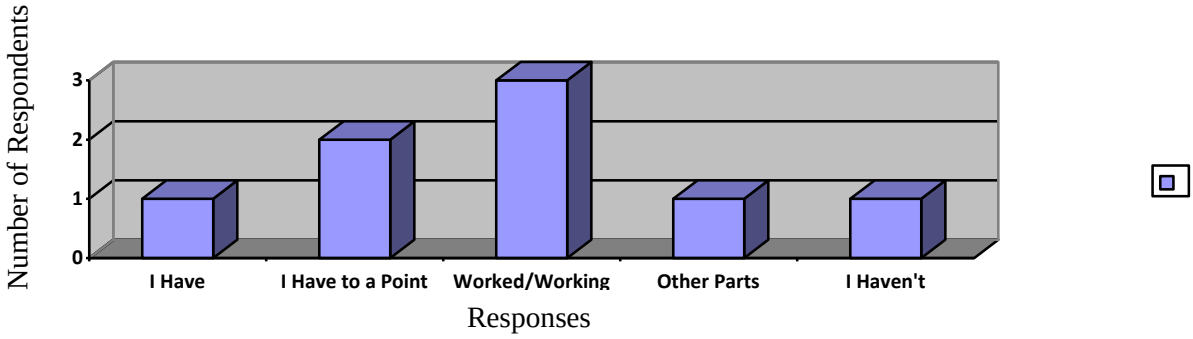


Figure 16: Inclusion in policy decision making - case study

On a provincial-level in response to the question 'Do you feel you have been included in decision making around climate change policy?' respondents' answers are likewise outlined in the below graph.

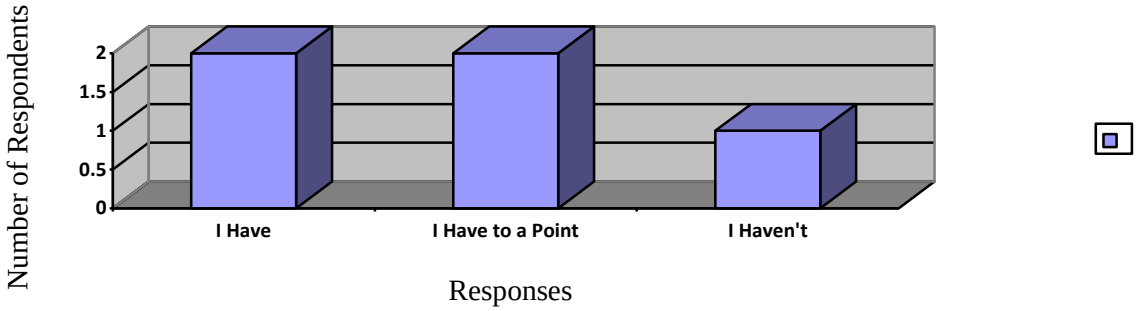


Figure 17: Inclusion in policy decision making - province

Respondents at the provincial-level largely indicated that they had been included in climate change policy decision making, at least to some extent, with only one indicating that they had not been included. Only three at the case study-level, however, indicated that they had been included at least to some degree in said decision making, with another three stating that they had either had to work to be included or were working on it. In part, this might be explained by the fact that those interviewed at the provincial-level were likely sought out for their expertise on

climate change, while targeted case study interviewees were not necessarily considered qualified in the areas of climate change research or policymaking. Still the indication that a sizable number of case study interviewees associated involvement in decision making on climate change policy with 'work' suggests that they may perceive there to be barriers to their involvement in said decision making. As Ren et al (2015) point out mainstream democracy can fail to adequately account for views of those most affected by climate change (323). This association of inclusion in the policy process with 'work' seems to contradict the success of attempts by the provincial government to legitimate policy through public consultation as discussed in Chapter 3. One respondent indicated that the presence of regional climate change coordinators could potentially improve the inclusivity and effectiveness of related policy generally by ensuring follow up:

> … you know, and each of the regions and this one is no different really, would benefit from a climate change coordinator and planner, and we were – there's one thing that we thought we were on track with… the [GBS] climate change adaptation plan. But again there's no follow up from the adaptation plan.

Improving Climate Change Policy

On a case study-level in response to the question 'Do you feel there is anything that could be done to improve upon climate change policy in your community and NL?' respondents' answers are outlined in the below graph.

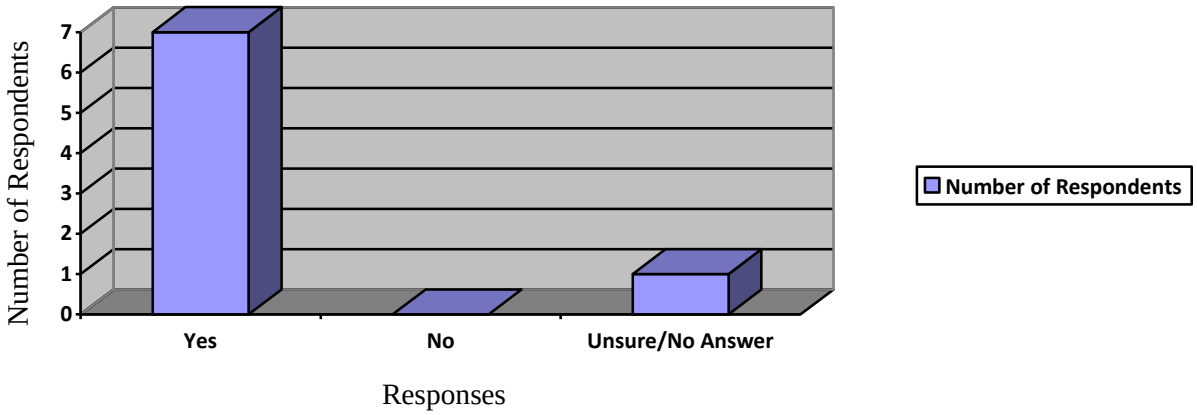


Figure 18: Improving climate policy - case study

On a provincial-level in response to the question 'Do you feel there is anything that could be done to improve upon climate change policy in NL?' respondents' answers are likewise outlined in the below graph.

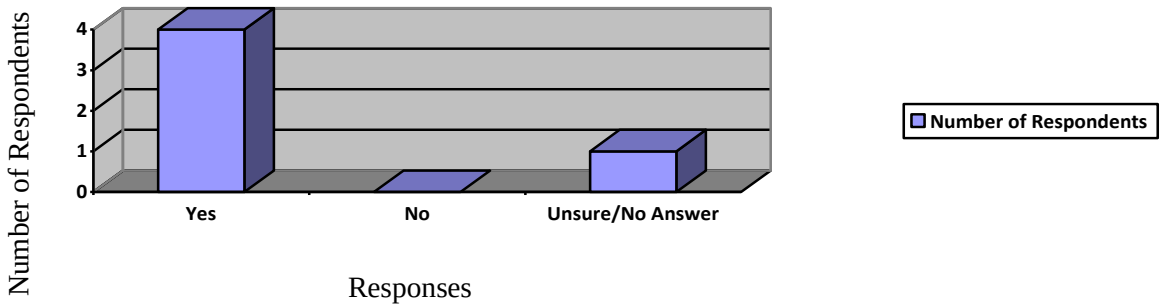


Figure 19: Improving climate policy - province

Except for one respondent at each-level of those interviewed, both of whom stated that they were unsure what could be done to improve climate change policy, interviewees overwhelmingly stated that more could be done to improve climate change policy in NL. Possible policy improvements are noted in Table 14 below. At the case study-level suggestions for improvement mentioned by multiple respondents included the greater inclusion of communities in consultation on policy, improved education and awareness, and the presence of

on-the-ground coordinators and planners, with case study interviewees also mentioning in passing past environmental initiatives in GBS.

Table 14: Potential improvements to policy mentioned in interviews

Level of Interview	Considerations cited by interviewees and number of interviewees who mentioned a consideration (# if more than one)
Case Study Question: Do you feel there is anything that could be done to improve upon climate change policy in your community and NL?	• Education and awareness process needs to happen (3) • Need climate change coordinators and planners on the ground (2) • Include communities in conversations or consultations (2) • GBS had undertaken some early environmental initiatives (2) • Respect culture and way of life • Leaders are getting their information from the people who caused the problem (fossil fuel industry) • Universities are tied too heavily to fossil fuel industry, limiting progress • Need to rebuild after damage done by Harper administration to science and knowledge • Need to get more people involved, ask more opinions • People need to understand policies as beneficial for the future • Young people are needed to do some things as well • Difference between environmental awareness and action at the community level • Need to be proactive rather than reactive • Need to acknowledge right to a healthy environment • Policy needs to be put into understandable language • Policy needs to be more evident and available to people • Follow up on financial ramifications of implementing policies • People dissatisfied with government response to discussions (example Muskrat Falls), what's the point if government doesn't listen • Environmental policy successes to learn from include delay of fracking, decision to address Manolis L (a sunken ship that has leaked oil) • Better access to streamlined GIS services, LIDAR data, and mapping
Provincial Question: Do you feel there is anything that could be done to improve upon climate change policy in NL?	• It's good that there are people working on this issue • Need climate policies to be developed • Need a carbon tax with low income offset • Adaptation needs to be more of a priority • Ongoing relationship between academia and government, beyond just submitting information • Power network is vulnerable • Northern areas are vulnerable • Planning for future needs is important • Pan Canadian Framework on Clean Growth and Climate Change is a positive step

At the provincial-level suggestions, and comments, spanned several topics from the Pan Canadian Framework on Clean Growth and Climate Change to the suggestion of a carbon tax with a low-income offset, and it is thus harder to infer any specific suggestions that were shared across correspondents. Again, in part this might be explained by the fact that, by definition, specialists (such as those targeted at the provincial-level) on climate change often deal with separate aspects of an issue and therefore may have differing perspectives on what could be improved in terms of related policy – or the small sample size. One can, however, loosely categorize comments mentioned by provincial-level respondents into:

- Comments suggesting particularly vulnerable communities need to be better addressed (i.e. Northern Labrador, where significant vulnerabilities and challenges do indeed exist [Cunsolo Willox et. al, 2013a; Cunsolo Willox et al., 2015; Bell, et. al., 2008; Riedlsperger, 2014; Goldhar et. al., 2014; Harper et. al., 2015]).
- Comments suggesting market-based policy tools have a greater role to play (i.e. a carbon pricing system with a low income offset).
- Comments emphasizing a greater role for researchers in the policy process.
- Comments emphasizing the virtues work that has been done thus far (i.e. it is good to have joined the Pan Canadian Framework on Clean Growth and Climate Change).

The Way Forward on Climate Change in NL (2019) does aim to incorporate action items that reflect many of the recommendations for policy improvement mentioned by respondents. The 2019 plan emphasizes the need for greater awareness on the issue of climate change and consultation with communities, and although it does not contain plans for a system of on-the-ground coordinators, it does attempt to better incorporate climate change into planning and capacity at the community-level (The Way Forward, 2019). Northern communities are also a

priority under the 2019 plan; the 2019 plan critically reflects on the failures of the prior 2011 plan in terms of mitigation, and aims to support the dissemination of research on climate change (1-52).

As discussed in Chapter 3, the main shortcoming of the 2019 plan appears to be a lack of measurable and time-bound objectives and a seeming disconnect between stated emissions targets and action items. Additionally, while market tools are a component of The Way Forward on Climate Change in NL, the provincial government's carbon pricing system does not include a specific low-come offset as mentioned among the responses from interviewees, instead including exemptions for off-grid diesel electricity generation and home heating fuels (Carbon Pricing Release, 2018). It is resulting possible that the carbon tax itself may, as such, have a social justice impact for NL. Interviews as part of this research were conducted prior to the announcement of the carbon pricing plan, but as one respondent said of the then gas tax and potential future carbon tax:

> … if you put in a carbon tax and you don't do it right and you don't charge the big emitters, because this is one of the plans they've talked about is basically not charging the oil industry but charging all the people, this could be a big issue and we actually saw this with the gas tax.

In the final, general question interviewees often further specified what they felt could be improved in terms of social justice factors of climate change in NL, responses that are discussed further below.

Additional Insights

In order to catch any other additional insights from interviews that may have fallen outside the structure of the interview process or may represent cumulative thoughts following

from the other questions, respondents were asked if they had any general responses on potential social justice impacts of climate change. Considerations cited by interviewees in relation to this general response question are outline in Table 15 below.

Table 15: Additional insights from interviewees

Level of Interview	Considerations cited by interviewees and number of interviewees who mentioned a consideration (# if more than one)
Case Study Question: Do you have anything you would like to state relating to any potential social justice impacts of climate change in your community and NL?	**Social Justice Factors** • Infrastructure damage affects people socially • Social justice is tied to government support which is tied to population size • Social justice is a tricky issue – some might see justice as injustice • The more normal a distribution within a community the more reliable • Diversity of job opportunities throughout a year is important • Have to look at all factors to social justice as a package
	Climate Change Impacts • Recent climate change impacts in GBS this winter opened eyes to climate change • Every climate change event puts more impetus on government to improve resources and planning • Coastal communities need special attention • Important for people to identify the impacts of climate change • Fortunate to have local construction equipment in GBS, local jobs, to deal with climate change impacts • Change in knowledge that once allowed Newfoundlanders to find safe shelter
	Policy and Institutional Response • Need to have sufficient electricity supply to switch over things to electric (2) • Very reactive towards climate change at municipal level/needs more coordination (2) • Signage was removed advertising a GBS green initiative (2) • Need a proactive approach to province's infrastructure, adapting before impacts and saving money • Need more awareness of climate change, and need more actions to help resolve the issue • Need follow up on environmental initiatives • Need to change behavior, still arguing about banning plastic bags • Everyone needs to make pro-environment changes at the same time to avoid people/businesses being unfairly impacted (plastic bags) • Need electric car infrastructure from national/provincial efforts • Policy needs teeth and funding to support it • Band aid policies predominant at the municipal level • Transportation and housing two main sources of GHG emissions

	• Not enough being done to address water quality issues • Distributing the administration work, some communities are too small for effective administrations to exist • Amalgamation or new administration systems need to be an option given size of some communities • Provincial level doesn't really believe in the climate change efforts of the national government (i.e. that they are necessary). • Sometimes better to leave people environmentally unregulated, allow them to provide for themselves, rather than try to equalize everything out according to formula • Policy must respect land and culture to avoid fights • People and their opinions must be acknowledged • Pensions and government pensions need to be adequate and often aren't • Appropriate safe housing fit for climate impacts • Government help in identifying climate change impacts • Changes in transport behavior can save money (and so generate interest) while helping environment • Difference in provincial rules can make things unequal between provinces on environmental matters (recreational food fishery)
Provincial Question: Do you have anything you would like to state relating to any potential social justice impacts of climate change in NL?	**Social Justice Factors** • A lot can be done in terms of social justice in Northern Labrador (2)
	Climate Change Impacts • Coastal areas are at risk • North needs to be paid attention to • We're not thinking big enough, about just how bad climate change will get across the world • Even people who are right-wing should support climate action as climate change will increase war and refugee numbers coming to Canada
	Policy and Institutional Response • Rural areas may have difficulty responding • A lot can be done in slightly larger rural communities that are regional centers • Need to provide regional capacity, training, or expertise

Responses to the general response question varied highly, but in aggregate suggest there was a perception amongst interviewees at both levels that much needs to be done, across numerous areas of policy, to address the issue of the social justice impacts of climate change in NL. The variability of responses also suggests that any policy, or set of policy priorities, concerning climate change is likely to be perceived through a variety of different lenses, even within the context of a single case-study community. One case study-level interviewee directly

noted that some might see justice and injustice differently, which is perhaps a natural consequence of the complex mixture of social, economic, and institutional factors Adger (2001) note as contributing to vulnerability and adaptive capacity (921 and 925).

In general, however, responses often fall into one or more of four categories:

- The need to be better prepared for the physical impacts of climate change in vulnerable areas ahead of time.
- The need to better address social issues that could exacerbate climate impacts.
- The need for greater awareness of climate change and adaptation resources.
- The need for greater follow up, consultation, and respect for local concerns in climate change policy development and implementation.

It is important to point out that these categories to some extent mirror those expressed concerning the accessibility of existing climate change adaptation resources, such as capacity to find and use resources and attitudes towards climate change and the environment. These latter points, as previously mentioned, bear a resemblance to findings from the Amec analysis of adaptation tool uptake from the 2011 provincial Climate Change Action Plan, such as the need for increased awareness of said tools and the provision of related training (Amec Foster Wheeler, 2016). Indeed, throughout the interviews the issues of capacity and environmental attitudes were highlighted consistently as key factors in assessing climate change policy's effectiveness both generally and in terms of social justice. This is supported by literature on the subject of climate change which highlights the need for increased capacity, communication, and engagement to effectively deal with climate change (Grenfell & GMCA, 2018; Irvine et al., 2016; Kasperson & Kasperson, 2001). One case study interviewee emphasized how attitudes toward climate change, and who is most affected by it, are shaped in large part by local environmental impacts of

weather and how they are perceived as connected to the larger issue of climate change. In relation to major flooding experienced throughout Western Newfoundland in January of 2018, which caused states of emergency to be declared in multiple communities including in Trout River a community near GBS (CBC, January 15 2018), that respondent stated:

> … for our town [GBS], this past winter when the severe weather happened it really opened a lot of eyes and made a lot of people think about that because it's human nature that you always feel that the impacts of climate change are going to affect someone else.

Figure 20: Damage to a secondary bridge in GBS from gradual deterioration and flooding in January 2018.

The perceived need for greater follow up, consultation, and respect for local concerns in policy development as expressed by respondents may point to weaknesses in the procedural as well as distributive justice of NL's current adaptation policies; the importance of which is emphasized by Paavola and Adger (2002). As discussed in Chapter 3, while The Way Forward on Climate Change in NL does attempt to address many of the points concerning community capacity, awareness, and consultation raised by interviewees, it is unclear how effectively these issues will be addressed.

Chapter 5: Conclusions and Policy Recommendations

Summary Discussion

This thesis sought to aid in assessing the ability of current climate change adaptation policy in NL to address both future, and current, social justice ramifications of climate change. A review of current literature suggests that while there is a great deal of research that has taken place to assess climate change impacts on a provincial scale, and in various communities and regions in the province, there is little that addresses social justice considerations directly. Thus, this thesis first aimed to help bridge an information gap through a general province-wide analysis and through a localized community scale analysis, of climate change's ramifications for social justice and related policy implications. The thesis also used a conceptual model to guide its analysis of social justice implications of climate change and related policy ramifications.

Key sources of data included existing information from literature on climate change in NL and climate change policy, interviews with community members and relevant key individuals, and data on the case study community and the province of NL. Other sources, such as news articles, were also cited if considered relevant. The approach to this research was primarily qualitative, and quantitative data was also cited to help provide context to the research and findings.

Finally, this thesis assessed existing relevant provincial policy in terms of its capacity to deal with the social justice ramifications identified and will end with a description of any resulting policy recommendations. It is hoped that this thesis can provide a useful stepping-stone to further research on the social justice ramifications of climate change for NL, and related policy. 'Climate justice' continues to grow as a field of research and localized studies with real-world policy utility are, as such, increasingly important to effective mitigation and adaption. This thesis aims to

contribute to this ever-expanding field, while making a practical contribution to climate change adaptation and mitigation policy in NL.

Limitations to this research include a low response rate in comparison to the initial number of interviewees targeted, the use of a singular case study community, and the scope and complexity of the subject being dealt with. Research findings reveal myriad possible influencing factors that could affect social justice in relation to climate change. This research has been able to identify aspects of social justice and climate change that have interacted in the case study community's local region, and across the province, and that are *likely* to interact in many communities across NL in the future, but this thesis cannot provide a set roadmap as to how these *will* interact in specific places at specific times. To an extent, therefore, this research is exploratory in that it can provide a general overview of what potential interactions of social justice and climate change may warrant further examination in NL.

Representativeness of the sample size used for primary data collection through interviews, as noted, is a limitation. However, as shown above, factors commonly cited by interviewees relating to social justice, climate change, and institutional/policy response, at both the provincial and case study-levels, correlate to available secondary data and literature on those subjects. This suggests that themes, concerns, and viewpoints expressed during interviews do reflect some discernable realities being faced provincially and locally. Thus, this thesis can provide a list of considerations that may be relevant to NL in terms of the social justice ramifications of climate change and related policy response. Further, findings imply that policy foci could be prioritized at the provincial-level to aid NL in terms of preparedness for these ramifications, or to increase the ability of said policy to more accurately identify such ramifications in specific cases.

This final chapter examines and summarizes findings from the prior four chapters of this thesis in relation to the research questions this thesis set out to answer:

- What are the known and likely social justice ramifications of climate change for NL?
- Do existing climate policies on the municipal and provincial scales account for these ramifications in a way that facilitates mitigating or adapting to these ramifications?
- What policy foci or measures might improve upon existing policy in mitigating and/or adapting to any social justice impacts found?

Social Justice Factors and Ramifications of Climate Change for NL

The first element of the conceptual framework for this thesis examined social justice factors relevant to NL and GBS, including social assets and concerns, livelihood diversity, and distribution of wealth and means. Adaptive capacity and vulnerability in terms of climate change are inherently connected to factors of social justice present in the case study and in many areas across NL, such as outmigration and aging populations. However, case study interviewees noted that the impacts of such factors, relevant to adaptive capacity, were not clear-cut. Older individuals, rather than being seen as a burden on a community, for instance, can also be recognized as essential to carrying on traditions and conveying knowledge that could actually have beneficial effects for adaptive capacity. As evidenced by interviewees, social cohesion and core groups of volunteers who have been able to drive action on climate change appear to be central to the strengths GBS possesses in facing climate change. More to the point, this community-oriented thinking appears to be one of the main factors that maintains a perceived relative social-environmental equality among community members of GBS. Changing social fabrics, such as increasingly individualistic versus community-oriented thinking may be a concern in this respect.

Data seems to indicate that in the case of GBS livelihood diversity is constrained and individuals are likely to have to leave to find work. Further, interviewees noted that general outmigration is compounded by issues such as affordable housing and low incomes, which may dissuade people from moving into the community. Local small businesses, tourism connected with Gros Morne National Park, construction and service stations were all noted as livelihood sources. While data on the distribution of wealth and means within GBS is limited, respondents generally noted that strong community cohesiveness and volunteerism tends to even out social and economic impacts.

Provincially, several issues identified at the case study-level were also seen as important social justice considerations across the province by those interviewed. Factors such as demographic changes were repeated at the provincial-level, as people leave smaller communities for larger ones, or move out of the province altogether, with resulting impacts for communities' resilience and adaptive capacity. Further, social networks and traditional networks were noted as important provincial considerations, as were constrained livelihood options and factors such as brain drain. That these factors were present across both the provincial and case study levels, and given evidence from available secondary sources, it is likely that this correlation is indicative of common considerations likely to affect communities across the province in terms of social justice. NL is also facing and uncertain economic and social situation that could worsen these factors, including general economic and gender inequalities, which should be ongoing considerations for social justice in relation to climate change in NL.

Social justice and climate change impacts are manifest individually along a rural and remote-urban divide in NL. Social justice topics discussed by provincial and case study-level interviewees are likely to have impacts on community resilience, whether positive or negative, and

rural and remote communities are likely to bear some of greatest burdens given the severity of the rural and remote-urban divide in NL. How and where governments and private entities invest in terms of development, whether in the form of infrastructure or employment-creating projects, is likely to have a significant impact on how future outcomes in terms of resilience, and related issues of justice, affect communities.

Climate change will impact NL in a myriad of ways including through sea level rise, coastal erosion, changing weather conditions, changing seasonal conditions, changes in biodiversity, and oceanic changes, as well as mental and physical health impacts. For coastal communities, like GBS, sea level rise and coastal erosion are already serious issues and are likely to continue to cause negative impacts. Changing seasons will affect the time periods open to certain activities, most likely constraining winter activities while increasing the time available to for summer activities. At this time, it is unclear the exact effect changing season length may have on regional and local economies in NL, and the ability to take advantage of any opportunities present for communities appears to rest largely on their capacity to seize those opportunities. However, it is clear that climate change's overall effects pose significant detrimental risks for communities, and particularly rural and remote communities, throughout the province. This emphasis on rural and remote impacts was echoed by interviewees, as well as secondary data, at both levels of this study who generally saw climate change as a serious concern in terms of their own community and across the province as a whole.

There is the potential for significant economic change to occur as a direct and indirect result of climate change. Potential climate impacts for fisheries are a key concern in this respect, given the sector's importance for rural and remote economies in particular. More research is needed on how climate change may impact industries which are important to rural and remote regions such

as fisheries. A further, indirect, ramification of climate change identified as part of this research relates to shifting global economies, as the global community seeks to minimize climate change, and resulting ramifications. As a province greatly dependent on the extraction of oil and gas and related activities, NL may face significant economic hurdles as the world moves toward decarbonization.

How prior environmental changes have been distributed throughout the province of NL cannot be taken as a definitive indication of how future environmental impacts, from influencers such as climate change, will be distributed. But prior environmental impact distribution can provide a baseline as to how interviewees perceive distribution in the past *relative* to the potential distribution of impacts in the future. Provincial-level respondents tended to see the distribution of prior environmental impacts as having been unequal throughout the province, however many case study-level interviewees actually felt that environmental burdens had been distributed fairly equally within their community or in their region generally. Core to this equality of distribution at the local level were close social networks and social cohesion, factors also mentioned by provincial-level respondents as relevant to the distribution of environmental impacts generally. It is impossible to conclude as to whether this perceived equality of impact in GBS is true of other communities in NL, as the distribution of prior environmental impacts is inherently tied to localized factors. But this correlation in the stated importance of factors, such as social cohesion and networks, as important to prior impact distribution is noteworthy. It also emphasizes the importance of maintaining social networks in NL, which may vary with changes in moral economies, volunteer activities, and technology, as well as livelihood and demographic changes.

Case study respondents were less likely to view the future impacts of climate change as being equally distributed relative to past general environmental impacts, and provincial-level

respondents were likewise less likely to see these impacts as being equally distributed. This is perhaps unsurprising given the potential oncoming negative issues faced by rural and remote NL, such as demographic change, constrained livelihood options, social-cultural change, and other factors that could affect communities' adaptive capacity like the NL's economic situation and related issues of economic inequality. Other biophysical factors, also mentioned by respondents, are likely to play an additional role. While some communities may be more or less vulnerable to the negative impacts of climate change, and more or less likely to be able to take advantage of any positive impacts, when and exactly how these impacts will interact with communities, and their respective capacities and vulnerabilities, is hard to predict without localized bio-physical, socio-economic, and cultural information.

Existing Policies' Capacity to Address Social Justice Ramifications of Climate Change and Areas for Improvement

Perhaps the most concerning finding from this research was the general perception of unpreparedness in terms of provincial and case study capacity to respond to climate change. This perception appears to have been tied to issues concerning the accessibility and/or effectiveness of climate change policy as well as ambiguity around the severity of climate change's potential ramifications. The engagement of communities in policy development, implementation, and evaluation, their level of knowledge around climate change, their capacity to carry out policies and resources aimed at tackling adaptation to climate change, and their knowledge of how to access those policies and resources, were identified by respondents as factors that affect either policy accessibility or effectiveness. These factors of accessibility also echo the importance of social and policy learning to successful adaptation (Adger et al. 2001). As mentioned in Chapter 3, The Way

Forward on Climate Change in NL does aim to address concerns around communities' capacities to use adaptation tools and resources, as well as aiming to increase awareness, but it is not clear to what degree and by what date these aims will be achieved (The Way Forward, 2019). Barriers, ranging from internet inaccessibility in rural and remote communities, to diminished human and economic resources, have been seen as detrimental to either the accessibility or effectiveness of current climate change policy such as the 2011 Climate Change Action Plan.

Secondary source analysis confirms that evidence exists to back up these perceptions of policy effectiveness/accessibility. While policy measures aimed at addressing climate change have been undertaken by the provincial government, these have faced significant shortcomings in respect to local uptake and implementation in communities. Barriers identified in secondary sources mirror those mentioned by interviewees and center around a lack of general climate change awareness, a lack of awareness of resources available, and diminished capacity to utilize the resources available, given a deficit of human expertise or financial capital in communities. Meanwhile, past policies aimed at the mitigation of climate change have not met emissions targets and were not ambitious enough to have met said targets, as noted in Chapter 3. Perceptions that, in general, social justice was not adequately addressed by current climate change policy may be driven in part by these factors.

Finally, while respondents at the provincial-level indicated a general involvement in climate change policy decision making, case study respondents often equated such involvement with 'work' suggesting that there may be room for climate change policy to more effectively engage individuals in decision-making processes, at least in the case of GBS. Interviews clearly show a desire on the part of most respondents to see climate change policy improved on a number of levels, some of which are included as aims in the provincial government's 2019 climate change

plan; The Way Forward on Climate Change in NL. Improvements cited by respondents center around the themes of inclusion, communication and awareness, localized coordination of solutions, addressing impacts in vulnerable communities, fair and effective carbon pricing, climate change research, and the continuation of ongoing work to tackle climate change. However, it is currently unclear to what extent The Way Forward on Climate Change in NL will effectively address these suggested improvements and the 2019 plan does not include certain suggested mechanisms, which interviewees noted, such as a low income rebate for carbon pricing.

In general policy-related barriers to dealing with social justice ramifications of climate change centered around:

- A lack of clear, ambitious, or time-bound objectives.
- A lack of awareness or communication with communities on climate change to implement a multi-level response to climate change.
- A lack of capacity on the part of communities to implement a multi-level response to climate change.

While past literature on climate change in NL has noted many of the factors overviewed in this discussion, such as rural and remote-urban divide (Catto, 2010), this thesis shines a specific light on how social justice, its various contexts and characteristics could and does already interact with climate change provincially. The findings of this thesis are extensive and indicate that climate change will likely have a wide range of varying interactions with existing social justice factors in various locations throughout NL. The outcomes of these interactions, between climate change impacts and existing social justice factors, are likely to be complex and influenced heavily by specific regional and local dynamics, such as geography, policy, local industry, and social-cultural characteristics. This general observation from the primary and secondary data, gathered as a part

this research reflects broad context literature on the subject of climate change and social justice and the multifaceted socio-economic, cultural, policy, and political factors that affect outcomes as they interact with climate change. NL is a province with a unique and varying geography, numerous small isolated communities, and a host of socio-economic, cultural, and political characteristics that varies by region. It is perhaps intuitive then that the outcomes of climate change in our province are likely to have varying socio-political and economic effects.

Policy Recommendations

The following constitute four policy recommendations that may aid in the mitigation of, or adaptation to, the social justice implications of climate change discussed above. These policy recommendations are designed to not only help address the effectiveness of climate change policy, but also to help mitigate socio-economic factors that may negatively impact adaptive capacity, while building an inclusive and accessible framework for future policy decision making and ongoing implementation and evaluation. The Way Forward on Climate Change in NL, an ongoing climate change action plan, is described as "a living document that government will challenge itself to strengthen over time" (The Way Forward, 2019). The below recommendations, based on findings from this thesis, are made in the spirit of helping to foster and further strengthen climate change policy in NL.

Recommendation 1: Measurable and Time-Bound Objectives

As discussed in Chapter 3, past climate change policy in NL, such as the 2011 Climate Change Action Plan, has suffered from a lack of objectives that were ambitious enough to reach greenhouse gas emissions targets (Paddon, 2017). Further, past policy saw a reduced uptake of adaptation resources and tools due to factors of capacity and awareness, factors not identified until

years into the implementation of the 2011 plan (Amec Foster Wheeler, 2016). To avoid a repetition of these obstacles, it is recommended that measurable and time-bound objectives in line with targets for adaptation and mitigation be established to ensure the completion of action items included in The Way Forward on Climate Change in NL. Further, it is recommended that an annual progress report on these objectives be publicly issued annually in parallel to provincial-territorial-federal government joint progress reviews of climate policy (Pan Canadian, 2016).

Recommendation 2: Regional Climate Change Coordinators

Rural and remote regions and communities are dealing with unique localized challenges related to climate change and social justice, and have varying adaptive capacities (see Chapters 2, 4, and 5). To help remedy this situation, and to reinforce capacity building action items in The Way Forward on Climate Change in NL, it is recommended that the provincial government dedicate regional climate change coordinators to work with communities in NL. Coordinators would assist with on the ground and multi-level adaptation and mitigation efforts relating to climate change by providing practical feedback, knowledge, and human capacity. Additionally, coordinators could direct communities and individuals to relevant provincial resources and help them understand how to use those resources. These coordinators could also help evaluate policy effectiveness on an ongoing basis, ensure two-way communication (see Recommendation 3), and could work with other entities such as FCM and MNL and help to augment existing programs aimed at increasing capacity such as BAM! NL (Cardin and McMullan, 2015; Grenfell & GMCA, 2018). Coordinators could be assigned to set regions, such as Rural Secretariat Regions (shown in Appendix B), or could rotate between regions on a regular basis depending upon provincial

capacity. These coordinators would provide support for place-specific adaption and/or migration strategies.

Recommendation 3: S.M.A.R.T. Communications Plan

The Way Forward on Climate Change in NL contains multiple action items aimed at increasing awareness of climate change and how communities can take action on climate change (The Way Forward, 2019). As mentioned in Chapter 3, effective communication and reputational relationship building requires the setting of measurable objectives, the establishment of bridging two-way communication channels, and formal reporting mechanisms to evaluate outcomes (Cardin & McMullan, 2015; Doorley & Garcia, 2015). Rural and remote communities are likely to be particularly affected by social justice ramifications of climate change, as discussed in Chapters 2, 4, and 5. It is recommended that a multi-year communications plan, with specific, measurable, achievable, relevant, and time-bound (S.M.A.R.T.) objectives (Cardin & McMullan, 2015; Doorley & Garcia, 2015) be developed to increase awareness of climate change's social and biophysical impacts for rural and remote communities and how these can be addressed. The communications plan should carefully consider the specific avenues of communication that are prominent and available in rural, remote, and Indigenous communities, as well as differing degrees of capacity and access to technology such as internet. The communications plan should also be evaluated annually to assess progress toward objectives and make any necessary adjustments to strategies and tactics, in line with government joint progress reviews of climate policy (Pan Canadian, 2016). The emphasis of the plan should be on ensuring two-way communications between the provincial government and rural, remote, and Indigenous governments where all levels (and types) of government can listen to and act on what they hear from other governments.

The communications plan should also emphasize the role of mental health awareness, as it relates to climate change, and address how communities can act to address issues such as ecological grief and changes to land-based activities given the increasing importance of these issues in Indigenous communities (Cunsolo Willox et. al, 2013a; Cunsolo Willox et. al. 2015; Cunsolo Willox et. al., 2012; Cunsolo Willox et. al., 2013b).

Recommendation 4: Formal Advisory Committee

A multi-level government response to climate change in NL must overcome significant obstacles, as identified through this research, and there is a lack of formal multi-level government coordination on public health in relation to climate change in Canada (Chapters 1-5 above; Austin et al., 2018). It is recommended that the provincial government create a formal advisory committee that will meet with municipal government representatives on a regular basis to address approaches to multi-level government responses to climate change. This advisory committee could consist of representatives of organizations representing marginalized groups in NL, representatives of Indigenous governments and groups (which provide vital services in many rural and remote regions) and municipal governments or regions in NL, representatives of federal government offices or programs related to climate change, climate change researchers and scientists working for independent academic institutions, and representatives of groups such as MNL and FCM. Other committee members could be added depending upon relevance to specific multi-level responses.

Conclusions

The quote at the beginning of this thesis encapsulates many of the significant concerns expressed generally by those interviewed about the effectiveness of climate change policy in NL to deal with oncoming climate change impacts and their social justice implications. It is likely

that issues of livelihood diversity, demographic change, provincial economic insecurity and economic inequalities, and social-cultural change will impact the adaptive capacity of communities in terms of climate change. Rural and remote communities are likely to face increased issues of adaptive capacity given their exposure to these factors. Geographic location, the accessibility of policy and resources, and investment by external entities are also likely to play a significant role in future adaptive capacity in rural and remote communities.

Climate change will have multifaceted and wide-ranging implications for NL that will be distributed in differing biophysical ways. Geographic qualities of different regions, weather patterns, as well as the state of coastlines, and outcomes of continued sea level rise, will play a significant role in how these implications are distributed. However, general issues of social justice will almost certainly affect the adaptive capacity and vulnerabilities of communities across our province and must be a core consideration in climate change policy development, implementation, and evaluation.

Climate change policy in NL increasingly cites socio-cultural, demographic, and economic factors relevant to social justice as core considerations during the legitimation component of the policy cycle. Recent policy has directly acknowledged and aimed to address social factors relating to Indigenous and northern communities, which face particular challenges in terms of accessing needed resources. However, climate policy is unlikely to be effective without strong proactive climate change adaptation and mitigation targets, localized investment of expertise and resources to tackle and anticipate impacts on a community-to-community basis, and continued and improved information dissemination and community engagement on climate change. A multi-level, long-term, strategy like The Way Forward on Climate Change in NL will need to tackle underlying issues of economic inequality and demographic/economic change in

our province as well as biophysical impacts. Policy will also need to account for factors like global decarbonization and other ramifications for exiting provincial industries and sectors, as well as work to reinforce existing moral and informal economies.

To achieve effective outcomes in terms of social justice and climate change, climate policy in NL will have to:

- Navigate regional and local considerations of social justice in multifaceted contexts, which entails the consideration of factors such as livelihood, demographic and social change, while keeping in mind broader issues of economic inequalities and the state of our province's economic future.
- Ensure perspectives on preparedness from all governmental levels are incorporated into setting targets for adaptation and mitigation that are comprehensive enough to meet resulting criteria for preparedness.
- Set action items with measurable and time-bound outcomes that can effectively reach targets for adaptation and mitigation.
- Effectively utilize two-way communication tools to gain broad, multi-level, and measurable trust from citizens throughout the province while emphasizing awareness and relevance in local communities and considering their respective capacities.
- Better integrate climate change policy with connected social policies; clarify the role of justice in climate change policy and how communities and individuals can contribute to the incorporation of justice considerations in policy development and implementation.
- Reinforce social cohesion and welfare through related resources, while working to better understand and enhance, where possible, the impact of informal networks and alternative/moral economies in communities.

This research has aimed to better understand the provincial and local specifics of a worldwide problem. Globally, examples of climate change's social justice impacts range from increased risk of death/illness for vulnerable urban demographics, to the impact of riverine flooding in developing countries (Kasperson & Kasperson, 2001). Increases in extreme weather events and other environmental changes are having widespread effects (Watts et al., 2015). The World Health Organization estimates that every year approximately 150,000 people die worldwide because of climate change impacts including severe weather events, changes in disease vectors and transmission patterns, as well as impacts on food production and resulting malnutrition (WHO, "Climate Change"). Meanwhile in 2015 the Lancet Commission on Health and Climate Change found that climate change impacts could undermine half a century of gains relating to global health (Watts et al., 2015). Climate change is set to continue to be a central challenge in the 21st century and beyond, and that impacts will be most severe for those who are most vulnerable, both globally and locally. This research helps shine a light on these impacts in our province, and its communities. and what we can do to address and prevent negative impacts while building our resilience.

Bibliography

Adger, W. N., Paavola, J., Huq, S., & Mace, M. J. (2006). *Fairness in adaptation to climate change*. MIT Press.

Adger, W. N. (2001). Scales of governance and environmental justice for adaptation and mitigation of climate change. *Journal of International Development* 13, 921-931. https://doi.org/10.1002/jid.833

Adger, W. N., Quinn, T., Lorenzoni, I., & Murphy, C. (2017). The social contract for climate risks. *Institutional Capacity for Climate Change Response*, 76-89. https://doi.org/10.9774/GLEAF.9781315651354_7

Agyeman, J. Schlosberg, D., Craven, L., & Matthews, C. (2016). Trends and directions in environmental justice: From inequity to everyday life, community, and just sustainabilities. *Annual Review of Environment and Resources*, 41, 321-340. https://doi.org/10.1146/annurev-environ-110615-090052

Amec Foster Wheeler. (2016). Climate Change Adaptation Tools and Resources Stakeholder Engagement Report. Retrieved from: http://www.exec.gov.nl.ca/exec/occ/publications/Stakeholder_Engage_F_Rpt.pdf on September 9, 2018.

Amundsen, H., Berglund, F., and Westskog, H. (2010). Overcoming Barriers to Climate Change Adaptation—A Question of Multilevel Governance? *Environment and Planning C: Government and Policy*, 28, 276-289. https://doi.org/10.1068/c0941

Austin, S. E., Ford, J. D., Berrang-Ford, L., Biesbroek, R., Tosune, J., & Rossa, N. A. (2018). Intergovernmental relations for public health adaptation to climate change in the federalist states of Canada and Germany. *Global Environmental Change*, 52, 226-237. https://doi.org/10.1016/j.gloenvcha.2018.07.010

Badie, B. et. al. ed. Contributers: Gerring, J. (2011). Case Studies. *International Encyclopedia of Political Science*, 194-196.

Beckley, T. M., Martz, D., Nadeau, S., Wall, E., & Reimer, B. (2008). Multiple Capacities, Multiple Outcomes: Delving Deeper into the Meaning of Community Capacity. *Journal of Rural and Community Development* 3/3, 56–75.

Bell, T., Jacobs, J. D., Munier, A., Leblanc, P., and Trant, A. (2008). Climate Change and Renewable Resources in Labrador: Looking toward 2050. *Proceedings and Report of a Conference held in North West River, Labrador, 11-13 March. St. John's: Labrador Highlands Research Group, Memorial University of Newfoundland*, 1-95.

Bernstein, A. R. (2011). Climate Justice. In Deen K. Chatterjee (Ed.), *Encyclopedia of*

Global Justice (n.pag). New York: Springer.

Cambridge Dictionary. (n.d.). Disenfranchised. Retrieved from: https://dictionary.cambridge.org/dictionary/english/disenfranchised on January 14, 2020.

Cardin, M., and McMullan, K. (2015). Canadian PR for The Real World. Pearson.

Catto, N. (2010). A Review of Academic Literature Related to Climate Change Impacts and Adaptation in Newfoundland and Labrador. *Department of Geography, Memorial University*, i-73.

CBC. (December 08, 2014). Left behind by the boom: Income inequality, by the numbers. Retrieved from: https://www.cbc.ca/news/canada/newfoundland-labrador/left-behind-by-the-boom-income-inequality-by-the-numbers-1.2861727 on October 28, 2018.

CBC. (November 26, 2017). Newest data shows poverty on the rise in N.L., but critics say it's worse than indicated. Retrieved: https://www.cbc.ca/news/canada/newfoundland-labrador/poverty-data-stats-gathering-place-1.4419800 on October 25, 2018.

CBC. (October 7, 2017). N.L.'s aging population, demographics a looming financial problem that needs action, says Ottawa. Retrieved from: https://www.cbc.ca/news/canada/newfoundland-labrador/aging-population-leads-to-financial-trouble-1.4345078 on September 23, 2018.

CBC. (March 1 2019). N.L. unveils 'ambitious' climate change action plan, commits to protecting oil and gas. Retrieved from: https://www.cbc.ca/news/canada/newfoundland-labrador/nl-unveils-climate-change-action-plan-1.5039009 on March 22, 2019.

CBC. (January 15, 2018). Western Newfoundland still cleaning up from flood, request for federal disaster money likely. Retrieved from: https://www.cbc.ca/news/canada/newfoundland-labrador/western-newfoundland-flood-cleanup-1.4487376 on October 30, 2018.

Climate Change Action Plan (CCAP). (2011). Government of Newfoundland and Labrador, 1-75.

Community Accounts: Glenburnie-Birchy Head-Shoal Brook Well-Being and Indicators. Retrieved from: http://nl.communityaccounts.ca/indicators.asp?_=vb7En4WVgaauzXdjVg__ on March 26 2015.

Community Foundation of Newfoundland & Labrador and Memorial University's Harris Centre (Vital Signs). Vital Signs 2016. Retrieved from:

https://www.mun.ca/harriscentre/vitalsigns/NLs_Vital_Signs_2016.pdf on October 30, 2018.

Community Sector Council. (n.d.). The Community Sector in Newfoundland and Labrador. Retrieved from: http://communitysector.nl.ca/resource-centre/about-community-sector/community-sector-newfoundland-and-labrador on February 20, 2019.

Conference Board of Canada (Income). (2017). Income Per Capita. Retrieved from: https://www.conferenceboard.ca/hcp/provincial/economy/income-per-capita.aspx?AspxAutoDetectCookieSupport=1 on February 20, 2019.

Conference Board of Canada (Poverty). (2017). Poverty. Retrieved from: https://www.conferenceboard.ca/hcp/provincial/society/poverty.aspx on February 20, 2019.

Cunsolo Willox, A., Harper, S. L., Ford, J. D., Edge, V. L., Landman, K., Houle, K., Blake, S., & Wolfrey, C. (2013a). Climate change and mental health: an exploratory case study from Rigolet, Nunatsiavut, Canada. *Climatic Change, Springer,* 121(2), 255-270. https://doi.org/10.1007/s10584-013-0875-4

Cunsolo Willox, A. & Ellis, N. R. (2018). Ecological grief as a mental health response to climate change-related loss. *Nature Climate Change,* 8 (April), 275-281. https://doi.org/10.1038/s41558-018-0092-2

Cunsolo Willox, Stephenson, and Allen. (2015). Examining relationships between climate change and mental health in the Circumpolar North. *Regional Environmental Change* 15, 1, 169–182. https://doi.org/10.1007/s10113-014-0630-z

Cunsolo Willox, A., Harper, S. L., Ford, J.D., Landman, K., & Houle, K., Edge, V. L., the Rigolet Inuit Community Government. (2012). "From this place and of this place:" Climate change, sense of place, and health in Nunatsiavut, Canada. *Social Science & Medicine*, 75(3), 538-547. DOI: 10.1016/j.socscimed.2012.03.043

Cunsolo Willox, A., Harper, S. L., Edgeb, V. L., Landmana, K., Houlec, K., Ford, J. D., & the Rigolet Inuit Community Government. (2013b). The land enriches the soul: On climatic and environmental change, affect, and emotional health and well-being in Rigolet, Nunatsiavut, Canada. *Emotion, Space and Society,* 6, 14-24. https://doi.org/10.1016/j.emospa.2011.08.005

Curtis, J. C. C. (2015). The Glenburnie-Birchy Head-Shoal Brook Climate Change Adaptation Plan: Impacts and Implementation. *ENVP 6520 (Dr. Kelly Vodden) Term Assignment Part 2*, 1-20.

Department of Transportation and Works 2014-2017 Strategic Plan. (2014). Government of

Newfoundland and Labrador Department of Transportation and Works, 1-18.

Divest MUN. (2015). Decarbonization and the Newfoundland and Labrador Economy. Retrieved from: https://issuu.com/divestmun/docs/decarbonization_and_the_newfoundlan on October 27, 2018.

Doorley, J. and Garcia, H. F. (2015). Reputation Management: The Key to Successful Public Relations and Corporate Communication. 3rd Edition. New York: Routledge.

Durkalec, A., Furgal, C., Skinner, M. W., & Sheldon, T. (2015). Climate change influences on environment as a determinant of Indigenous health: Relationships to place, sea ice, and health in an Inuit community. *Social Science & Medicine* 136-137, 17-26. DOI: 10.1016/j.socscimed.2015.04.026

Fawcett, D., Pearce, T., Ford, J. D., & Archer, L. (2017). Operationalizing longitudinal approaches to climate change vulnerability assessment. *Global Environmental Change*, 45, 79-88. https://doi.org/10.1016/j.gloenvcha.2017.05.002

Federation of Canadian Municipalities (FCM). (2018). Municipalities for Climate Innovation Program. Retrieved from: https://fcm.ca/en/programs/municipalities-climate-innovation-program on February 20, 2019.

Filiberto, D., Wethington, E., Pillemer, K., Wells, N. M., Wysocki, M., & Parise, J. T. (2009-2010). Older People and Climate Change: Vulnerability and Health Effects. *Generations*, 4, 19-25.

Finnis, J. (March 22, 2013) "Projected Impacts of Climate Change for the Province of Newfoundland & Labrador." Submitted to the Office of Climate Change, Energy Efficiency & Emissions Trading, 1-134.

Fisheries and Oceans Canada. (November 2014). Short-term Stock Prospects for Cod, Crab and Shrimp in the Newfoundland and Labrador Region. *Fisheries and Oceans Canada*, 1-18.

Fisher, S. (2015). The emerging geographies of climate justice. *The Geographic Journal*, 181 (1), 73-82.

Forse, M., Langlois, S., & Parodi, M. (2016). Contrasting sentiments of social justice in France and Quebec. *The Tocqueville Review/La revue Tocqueville*, 37 (2), 13-34.

Furgal, C. & Seguin, J. (2006). Climate Change, Health, and Vulnerability in Canadian Northern Aboriginal Communities. *Environ Health Perspectives*, 114(12), 1964–1970. doi: 10.1289/ehp.8433

Grenfell and Gros Morne Cooperating Association (Grenfell and GMCA). 'Coastal communities

in a changing climate: impacts, challenges, and solutions for Gros Morne." Retrieved from: https://grosmorneclimatesymposium.com/ on October 31, 2018.

Goldhar, C., Bell, T., and Wolf, J. (2014). Vulnerability to Freshwater Changes in the Inuit Settlement Region of Nunatsiavut, Labrador: A Case Study from Rigolet. *ARCTIC,* 67(1), 71-83. http://dx.doi.org/10.14430/arctic4365

Government of Canada (Emissions by Province). (2018). Greenhouse gas sources and sinks: executive summary 2018. Retrieved from: https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/sources-sinks-executive-summary-2018.html?fbclid=IwAR317YNN0rP_6DkdZBFt-9kdGkXfx9w0Ii-vxp-mtiWMrbpZt3B92Xtdc4M#es-5 on October 28, 2018.

Government of Canada (Prov. Tax Rates). (2019). Provincial and territorial tax rates for 2019. Retrieved from: https://www.canada.ca/en/revenue-agency/services/tax/individuals/frequently-asked-questions-individuals/canadian-income-tax-rates-individuals-current-previous-years.html#provincial on February 23, 2019.

Government of Canada (Pan Canadian). (2016). Pan-Canadian Framework on Clean Growth and Climate Change. Retrieved from: https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework/climate-change-plan.html on October 28, 2018.

Government of Canada (Sea ice). (2018). Sea ice in Canada. Retrieved from: https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/sea-ice.html on January 14, 2020.

Government of Newfoundland and Labrador (Backgrounder). (n.d.). Backgrounder - Quick Facts – Muskrat Falls Development Generation and Transmission. Retrieved from: https://www.gov.nl.ca/lowerchurchillproject/backgrounder_7.htm on October 28, 2018.

Government of Newfoundland and Labrador (Carbon Pricing Plan). (2018). Made-in-Newfoundland and Labrador Carbon Pricing Plan. Retrieved from: http://www.exec.gov.nl.ca/exec/occ/publications/NL_Carbon_Pricing_Plan.pdf on October 28, 2018.

Government of Newfoundland and Labrador (Carbon Pricing Release). (2018). Provincial Government Releases Federally-Approved Made-in-Newfoundland and Labrador Approach to Carbon Pricing. Retrieved from: https://www.releases.gov.nl.ca/releases/2018/mae/1023n01.aspx on October 28, 2018.

Government of Newfoundland and Labrador (Climate Change Consultations). (2016). Climate Change Consultations. Retrieved from: http://www.exec.gov.nl.ca/exec/occ/consultations.html

on September 12, 2018.

Government of Newfoundland and Labrador (Final Progress Report). (2017). Final Report on the 2011 Climate Change and Energy Efficiency Action Plan. Retrieved from: http://www.exec.gov.nl.ca/exec/occ/pdf/final_progress_report_2011.pdf on September 14, 2018.

Government of Newfoundland and Labrador (Fisheries). (n.d.). Fisheries and Land Resources. Retrieved from: http://www.fishaq.gov.nl.ca/ on September 12, 2018.

Government of Newfoundland and Labrador (Introduction, Charting Our Course). (2011). Introduction: Charting Our Course. Retrieved from: http://www.exec.gov.nl.ca/exec/occ/publications/cc_chapter_1.pdf on September 12, 2018.

Government of Newfoundland and Labrador (Investing). (October 16, 2015). Investing in a Shared Prosperity. Retrieved from: https://www.releases.gov.nl.ca/releases/2015/exec/1016n01.aspx on September 10, 2018.

Government of Newfoundland and Labrador (Population by Age). (n.d.). Population by Age Groups and Sex Newfoundland and Labrador 1971-2017. Retrieved from: http://www.stats.gov.nl.ca/statistics/population/PDF/PopAgeSex_BS.PDF on September 10, 2018.

Government of Newfoundland and Labrador (Submissions by Organizations). (2011). Submissions by Organizations. Retrieved from: http://www.exec.gov.nl.ca/exec/occ/pdf/submissions_by_organizations.pdf on September 12, 2018.

Government of Newfoundland and Labrador (Secretariat Regions). (2016). Rural Secretariat Regions. Retrieved from: https://www.stats.gov.nl.ca/Maps/PDFs/RS_NL.pdf on November 11, 2018.

Government of Newfoundland and Labrador (The Way Forward). (n.d.). The Way Forward: A Vision for Sustainability and Growth in Newfoundland and Labrador. Retrieved from: https://www.gov.nl.ca/pdf/the_way_forward.pdf on September 12, 2018.

Government of Newfoundland and Labrador (The Way Forward). (2019). The Way Forward on Climate Change in Newfoundland and Labrador. Retrieved from: https://www.exec.gov.nl.ca/exec/occ/publications/The_Way_Forward_Climate_Change.pdf on March 23, 2019.

Government of Newfoundland and Labrador (What We Heard). (n.d.). What We Heard: A Summary of Input from Climate Change Consultations. Retrieved from: http://www.exec.gov.nl.ca/exec/occ/pdf/cc_what_we_heard_final.pdf on September 13, 2018.

Hahn, M. B., Riederer, A. M., & Foster, S.O. (2009). The Livelihood Vulnerability Index: A pragmatic approach to assessing risks from climate variability and change – A case study in Mozambique. *Global Environmental Change*, 19 (1), 74-88. https://doi.org/10.1016/j.gloenvcha.2008.11.002

Harper, S. L., Edge, V. L., Ford, J., Cunsolo Willox, A., Wood, M., IHACC Research Team, RICG, & McEwen, S. A. (2015). Climate-sensitive health priorities in Nunatsiavut, Canada. *BMC Public Health*, 15:605, 1-18. https://doi.org/10.1186/s12889-015-1874-3

Innu Nation. (n.d.). Welcome to Innu.ca! Retrieved from: http://www.innu.ca/ on January 15, 2020.

INSIGHT-BLOG. (November 2, 2018). Social Responsibility and Small Business in Newfoundland and Labrador (Podcast). Retrieved from: https://insightblog.ca/2018/11/02/social-responsibility-and-small-business/ on November 7, 2018.

Irvine et. al., Hallström et. al. ed. (2016). Developing Assessment and Adaptation Capacity in *Sustainability and Collaboration in Rural Canada*. The University of Alberta Press, 117-143.

Kasperson, R.E. & Kasperson, J. X. (2001). Climate Change, Vulnerability, and Social Justice. *Stockholm Environment Institute*, i-19.

Kim, H., Marcouiller, D. W., & Woosnam, K. M. (2018). Rescaling social dynamics in climate change: The implications of cumulative exposure, climate justice, and community resilience. *Geoforum*, 96, 129-140. https://doi.org/10.1016/j.geoforum.2018.08.006

Locke, W. & Lynch, S. (2003). What Does Newfoundland and Labrador Need to Know About the Knowledge-Based Economy to Strengthen Its Place in Canada? Retrieved from: https://www.gov.nl.ca/publicat/royalcomm/research/Locke.pdf on September 24, 2018.

Lowitt, K. (2013). Examining Fisheries Contributions to Community Food Security: Findings from a household seafood survey. *Journal of Hunger and Environmental Nutrition*, 8, 221-241. https://doi.org/10.1080/19320248.2013.786668

Manuel, P. & Herring, S. (2010). Climate Change Adaptation Plan for Glenburnie-Birchy Head-Shoal Brook, Newfoundland and Labrador. *Canadian Institute of Planners*, vol.'s 1 and 2, 1-204 and 1-46.

McGlade, C. & Ekins, P. (2015). The geographical distribution of fossil fuels

unused when limiting global warming to 2 degrees C. *Nature* 517, 187–190. https://doi.org/10.1038/nature14016

McLeman, R. & Ford, J. D. (2013). How Demographic Change and Migration Influence Community-Level Adaptation to Climate Change: Examples from Rural Eastern Ontario and Nunavut, Canada (Chapter 3). *Disentangling Migration and Climate Change*, 55-79.

Memorial University of Newfoundland. (2020). Primer on Indigenous Peoples and protocols in Newfoundland and Labrador. Retrieved from: https://www.mun.ca/research/Indigenous/primer.php on January 15, 2020.

Miawpukek Mi'kamawey Mawi'omi. (2020). Retrieved from: http://www.mfngov.ca/ on January 15, 2020.

Middle Brook Cottages & Chalets. Middle Brook Cottages & Chalets (website). Retrieved from: http://middlebrookcottages.com/ on October 11, 2015.

National Pro Bono Resource Centre (NPBRC). (2011). What is Social Justice? Retrieved from: https://probonocentre.org.au/wp-content/uploads/2015/09/Occ_1_What-is-Social-Justice_FINAL.pdf on December 29, 2018.

Neil, K. C. (n.d.). A NL Labour Market Investigation. Retrieved from: https://www.mun.ca/care/commentaries/Gender_Wage_Gap.pdf on September 10, 2018.

Newfoundland and Labrador Federation of Labour (NLFL). (May 2009). Good Jobs, Green Jobs: Exploring Opportunities for Newfoundland and Labrador. *Newfoundland and Labrador Federation of Labour*, 1-21.

NL House of Assembly. Recording of the 2018-02-28, 2:02 PM - 4:54 PM, sitting. Retrieved from: http://www.assembly.nl.ca/HouseBusiness/Webcast/archive.aspx on September 1, 2018.

NunatuKavut Community Council (NCC). (2020). WHO WE ARE. Retrieved from: https://nunatukavut.ca/ on January 15, 2020.

Oulahen, G., Klein, Y., Mortsch, L., O'Connell, E., & Harford, D. (2018). Barriers and Drivers of Planning for Climate Change Adaptation across Three Levels of Government in Canada. *Planning Theory & Practice*, 19 (3), 405-421. https://doi.org/10.1080/14649357.2018.1481993

OUPblog. (2017). What is social justice? Retrieved from: https://blog.oup.com/2017/03/what-is-social-justice/ on December 29, 2018.

Olusanya, H. & van Zyll de Jong, M. (2018). Assessing the vulnerability of freshwater fishes to climate change in Newfoundland and Labrador. *PLoS One* 13(12), 1 13.

https://doi.org/10.1371/journal.pone.0208182

Oxford Bibliographies. (2018). Procedural Justice. Retrieved from: http://www.oxfordbibliographies.com/view/document/obo-9780195396607/obo-9780195396607-0241.xml on December 29, 2018.

Paavola, J. & Adger, W. N. (2002). Justice and Adaptation to Climate Change. *Tyndall Centre Working Paper* No. 23, 1-22.

Paddon, T. (June 2017). Report to the House of Assembly on Performance Audits of Departments and Crown Agencies Newfoundland and Labrador: Office of the Auditor General

PolicyNL. (n.d.). The Policy Cycle. Retrieved from: https://www.policynl.ca/policydevelopment/policycycle.html on December 31, 2018.

Pearce, T., Ford, J., Cunsolo Willox, A., & Smit, B. (2015). Inuit Traditional Ecological Knowledge (TEK), Subsistence Hunting and Adaptation to Climate Change in the Canadian Arctic. *Arctic* 68(2), 233-245. https://doi.org/10.14430/arctic4475

Power, N. G., Norman, M. E., & Dupré, K. (2014). "The fishery went away": The impacts of long-term fishery closures on young people's experience and perception of fisheries employment in Newfoundland coastal communities. *Ecology and Society* 19(3): 6. http://dx.doi.org/10.5751/ES-06693-190306

Public Health Agency of Canada (PHAC). Glossary of Terms. n.d. Retrieved from: http://www.phac-aspc.gc.ca/php-psp/ccph-cesp/glos-eng.php#s

Qalipu First Nation. (2016). Qalipu First Nation. Retrieved from: https://qalipu.ca/ on January 15, 2020.

Ren, J., Goodsite, M. E., & Sovacool, B. K. (2015). Climate Justice More Vital Than Democracy (Correspondence). *Nature* Vol. 526, 323.

Riedlsperger, R. (2014). Vulnerability to changes in winter trails and travelling: a case study from Nunatsiavut. *Department of Geography/Faculty of Arts Memorial University of Newfoundland* (thesis), 51-60.

Ritchie, J. and Lewis, J. (2003). *Qualitative Research Practice: A Guide for Social Science Students and Researchers.* London: SAGE Publications.

Rosenbaum, W. A. (2011). Environmental politics and Policy. 8th Edition. Washington DC: CQ Press.

Rowley, J. (2002). Using Case Studies in Research. *Management Research News* 25(1),

16-27.

SafetyNet and COD-NL. (2016). Disability Support Services in Newfoundland and Labrador and Canada: Impacts on Labour Market Participation for Individuals with Disabilities. Retrieved from: https://www.crwdp.ca/sites/default/files/Research%20and%20Publications/disability_support_services_-_final_report.pdf on February 24, 2019.

Simms, A. and Ward, J. (2017). Regional Population Projections For Newfoundland and Labrador 2016-2036. Retrieved from: https://www.mun.ca/harriscentre/PopulationProject/Population_Projections_for_NL.pdf on October 28, 2018.

Skinner, S. and Wiseman, R. (2011). Letter from the Ministers. Retrieved from: http://www.exec.gov.nl.ca/exec/occ/publications/cc_letters.pdf on September 10, 2018.

Spooner, I. S., Batterson, M., Catto, N., & Liverman, D. (2012). Slope failure hazard in Canada's Atlantic Provinces: a review. *Atlantic Geology* 49, 1- 14. doi:10.4138/atlgeol.2013.001

Statistics Canada (Distribution of Total Income). (2016). Distribution of total income by census family type and age of older partner, parent or individual. Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1110001201&pickMembers%5B0%5D=1.1 on February 20, 2019.

Statistics Canada (Employment by industry). (n.d.). Employment by industry, monthly, seasonally adjusted and unadjusted, and trend-cycle, last 5 months (x 1,000). Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410035501&pickMembers%5B0%5D=1.2&pickMembers%5B1%5D=3.1&pickMembers%5B2%5D=4.1 on February 20, 2019.

Statistics Canada (Employment insurance claims). (2018). Employment insurance claims received by province and territory, monthly, seasonally adjusted. Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410000501 on February 18, 2019.

Statistics Canada (Employment Rates). (2007). Employment rates, by province. Retrieved from: https://www150.statcan.gc.ca/n1/pub/71-222-x/2008001/sectionc/c-emp-eng.htm on February 20, 2019.

Statistics Canada (Highest level of educational attainment). (2016). Highest level of educational attainment (general) by selected age groups 25 to 64, both sexes, % distribution 2016, Canada, provinces and territories, 2016 Census – 25% Sample data. Retrieved from: https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/hlt-fst/edu-sco/Table.cfm?Lang=E&T=11&Geo=00&View=2&Age=2&SO=14D on February 21, 2019.

Statistics Canada (Interprovincial In-migrants). (2017). Interprovincial In-migrants by age group and sex. Retrieved from: https://www.stats.gov.nl.ca/statistics/population/PDF/InMig_AgeSex_BS.PDF on February 20, 2019.

Statistics Canada (Sense of Belonging). (n.d.). Sense of belonging to Canada, the province of residence and the local community. Retrieved from: https://www150.statcan.gc.ca/n1/pub/89-652-x/89-652-x2015004-eng.htm on February 21, 2019.

Statistics Canada (Unemployment Rate). (2018). Unemployment Rate, Monthly, Canada and Provinces, Unadjusted. Retrieved from: https://www.stats.gov.nl.ca/Statistics/Labour/PDF/UnempRate_Monthly.pdf on February 22, 2019.

Statistics Canada (Use of Tech). (n.d.). Use of technology by age group and sex, Canada, provinces and regions. Retrieved from: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2210011001&pickMembers%5B0%5D=1.7&pickMembers%5B1%5D=2.1&pickMembers%5B2%5D=3.1 on February 21, 2019.

Stehlik, D. (2004). From 'Snowball' to 'Rhizome': A Rethinking of Method. *Rural Society* 14, 1, 36-45. https://doi.org/10.5172/rsj.351.14.1.36

Summers. (2012). A regional approach to climate change adaptation planning for Bonne Bay, NL. *Submitted to the School of Planning, Dalhousie University*, 1-111.

The Independent.ca. (April 14, 2016). Government "definitely does have a choice" in NL Budget 2016: economist. Retrieved from: http://theindependent.ca/2016/04/14/government-definitely-does-have-a-choice-in-nl-budget-2016-economist/ on October 28, 2018.

The Independent.ca. (March 5, 2019). Newfoundland and Labrador's "Climate Action Plan" is All Bark and No Bite. Retrieved from: http://theindependent.ca/2019/03/05/newfoundland-and-labradors-climate-action-plan-is-all-bark-and-no-bite/ on March 23, 2019.

The Packet. (March 29, 2018). Brain drain? High school students talk fiscal future of Newfoundland and Labrador. Retrieved from: https://www.thepacket.ca/news/brain-drain-high-school-students-talk-fiscal-future-of-newfoundland-and-labrador-197741/ September 30, 2018.

The Telegram. (March 1, 2019). Environment minister Graham Letto launches climate change action plan in Corner Brook. Retrieved from: https://www.thetelegram.com/news/local/environment-minister-graham-letto-launches-climate-change-action-plan-in-corner-brook-288763/ on March 22, 2019.

The Telegram. (February 26, 2018). Letter: Doubling oil production a big step backward. Retrieved from: https://www.thetelegram.com/opinion/letter-doubling-oil-production-a-big-step-backward-188456/ on October 27, 2018.

The Western Star. (September 30, 2017). Fracking awareness group sends message to government. Retrieved from: https://www.thewesternstar.com/news/local/fracking-awareness-group-sends-message-to-government-118618/ on October 26, 2018.

The Western Star. (July 27, 2018). Mayor of Trout River displeased with processing and removal of Tablelands rock. Retrieved from: https://www.thewesternstar.com/news/local/mayor-of-trout-river-displeased-with-processing-and-removal-of-tablelands-rock-229593/ on November 9, 2018.

The Western Star. (September 3, 2018). Newfoundland and Labrador carbon pricing plan on thin ice. Retrieved from: https://www.thewesternstar.com/news/local/newfoundland-and-labrador-carbon-pricing-plan-on-thin-ice-238416/ on September 21, 2018

The Western Star. (July 4, 2018). Trout River residents come together to revitalize trail network, organize festival. Retrieved from: https://www.thewesternstar.com/living/trout-river-residents-come-together-to-revitalize-trail-network-organize-festival-223540/ on November 9, 2018.

Thomas, D. S. G., & Twyman, C. (2005). Equity and justice in climate change adaptation amongst natural-resource-dependent societies. *Global Environmental Change*, 15 (2), 115-124. https://doi.org/10.1016/j.gloenvcha.2004.10.001

Town of GBS. Town of Glenburnie-Birchy Head-Shoal Brook (Facebook page). Retrieved from: https://www.facebook.com/Town-of-Glenburnie-Birchy-Head-Shoal-Brook-243271702390840/?ref=page_internal on October 13, 2015.

Turn Back the Tide. Impacts of Climate Change. (n.d.). Retrieved from http://www.turnbackthetide.ca/understanding/impacts-of-climate-change.shtml#.VqgGhk10yUk on March 27 2015.

United Nations. (2006). Social justice in an open world: The role of the United Nations. New York, NY: United Nations Publications.

UN WomenWatch. (2009). Women, Gender Equality and Climate Change. Retrieved from: http://www.un.org/womenwatch/feature/climate_change/downloads/Women_and_Climate_Change_Factsheet.pdf on November 10, 2018.

VOCM. (March 5, 2019). Climate Watch NL Calls for More Measurable Goals For Action Plan. Retrieved from: http://vocm.com/news/climate-watch-nl-calls-for-more-measurable-goals-for-action-plan/ on March 23, 2019.

Vodden, Catto, Irvine, Parewick, & Renaud. (2012). 7 Steps to Assess Climate Change Vulnerability in Your Community.Memorial University, Department of Geography, 1-278: https://www.turnbackthetide.ca/pdf/7_Steps_Tool.pdf

Watts, N, Adger, W. N., & Agnolucci, P., et al. (2015). Health and Climate Change: Policy Responses to Protect Public Health. *The Lancet,* 386(10006), 1861–1914. https://doi.org/10.1016/S0140-6736(15)60854-6

Way, R. (2017). Field and modelling investigations of permafrost conditions in Labrador, northeast Canada. Retrieved from: file:///Users/YFS/Downloads/Way_Robert_2017_thesis.pdf on January 15, 2020.

Wood, Bt. T., Stringer, L. C., Dougill, A. J., & Quinn, C. H. (2018). Socially Just Triple-Wins? A Framework for Evaluating the Social Justice Implications of Climate Compatible Development. *Sustainability,* 10(1), 211-231.

World Health Organization (WHO). (n.d.). Climate Change. Retrieved from http://www.who.int/heli/risks/climate/climatechange/en/ on March 27 2015.

Suggested Reading:

Atlantic Climate Adaptation Solutions Association (ACASA). Decision Tree Resources. Retrieved from: https://atlanticadaptation.ca/islandora/object/islandora:224 on October 31, 2018.

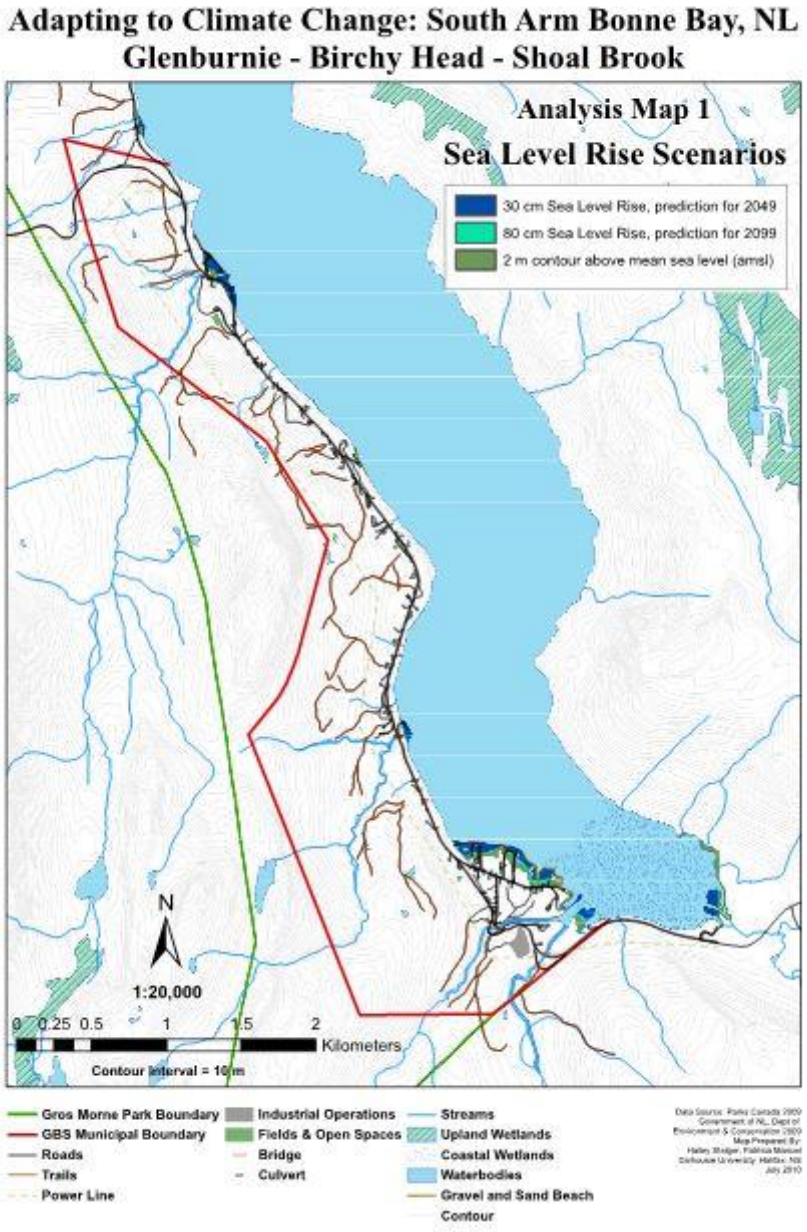
Coastal and Ocean Management Strategy and Framework. (2011). Department of Fisheries and Aquaculture, 1-24.

Government of Newfoundland and Labrador. (2006). Poverty Reduction Strategy. Government of Newfoundland and Labrador, 1-41.

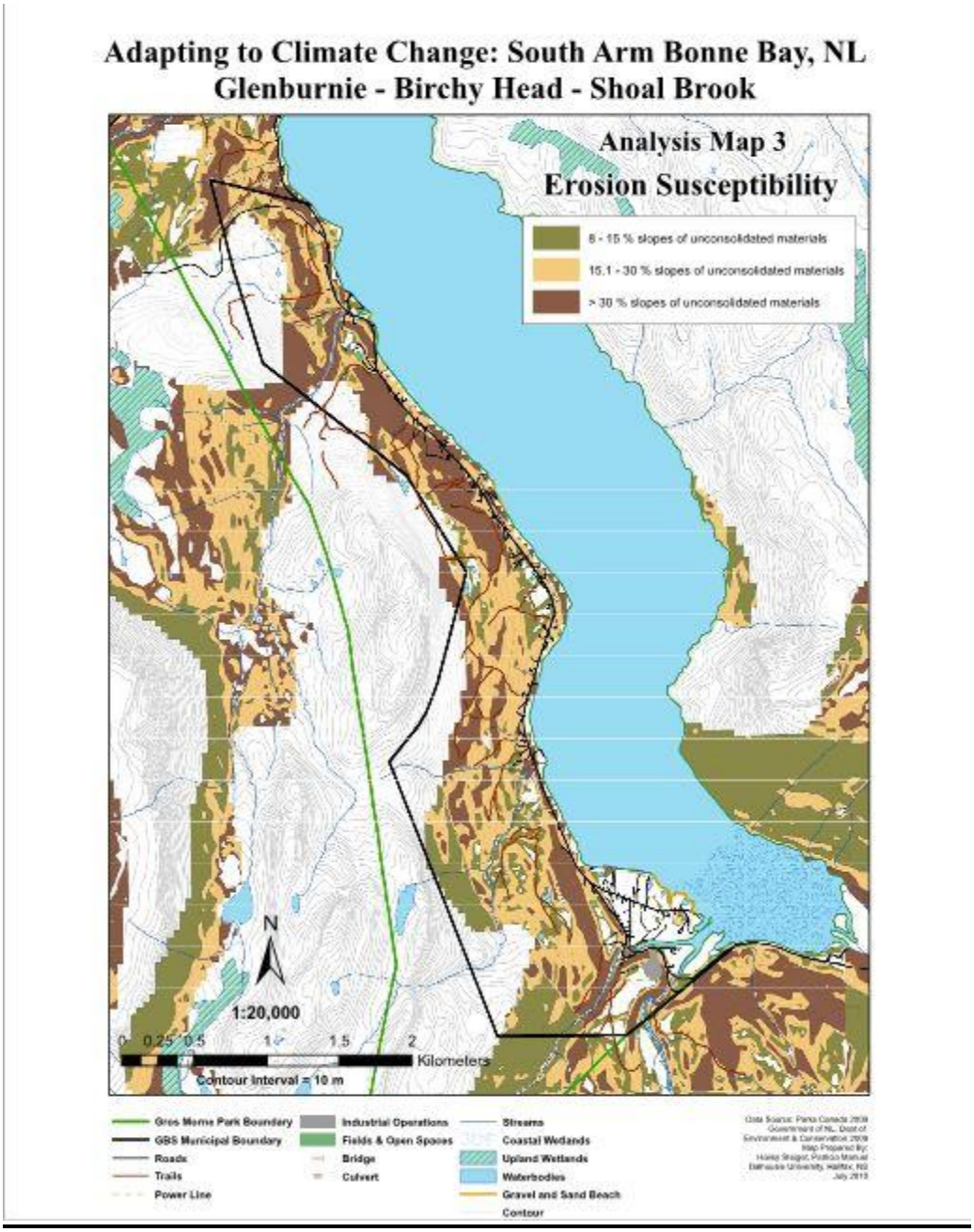
Hudson, C. A., & Close, D. (2011). From Neo-Liberal Populism to Inclusive Liberalism: The Politics of Newfoundland and Labrador's 2006 Poverty Reduction Strategy. *Canadian Review of Social Policy,* 65/66, 76-91.

Stake, R. (2010). *Qualitative Research.* Guilford Press.

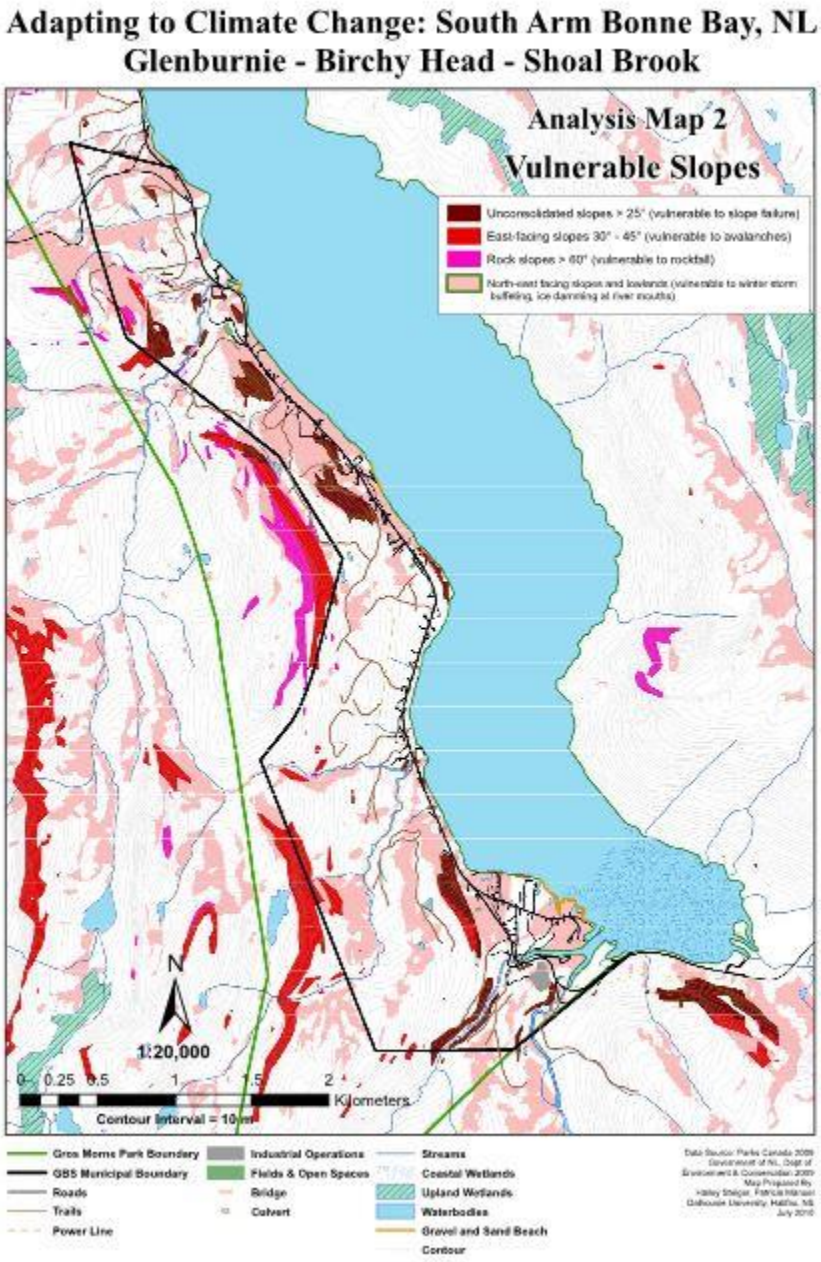
Appendix A: Maps from GBS Climate Change Adaptation Plan



Source: Manuel and Herring vol. 2, 2010, 33-35

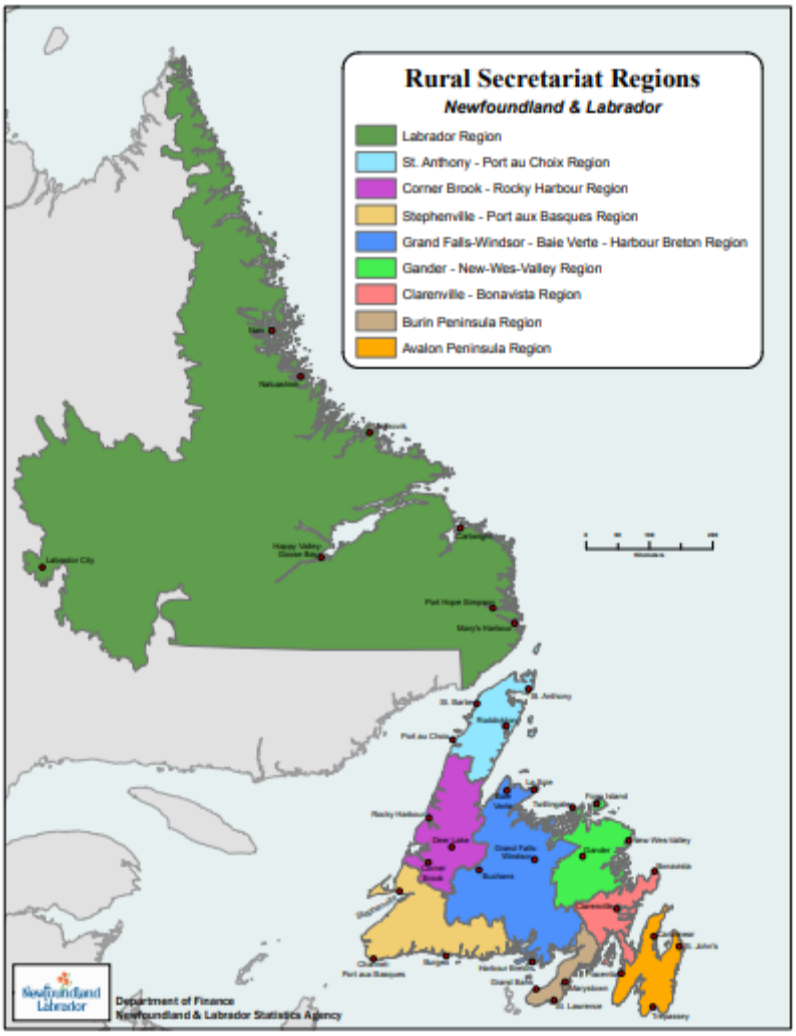


Source: Manuel and Herring vol. 2, 2010, 33-35



Source: Manuel and Herring vol. 2, 2010, 33-35

Appendix B: NL Rural Secretariat Regions



Source: Secretariat Regions, 2016, n.pag.

Appendix C: Interview Questions

Interview questions – Case Study

Social Justice:

What do you feel are GBS's social assets?

What do you see as the main social concerns in GBS?

What factors would you say affect livelihood options in GBS?

How equally do you think the impacts of social or economic changes (positive or negative) in GBS are distributed?

What factors have affected this distribution?

Climate Impacts:

What do you see as the main environmental concerns affecting GBS if any?

What sort of impact do you see climate change as having in the future of GBS?

In terms of prior environmental or climate impacts to GBS, how equally do you feel resulting burdens were distributed?

What factors have affected this distribution?

How equally do you think climate change impacts (positive or negative) in GBS might be distributed in the future?

Institutional/Policy Response:

How prepared do you see GBS as being in terms of climate change?

- Potential follow up questions:
    - Are you familiar with the GBS Climate Change Adaptation Plan?
    - To what extent do you feel the GBS Climate Change Adaptation Plan has been implemented?

- How prepared do you see NL as being in terms of capacity to adapt to climate change as a whole?

How accessible are municipal and provincial resources relating climate change?

What factors do you feel might affect the accessibility of municipal and provincial climate change resources?

Do you feel current climate change policy in NL incorporates social justice considerations relating to climate change's impacts effectively?

Do you feel you have been included in decision making around climate change policy?

Do you feel there is anything that could be done to improve upon climate change policy in your community and NL?

General response question:

Do you have anything you would like to state relating to any potential social justice impacts of climate change in your community and NL?

Interview questions – Provincial Level

Social Justice:

What do you feel are NL's social assets?

What do you see as the main social concerns in NL?

What factors would you say affect livelihood options in NL?

How equally do you think the impacts of social or economic changes in NL are distributed?

What factors have affected this distribution?

Climate Impacts:

What do you see as the main environmental concerns in NL?

What sort of impact do you see climate change as having in the future of NL?

In terms of prior environmental or climate impacts to NL, how equally do you feel resulting burdens were distributed?

What factors have affected this distribution?

How equally do you think climate change impacts (positive or negative) in NL might be distributed in the future?

Institutional/Policy Response:

How prepared do you see NL as being in terms of capacity to adapt to climate change?

- Potential follow up questions:
    - To what extent do you feel the 2011 NL Climate Change Adaptation Plan has been implemented?
    - How does the new Climate Change Strategy for NL under development build upon prior climate change policy?
    - How prepared do you see municipalities in NL as being in terms of capacity to adapt to climate change?

How accessible do you think municipal and provincial resources relating climate change are to communities or groups that might be affected?

What factors do you feel might affect the accessibility of municipal and provincial climate change resources?

Do you feel current climate change policy in NL incorporates social justice considerations relating to climate change's impacts effectively?

Do you feel you have been included in decision making around climate change policy?

Do you feel there is anything that could be done to improve upon climate change policy in NL?

General response question:

Do you have anything you would like to state relating to any potential social justice impacts of climate change in NL?