Adaptation for whom? Assessing Environmental Equity within British Columbia's Climate Change Adaptation Policies

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

Climate change is expected to disproportionately affect social groups and geographical regions made vulnerable by persistent social inequalities understood in terms of race, Indigenous status, age, gender, and disability (Anguelovski et al., 2016; BCCDC, 2020; Leonard, 2021; Solecki & Friedman, 2021; Vadeboncoeur, 2016). Globally, research on climate justice has shed light on how adaptation policies disproportionately impact vulnerable communities. In Canada, research has begun to explore adaptation responses to flooding and rising sea levels in New Brunswick (Chouinard et al., 2020), British Columbia (Birchall & Bonnett, 2021; Oulahen et al., 2918) and Quebec (Friesinger & Bernatchez, 2010; Lapointe et al., 2020). However, an explicit analysis of Canadian adaptation policies in terms of environmental justice, including its distributional, procedural, corrective, and social justice dimensions (Kuehn, 2020) is yet to be conducted. Recent climate-driven crises in British Columbia such as wildfires, flash flooding, and collapse of salmon fisheries bring urgency to developing climate adaptation policies and for considering the inequities of climate change. Coastal communities in British Columbia face an unavoidable challenge as sea levels continue rise. With 80% of British Columbia's population residing within 5km of the coast and near sea level (BCCDC, 2020, pg.71), efficient and holistic adaptation protocols are needed. Through a discursive policy analysis (DPA) and semi-structured interviews (n=15) with key informants, this thesis examined how government climate adaptation strategies and plans for British Columbia's west coast communities conceptualize and address equity concerns. The findings revealed inconsistent and vague perceptions of environmental equity within adaptation strategies and plans; lack of monitoring of initiatives and efforts being made across government; the fragmenting of adaptation efforts from complementary work; and the lack of awareness of roles and responsibilities within and across jurisdictions. Beyond the urgency for vulnerable groups, addressing equity concerns in adaptation strategies and practices could offer co-benefits in improving the efficiency of broader government operations. This study provides a foundation for future research that explores how multi-level government systems can deepen the conceptualization of environmental equity and prioritize addressing equity concerns within adaptation strategies and plans. The integration of such principles is vital to ensure a just and sustainable response to climate change impacts in British Columbia and beyond.

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List of Abbreviations

BC – British Columbia

CCA – Climate Change Adaptation

CR – Critical Realism

DPA – Discursive Policy Analysis

EE – Environmental Equity

EJM – Environmental Justice Movement

Chapter 1: Introduction

1.1 Research problem

Climate adaptation focuses primarily on anticipating, preparing for and responding to the social and ecological aspects of climate impacts. Through government legislation and local plans and strategies, climate adaptation can protect, prepare, and prioritize communities when facing climate change. While climate change is a complex and multi-faceted issue, its impacts can impose inequitable repercussions on those most vulnerable. With climate change disproportionately impacting vulnerable communities, adaptation policies and plans must be flexible and inclusive of the diverse needs of the community. Adhering to the diverse needs of communities will prevent reinforcing social inequities among those who are already most vulnerable. It is crucial to investigate whether these adaptation efforts are "… effectively prioritizing the needs of marginalized and vulnerable populations or whether they merely re-package business-as-usual land use planning approaches" (Anguelovski et al., 2016, pg.333). Mainstream adaptation programs often claim to provide social and environmental benefits called "win-win solutions" but end up obscuring uneven costs and benefits across socioeconomic groups (Anguelovski et al., 2016). This provokes the question of "adaptation for whom, by whom, and how?" (Anguelovski et al., 2016, pg.333). Through government neglect of existing vulnerabilities, lack of institutional capacity, and historical development patterns, climate change risk is unevenly distributed, and disasters are not equal opportunity events (Kuhl et al., 2021). Despite the wide agreement on these uneven distributions of impacts and resources within climate adaptation legislation, equity should be better integrated within the climate adaptation regime to preclude further inequities. My research aims to explore how Canadian governments are conceptualizing and addressing equity concerns within adaptation strategies through a discursive policy analysis and semi-structured interviews.

Environmental equity (EE) has been conceptualized in various ways, depending on the values and priorities researchers and/or government want to highlight. For example, a common conceptualization amongst scholars of environmental equity is the procedural, geographic, social, distributional, and generational equity dimensions (Zimmerman, 1993; Kuehn, 2000). However, distributive and procedural equity have been the most common dimensions (Ikeme, 2003). Distributive equity looking at the allocation of impacts, resources, and support. Whereas

procedural equity points to meaningful engagement and proper representation of equity-denied populations voices and concerns. Despite their popularity in use, these subdivisions are used in very broad manners, which can distort how inequities are understood. Part of the upsurge in EE literature has been the advancements of the environmental justice movement (EJM). However, the rise of the EJM movement brought on linguistic debate about whether environmental equity was an appropriate terminology to use. Environmental justice has been seen as the umbrella term, where all different dimensions, such as, procedural, distributional, geographic etc., are captured. Contrastingly, the term environmental equity has been commonly correlated with distributional equity and justice, thus, limiting in scope, in comparison to the umbrella term environmental justice. Despite environmental equity being attributed primarily to distributional aspects of equity, I use EE and environmental justice interchangeably. Using EE and environmental justice interchangeably reflects the dialogue currently adopted within Canadian government adaptation strategies.

Although the conceptualizations of EE are still developing, finding ways to address and operationalize these conceptualizations are still in its infancy. Yet, there have been some advancements being made globally. The recent Intergovernmental Panel on Climate Change (IPCC) *Sixth Assessment Report (2023)* for instance, notes the need to prioritize "equity, climate justice, social justice, inclusion and just transition processes [to] enable adaptation and ambitious mitigation actions and climate resilient development" (pg. 31). Moreover, the IPCC *Sixth Assessment Report (2023)* indicates how "Vulnerabilities and climate risks are often reduced through carefully designed and implemented laws, policies, participatory processes, and interventions that address context specific inequities such as those based on gender, ethnicity, disability, age, location, and income" (pg.32). The awareness and encouragements that the IPCC are advocating for are evidence that advancements are being made to better understand and address equity concerns among adaptation strategies and plans globally. Moreover, on a municipal level, there has been a high-level guide released for municipalities to better integrate equity within climate adaptation plans and strategies, created by the International Council for Local Environmental Initiatives (ICLEI) Canada. Questions to consider when integrating equity within climate adaptation include: 'developing an understanding on why the project must centre equity and climate adaptation?'; 'have you considered the social and political history of the [areas/communities] where the project will take place?'; and 'have you reported the outcomes

back to the communities you have engaged with?'. These are a few questions that can help integrate equity within climate adaptation in a comprehensive and realistic manner. The guide provides examples of strategies where equity was a core aspect of the project and the benefits and successes they brought. Although advancements are slowly being made, there is still a need for more municipalities and governments to address equity within climate adaptation strategies and plans. As argued by the ACT2025 advocacy group, there is demand for the upcoming COP28 in Dubai, to better "advance just and equitable ambition" (pg. 2). Specifically, it demands adaptation actions that "Strive to achieve a robust and equitable outcome on adaptation… which must improve global resilience, build adaptive capacity, reduce the vulnerability of people and nature to climate change…" (pg. 4). It is evident that there is strong urge and demand for governments to act and prioritize equity. Yet, these demands are not clearly indicated within climate legislation.

Overall, further research exploring the intersections of climate change and equity must be fulfilled in a Canadian context. It is important to note that climate change adaptation is an ongoing and evolving process, and strategies may continue to evolve as new scientific information emerges and governments reassess their priorities. As such, with climate hazards increasing and becoming more frequent, creating adaptation strategies that prioritize and center around equity is crucial.

1.2 Research question and objectives

Climate adaptation research has grown within the past few years, in comparison to the established field of climate mitigation research. With climate induced events becoming more frequent and destructive, a holistic/systems-based adaptation approach needs to be integrated across jurisdictions. What a holistic or a systems-based adaptation approach entails is ensuring that climate change impacts are addressed as a whole system, rather than focusing on individual impacts separately. This approach recognizes that different impacts can potentially reinforce one another while looking at the whole system and how everything is interconnected. As such, this project examined the question: *how do government climate adaptation strategies and plans for British Columbia's west coast communities* ***conceptualize*** *and* ***address*** *equity concerns?* Without tending to communities' needs, climate adaptation strategies can reinforce socially inequitable impacts systematically. As such, the objectives for this project were to:

1. Examine how equity and environmental justice have been conceptualized within discourses of climate adaptation across multiple scales of analysis (municipal, provincial, national and global).
2. Identify what efforts are currently being made (or lack thereof) to advance equitable adaptation strategies.
    - Compare how levels of government vary in their capacity and resources on tending to the needs of those most vulnerable.
3. Evaluate how an equity lens or framework can be integrated within adaptation policy development and implementation across jurisdictions.

This research aimed to provide information to CCA key informants across Canadian government jurisdictions to enable the implementation of equitable climate adaptation solutions.

1.3 Context of CCA in Canada

Each level of government has its respective capacities and responsibilities. The federal government is the highest level of jurisdiction and identifies areas of prioritization (Amundsen, Berglund & Westskog, 2010). These priorities establish the direction for the provincial government, to then "… *coordinate* policies, science, information systems, and emergency support" (Ontario Low Water Response, pg.1, as cited in Crabbé and Robin, 2006). Therefore, local, municipal governments can begin to collect information, interpret these policies, implement them, and *respond* directly to any emergencies (Ontario Low Water Response, as cited in Crabbé and Robin, 2006). The interdependencies between jurisdictions within the Canadian government system lends to the complexity of developing and implementing climate adaptations from any jurisdiction. As a result, inter-jurisdictional collaboration needs to occur to help finance and support community-based municipal action (Amundsen, Berglund, & Westskog, 2010), as well as establish a joint agenda (Thomalla et al., 2006). A joint agenda will establish clear goals and responsibilities for each jurisdiction, to support local action and provide transparency amongst jurisdictions.

With the accumulation of warming temperatures and glacier ice loss, sea levels are projected to rise about a foot by 2050 (NASA, 2022). As such, coastal cities are expected to be more at risk with such projections and a greater probability of catastrophic flooding events (Solecki & Friedman, 2021). Coastal cities are dynamic places where densities are high, houses

are often constructed illegally (i.e. informal settlements), critical infrastructure such as sanitation, drainage and solid waste collection are at-risk, and inadequate or absent roads pose great hazard (Kuhl et al., 2021). As such, coastal cities often face unique and cumulative impacts (Whitney et al., 2020). With sea-level rise (SLR) being a pressing issue and understanding how climate change disproportionately impacts vulnerable communities, it is of utmost importance that we have the infrastructure, legislation and plans, and resources in place to respond and protect all communities.

The British Columbia (BC) west coast province is commonly known for its national parks, museums, sports stadiums, and fresh seafood. As with many provinces, there is a unique set of communities that reside close to the water, such as First Nations communities, the elderly, and middle to lower-income to name a few. With such a unique landscape, living so close to the water, each community has established their traditions, values, and sentiments with their environment (Ramm et al.,2017). For example, the First Nations communities who live along the coast can enact traditional and commercial sector activities, such as hunting and gathering, fishing, recreation, and tourism enterprises (Jantarasami et al., 2018, as cited in Leonard, 2020). BC is one of the largest provinces in the country and one of the highest financially developed provinces as well (Ministry of Community Sport and Cultural Development, 2018). With such a high level of development and financial growth, BC has the capacity to innovate and create transformative change. The province holds a high reputation for being a leader in sustainability innovation and climate action in the country (Shaw et al., 2014). Due to BC's proximity to the water and diverse communities living along the coast, there is an urgent need for the province to continue integrating equity within current climate adaptation efforts. Some strategies that will be analyzed are the *Climate Preparedness and Adaptation Strategy BC (n.d.), Climate Change and Health Vulnerability and Capacity Assessment (2022), the BC First Nations Climate Strategy and Action Plan (2022),* and the *Provincial Flood Emergency Plan (2019*).There is a comprehensive list provided in Table 4.1, indicating which strategies were analyzed from each jurisdiction. After all, the range of diverse community needs, high risk of climate impacts, and sufficient financial resources available, indicates BC's urgency in developing equitable adaptation strategies and plans.

1.4 Municipalities of Focus

To scope my thesis, I focused on sea level rise and selected municipalities that were at the greatest risk. Based on the coastal floodplain maps from the British Columbia website, I selected the municipalities of Delta, Squamish, and Port Alberni due to their varied sizes, regions, risk to sea level rise, and capacities to take on climate adaptation efforts. The aim of including three different municipalities was to account for various jurisdictional realities, as not all regions have equal access to resources, information, support, capacity, and knowledge to embark on climate adaptation efforts. As such, by selecting these three municipalities, I hypothesized that a range of efforts and understandings of environmental equity would be found.

1.4.1 Delta

The Corporation of Delta is encompassed by 180 square kilometers bordered by the Fraser River on the north, the US border and Boundary Bay on the south, the City of Surrey on the east and the Strait of Georgia on the west (About Delta, n.d.). Delta's agricultural and farming foundations have allowed the municipality to expand into three communities: Ladner, Tsawwassen, and North Delta (About Delta, n.d.). Given its proximity to water, the municipality faces prominent challenges related to sea level rise, as well as other high risk weather events are high tides and winds, and the Spring freshet with high water levels in the Fraser River (Delta Flood Protection System, 2018). As shown in Figure 1, Delta will require immense interventions to prepare and navigate for the impacts and challenges SLR will bring forth. Such urgency to respond and tackle climate change is reflected within the three strategies which focused on flooding and sea level rise, those being *Climate Change Adaptation Strategy (2018), Delta Flood Protection Strategy (2018), and Delta-RAC Visioning Study (n.d.).*

Delta is quickly growing municipality with a current population size of just over 100,000 citizens (About Delta, n.d.).Delta's median family income ranks highest among other surrounding municipalities, such as Burnaby, Richmond, Vancouver, Metro Vancouver, and Surrey(Cleathero et al., 2016). The City of Delta is located on the shared, traditional, ancestral, and unceded territories of the Tsawwassen, Musqueam, and Other Coast Salish Peoples (Truth and Reconciliation, n.d.). In 2009, the Tsawwassen First Nation ratified the first urban treaty in BC, thereby reconciling their rights and title and fulfilling their right to self-government (Cleathero et al., 2016). The treaty provides Tsawwassen with jurisdiction over its land base of 724 hectares (Cleathero et al., 2016). Between 2001 and 2011 Delta's Indigenous population

increased by over 50% from 1,495 to 2,290 (Cleathero et al., 2016). Within Tsawwassen and Ladner there appears to be a large seniors population (Cleathero et al., 2016). Impacts from sea level rise can include potential relocation, food security, ecological degradation, groundwater salinization, and vulnerabilities of critical infrastructures. As such, accommodations for the elderly and for the First Nations residing within Delta need to be considered among adaptation efforts.

With over 50% of Delta's lands being agriculturally based, it represents a large portion of Delta's economy. Approximately 40% of the agricultural land in the region are located in floodplains, making them vulnerable to coastal or freshet flooding (Lokman, 2019). Agricultural losses resulting from a projected flood in the region are estimated in excess of $830 million, translating to a broader community impact of $1.1 billion (Lokman, 2019). Furthermore, Delta hosts one of the fastest-growing industrial areas in the Greater Vancouver region (Delta Flood Protection System, 2018). It is home to Deltaport, Canada's largest container terminal; Westshore Terminals, a major coal exporting terminal; and Tsawwassen Ferry Terminal which links the Lower Mainland to Vancouver Island and the Gulf Islands (Delta Flood Protection System, 2018). These port activities contribute approximately $1.06 Billion in annual economic activity in Canada and play a pivotal role in Canada's global trade (Delta Flood Protection System, 2018). Given the activity around these ports, the risk of sea-level rise poses a significant threat to the efficient transport of goods and resources, further underscoring the urgency of adaptation efforts.

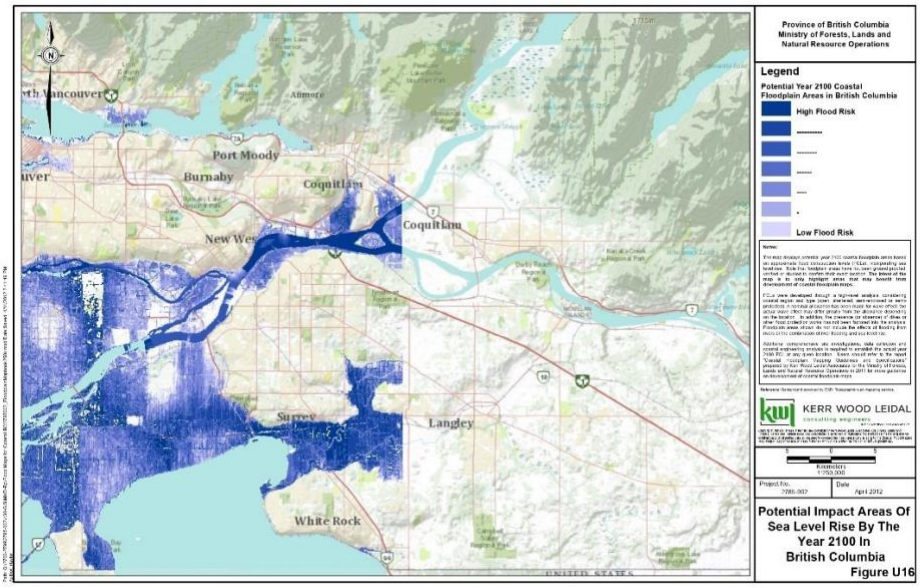

Figure 1. 1 – Map of projected sea level rise for Delta (Kerr Wood Leidal, 2012)

1.4.2 Squamish

Situated at the north end of Howe Sound, surrounded by mountains and temperate rainforest, the District of Squamish is known for its recreation, culture, and mountain lifestyle (About Squamish, n.d.). With such a rich culture and breathtaking environment, recreation and tourism are essential for the social, cultural, and economic health of Squamish (Picketts & Hamilton, 2016). Among the anticipated climate impacts, such as forest fires and extreme precipitation, rising sea levels stand out as a major concern for the District of Squamish (see Figure 2). Despite sea level rise being a priority risk for the municipality, there was only one strategy that was specifically catered to sea level rise, that being the *Integrated Flood Hazard Management Plan (2017)*. The other strategies analyzed, focused more broadly on climate change impacts, and did mention sea level rise as an impact, but it was not of focus.

With a population size of around 23,000 people (Squamish Population 2023, n.d.), it is important for this smaller region to adapt to SLR and broader climate challenges. The territory of the Squamish People includes the Burrard Inlet, English Bay, False Creek, and Howe Sound watersheds (Squamish,). Historically the Squamish People had dual residencies between the Howe Sound Watershed and the English Bay or Burrard Inlet watershed, majority of them live on the North Shore of Vancouver and 10 percent of them live in communities along the Squamish River in Squamish. According to the Squamish *Integrated Flood Hazard Management*

Plan (2017), there are four mountain rivers within Squamish, Squamish River, Cheakamus River, Mamquam River, and Stawamus River, which pose flood hazards. Flooding from these rivers can mean nearly 60% of the community's residents could be displaced. In particular, a flooding from the Stawamus River would make low-lying areas surrounding the Little Stawamus Creek Confluence, low-lying areas of Squamish Nation I.R. No.24, infrastructure such as Highway 99, Valley Drive, and the CN Rail mainline at risk (Kerr Wood, 2017). Moreover, a flood from the Cheakamus River would make Paradise Valley, Squamish Nation communities at Cheekeye and Moodyville on Cheakamus I.R. No.11 at risk. Additionally, there are approximately 200 counted homeless individuals in Squamish, with some who are uncounted, whom also need to be accounted for during sea level rises (Bella, 2018).

As the climate undergoes significant changes, the District must gain insights into how these shifts will impact its economy. The driving economic sectors within Squamish are the green economy, outdoor recreation, and sustainable tourism and hospitality (Key sectors, n.d.). Over the past few years, the recreation and tourism sectors have grown exponentially, underscoring the District's commitment to its landscape and recreational offerings. However, the District must now confront the reality of a changing climate. As articulated within the *Integrated Flood Hazard Management Plan (2017)*, majority of their community gathering places, such as the historic town centre of Downtown Squamish, are located within local floodplains. Making businesses and institutions vulnerable to flooding and sea level rise (Kerr Wood, 2017). While aspirations to expand the tourism industry are evident in various adaptation strategies such as the *Integrated Flood Hazard Management Plan (2017), Adapting to Climate Change Squamish (2016),* and *Official Community Plan (2020),* it is essential to integrate climate change considerations, especially regarding sea level rise and flooding, into these development goals.

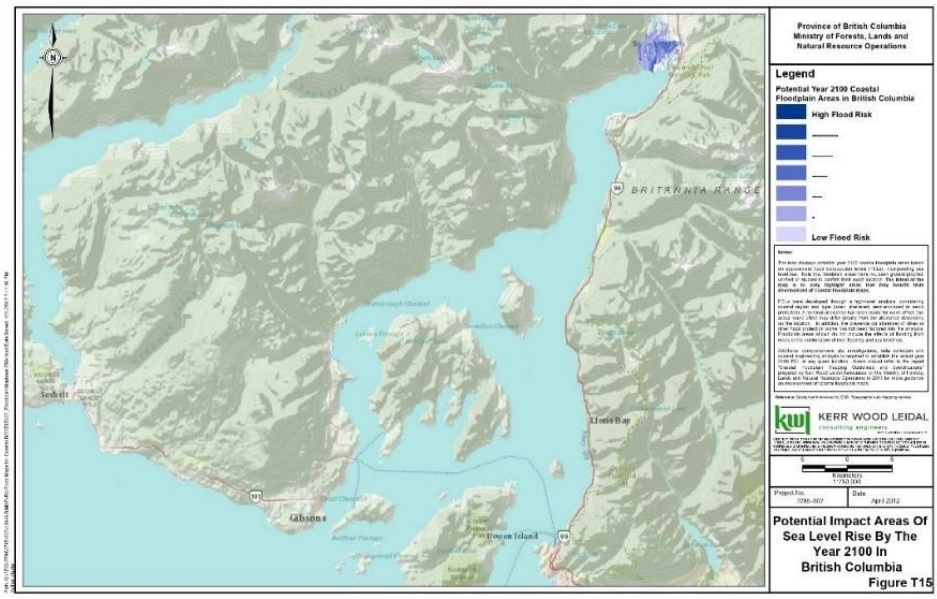

Figure 1. 2 – Map of projected sea level rise for the District of Squamish (Kerr Wood Leidal, 2012)

1.4.3 Port Alberni

The Alberni-Clayoquot Regional District is a large and diverse area of over 6,600 square kilometers centrally located on the west side of Vancouver Island (Community Profile, n.d.). Despite the regional population being just over 18,000 people, the city of Port Alberni is the largest city and commercial hub of the region (Community Profile, n.d.). There is a lot of culture, arts, recreation, and heritage that has been generated within the community, specifically around recreational Salmon fishing. However, sea level rise and storm surges causing overland flooding and inundation along the Alberni Inlet is of concern for the region (see Figure 3) (ICLEI, 2020). Surprisingly, Port Alberni does not have a dedicated strategy regarding sea level rise or flooding. Among the strategies analyzed, the *Together for* Climate *(2020)*, was the sole one to acknowledge sea-level rise as a risk, while the others discussed broader climate change challenges. Despite its relatively small scale, there is an imperative for climate adaptation measures to safeguard the rich cultural heritage of this region.

Port Alberni is located on the traditional territory of the Tseshaht and Hucpacasath First Nations, two of the fourteen nations of the Nuu-chah-nulth people of western Vancouver Island. The Hupačasath First Nation is located on the West Coast of Vancouver Island in Port Alberni,

British Columbia. Hupačasath , which means “people residing above the water,” consists of an amalgamation of three distinct tribes: the Muh-uulth-aht, Kleh-koot-aht and Cuu-ma-as-aht (Ahahswinis). These Indigenous communities have owned, used, and inhabited their traditional territory for millennia, embodying the living history of the Alberni Valley and emphasizing the importance of community. ON a broader scale, income levels in the area tend to be lower than the BC average, but this is balanced by a lower overall cost of living, particularly housing costs (First Nations of the Alberni Valley, 2023). Nevertheless, acknowledging the income reality within Port Alberni is important to consider when implementing climate adaptation efforts.

The primary industries underpinning the local economy encompass forestry, commercial fishing, and tourism (Community Profile, n.d.). The Hupačasath First Nation are also active in economic development and partnership opportunities in their traditional territory, including a majority ownership of the Upnit Power Corporation on the China Creek. The manufacturing of wood products has long been a key driver for the local economy (Community Profile, n.d). With the manufacturing of wood products, local oceans are also home to several species of wild pacific salmon, cod, halibut, and various shellfish species including clams, oysters, mussels, and crabs. While forestry and commercial fishing in Port Alberni serve as cornerstones, they are at risk of sea level rise, extreme heat, decrease in freeze-thaw days, increase in temperatures, and warmer sea surface temperatures. Collectively, these climate change factors compound existing pressures on Port Alberni’s ecosystems, potentially compromising the integrity of its natural features, areas, and systems (Together for Climate, 2020).

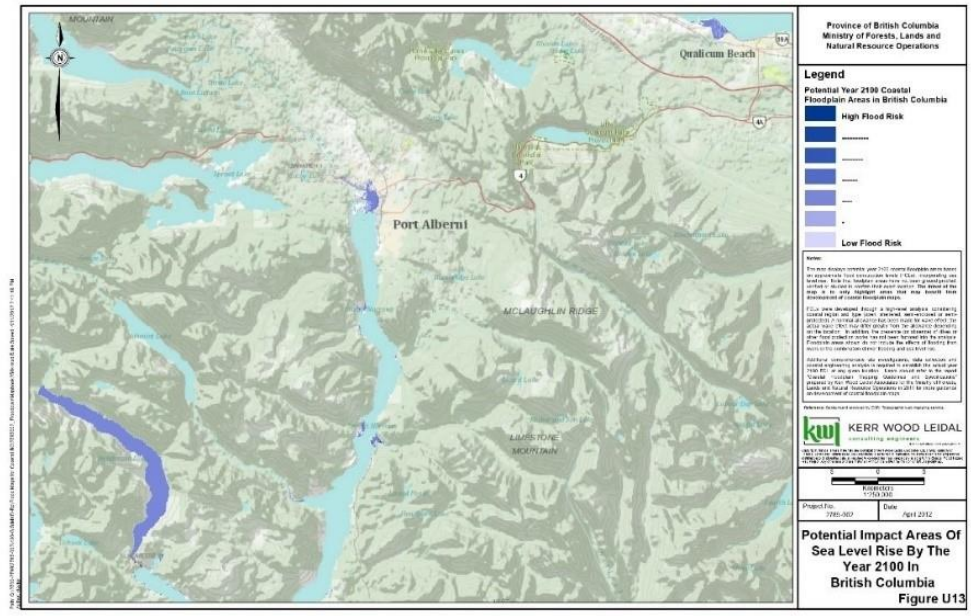

Figure 1. 3 – Map of projected sea level rise for Port Alberni (Kerr Wood Leidal, 2012)

1.5 Organization of the thesis

This thesis begins with a literature review which has four purposes. The first is to explore the historical background of CCA and how it has shaped current practices today. Second, it seeks to appreciate Indigenous knowledge systems and how they can catalyze equitable climate adaptation solutions. Third, it explores the different conceptualizations of equity that have emerged from EJM activists and scholars. Lastly, it looks at common practices that are adopted in an effort to address EE within the climate adaptation regime. Following the literature review, Chapter 3 discusses my research philosophy including my methodology and limitations within my approach. Chapter 4 explores the findings from the discursive policy analysis, 15 semi-structured interviews with key informants, and Indigenous news sources on how governments conceptualize equity. Chapter 5 explores the findings on how Canadian jurisdictions have begun to address equity. Lastly, Chapter 6 concludes by discussing how my thesis helps to address gaps within the broader equity and adaptation literature and what next future research should explore.

Chapter 2: Literature Review

2.1 Introduction

Climate change has generated a sense of collective urgency; however, not all communities and populations face climate change evenly. As such, my research aimed to explore how Canadian governments, specifically in British Columbia (BC), conceptualize and address equity concerns within climate adaptation strategies. I have narrowed the scope of my inquiry to emphasize sea level rise adaptation plans across all levels of government, as it is a primary concern for the coastal communities in BC. This review establishes a foundation of knowledge about the historical background of climate adaptation legislation and how it has influenced current adaptation practices in Canada. Moreover, I emphasize the importance of acknowledging Indigenous knowledge systems when attempting to achieve environmental equity as reconciliation plays a prominent role when achieving a sustainable and equitable future. Varied conceptualizations and practices to address equity found in the literature are explored within a multi-level government system. These conceptualizations and practices also act as reference to compare the findings of the discursive policy analysis and interviews within the analysis.

2.2 Background

2.2.1 Evolution of Climate Adaptation Legislation

Climate change has been a concern within international policy since the early 1970's with the introduction of the First Earth Summit held in Stockholm, Sweden (Jackson, 2007). The focus had shifted away from economic and natural resources management, towards environmental issues such as preservation and enhancement of the human environment (Jackson, 2007). Soon after the First Earth Summit, there was a steep upsurge in climate protocols, legislation, and conferences which have shaped the climate policy sphere to what it is today. Although international climate change policy has shifted drastically over the subsequent decades, climate mitigation has continued to take precedence over adaptation. As defined by the IPCC (2001) mitigation is "an anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases" (pg.750). By contrast, adaptation is defined as an "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (IPCC, 2001, pg.750). Although each are fundamentally formed to tackle different components of climate change, it is evident that both

adaptation and mitigation practices are needed for a robust and effective manner to respond to climate change.

Climate change was originally understood as solely a greenhouse gas (GHG) emissions problem (Khan & Roberts, 2013). Accordingly, climate mitigation was the primary target of legislation that was enforced and analyzed. As scholars have noted, adaptation was seen as the "poor cousin" of mitigation regimes (Schipper, 2006; Khan & Roberts, 2013). This hierarchic conceptualization between mitigation and adaptation influenced the climate policy sphere, restraining adaptation to become recognized until 2001 at the Marrakesh Accords. Alongside the different understandings of climate change during the early stages of international climate policy, insight on adaptation had also shifted. Prior to the rise of adaptation practices, adaptation was considered as a development issue, as the interventions were very technologically based (i.e., building dams and sea walls) (Khan & Roberts, 2013). However, with the emergence of the Marrakesh Accords, COP 12 and 13, and a few years later the Green Climate Fund in 2010, an interdisciplinary and social understanding of the adaptation regime emerged (i.e., focusing more on resilience and vulnerability).

As Khan & Roberts (2013) argues, there has been a cultural shift towards appreciating the role of climate adaptation policy. This is reflected in the UNFCCC's investments of up to USD $171 billion annually to meet the global demand for adaptation by 2030 (Preston, Westaway, & Yuen, 2011). At the national level, National Adaptation Programs of Action (NAPAs) have become a new practice among developing nations. NAPAs are frameworks aimed at prioritizing adaptation needs especially within least developed countries but have gained more traction from developed nations over the past few years (Preston, Westaway, & Yuen, 2011). Despite these international and national level efforts, climate adaptation has been focused on the state/provincial level, with a saturation of activity deriving at the local level (Preston, Westaway, Yuen, 2011; Chu, Anguelovski, & Carmin, 2016; Shi et al., 2016; Measham, 2011; Pasquini & Shearing, 2014). This is due to the geographic variability in climate impacts, which necessitates 'place-based' approaches to climate vulnerability and adaptation (Adger and Kelly, 1999; Cutter et al., 2000; Turner et al., 2003, as cited by Measham et al., 2011). At the state/provincial level, there is greater ability to capture more nuanced variabilities across municipalities, which the Government of Canada would not be able to capture. Subsequently, due to the smaller scale of municipalities, they are the closest level of government to community action (Measham, 2011).

However, with the limited finances, resources, and capacities of local/municipal level governments, it is important to design and modify adaptation plans according to local institutional strengths, civil society capacities, and urban climate adaptation needs (Chu, Anguelovski, & Carmin, 2016; Shi et al., 2016). Without providing tailored approaches and adequate support to local governments, adaptation efforts can reinforce those most vulnerable and prohibit poorer and less capable municipalities from being able to adapt to climate change (Shi et al., 2016).

In addition to the adaptive capacity barriers found within municipal governments, there is a lack of literature exploring the ideas of multilevel government adaptation planning (Shi et al., 2016). Consequently, there is lack of consideration for cumulative impacts coming from disconnected adaptation planning (Shi et al., 2016). These gaps within the literature emphasize the isolated nature of the current adaptation practices. In effort to advance the adaptation regime, in parallel with reducing vulnerabilities faced, multilevel adaptation planning needs to occur. Alcantara and Nelles (2014) defines multilevel governance as a "process of political decision making in which governments engage with a broad range of actors embedded in different territorial scales to pursue collaborative solutions to complex problems" (pg.185). Therefore, through multilevel government, adaptation planning is pursued by engaging with a broad range of actors. As such, urban adaptation approaches should adjust to align with different multilevel political opportunities and constraints, while also being cognizant of the inter-jurisdictional networks and interactions (Chu, Anguelovksi, & Carmin, 2016).

While acknowledging the need and desire to move towards a conjoined regime of mitigation and adaptation, this thesis focuses specifically on the adaptation regime, for two reasons. First, the rapidly growing literature on adaptation regimes reflects a recognition that more attention must be given to adaptation within international policy discourse. With the climate changing rapidly and there being vast uncertainty on what future climate projections will be, it is crucial to augment current adaptation strategies to embrace and navigate the uncertainty. Second, the social and human impacts of climate change are heavily influenced by adaptation strategies (or lack thereof). Developing innovative adaptation strategies requires greater consideration for how climate change will unevenly impact different (marginalized) populations and the role adaptation strategies have in addressing these impacts.

2.2.2 Government of Canada Roles and Responsibilities for Adaptation

In Canada, climate adaptation falls under the responsibility of different levels of government, including federal, provincial, and municipal governments. Each jurisdictions have specific roles and responsibilities in addressing climate adaptation. However, climate change transcends across jurisdictional boundaries, therefore, climate adaptation needs to be a shared responsibility across the Government of Canada.

At the federal level, the government is the highest scale of government and holds a plethora of responsibilities and roles. Within the realm of climate change, the federal government is responsible for demonstrating leadership, building knowledge and capacity, and investing in adaptation solutions (National Adaptation Strategy, 2023). They also share emergency management responsibilities with the provincial government, but specifically on federally owned lands and properties (An Emergency Management Framework, 2017). Beyond exercising leadership among efforts to tackle and respond to climate change, they also play a role in providing knowledge to other organizations to build an understanding about climate change, while enhancing adaptive capacity (Canada's Top Climate Change Risks, 2019; Federal Adaptation Policy Framework for Climate Change, 2016).

The provincial government plays the unique role in advancing adaptation in areas such as land-use planning laws and building regulations, and funding, developing, and delivering emergency services (National Adaptation Strategy, 2023). The provincial government tend to have more awareness about the need for adaptation strategies and plans, and either create their own stand-alone plans, or invest and support broader climate change plans or strategies (Pan-Canadian Working Group, n.d). With respect to equity, the *Community Climate Action Plan Squamish (2020)* indicates the roles the federal and provincial governments play in structuring income tax systems in a way to reduce the burden on those with lower incomes. Demonstrating the abilities and power for systemic change to occur.

Lastly, local governments and municipalities are at the frontlines of climate change and can provide insight into the local circumstances and involving local communities into adaptation efforts (National Adaptation Strategy, 2023). Although each jurisdiction has a role and responsibility in addressing climate adaptation efforts and strategies, there is an emphasis on local governments and municipalities to act and respond, due to the local nature of many climate impacts (Adapting to Climate Change, 2010). Due to such localized impacts, many climate

adaptation actions are embedded in municipality's existing plans and strategies (Adapting to Climate Change, 2010). Furthermore, as local governments are the closest government scale to communities, municipalities are responsible to define what hazards they are faced with, for example flood hazards and integrate them within current land use planning policies. This self-declaration of what flood hazards need to be addressed is enforced by the Local Government Act.

Despite each jurisdiction's roles and responsibilities, it is important to acknowledge that these responsibilities and roles do not occur in separation from one another. There are a lot of cross over and dependencies across jurisdictions. As illustrated by the *Delta-RAC Sea Level Rise Visioning Study (n.d.)*, dikes and other structures are inspected by the provincial Inspector of Dikes, however it is the responsibility of local governments to maintain, upkeep, and upgrade these structures. As such, jurisdictions and departments need to work in tandem with one another, rather than in competition or in separation. If advancements are to be made within climate adaptation strategies and actions within the Government of Canada, climate adaptation needs to be addressed by all departments and jurisdictions in unity.

2.2.3 Indigenous Perspectives and Adaptation

Climate change and deep-rooted colonial thinking have challenged Indigenous peoples in pursuing traditional practices and using their knowledge to navigate climate change. When reflecting on Canada's colonial history, moving towards a truly sustainable and equitable future for all requires prioritization of reconciliation. In effort to move towards reconciliation within the climate adaptation regime, greater recognition and appreciation of Indigenous Traditional Knowledge (ITK) in climate solutions, education, and shifting our relationship with the environment are needed. The way in which Indigenous communities have lived with the land for thousands of years demonstrates how they were able to navigate changing climates and lands, while still maintaining resiliency. As such, it is evident that there is much to be learned from their rich worldviews and relationships with the environment.

2.2.3.1 Indigenous Knowledge Systems

Indigenous peoples hold a rich worldview, unlike the mainstreamed Western science approach. Rather than viewing humans as superior to all living beings, Indigenous peoples believe that "...human, natural, and cosmological realms are linked; and that these realms need to be in balance or equilibrium" (Mearns & Norton, 2009, pg.155). This view alludes to what is commonly thought of as holistic perspectives; understanding that everything is connected and in

relationship with one another. As Hansen & Antsanen (2018) notes, the Cree people's worldview perceives individuals in four ways, through mind, body, spiritual being, and feelings. This is called Inninew, where the recognition of the connection to the land and spirits forms the foundation for how the Cree people perceive and navigate the world. As a result of this intimate connection to the land, Indigenous peoples consider the environment and planet around them as part of their families. As illustrated by McGregor (2022), the Anishinabek community uses the names of the first animals that have died for their people as clan names because these animals were regarded as 'relatives' (Johnston, 2006). Within their worldview, everything and everyone is interconnected, so when the environment is mistreated, it disrupts the balance of the entire system. This imbalance is believed to result in a loopback effect, where the mistreatment of the planet is reciprocated to restore equilibrium (Vogel & Bullock, 2021).

Every Indigenous community has its own worldview, but this holistic ideology is one that carries across most Indigenous worldviews (Hansen & Antsanen, 2018; Kettle et al., 2014; Vogel & Bullock, 2021; Cameron et al., 2019; Daigle et al., 2019; Berkes, 2009; Golden et al.,2015; Whitney et al.,2020). Consequently, in pursuit of working towards reconciliation and honouring the worldviews Indigenous communities hold, there is a need to move beyond 'indigenizing' existing EJ frameworks and delve deeper into the Indigenous knowledge systems and laws that exist (McGregor, 2022). Indigenous populations' sovereignty puts them in a unique context, in comparison to other marginalized populations, as they can create and enforce their own laws (Suagee, 1996; as cited in McGregor, 2022). Yet, this uniqueness adds another layer of analysis, urging the exploration of the power dynamics between Indigenous communities and the state. It also involves recognizing "... the colonial legacy that continues to play out in laws, court cases, and policies that systematically, institutionally, and structurally enable ongoing assaults on Indigenous lands and lives" (Whyte, 2017; as cited in McGregor, 2022).

Moreover, it is important to recognize that Indigenous knowledge is not content, but a system or process (Naess, 2013; Berkes, 2009). The ways in which Indigenous peoples perceive the world around them is not extractive knowledge; it is a whole perspective that informs how they navigate the world. If one were to extract and disassociate the knowledge from its original cultural context, the knowledge becomes depreciated and loses its integrity, richness, and dynamism (Naess, 2013). As such, it is critical to avoid perceiving Indigenous knowledge as content that can be extracted and easily integrated within Western science. Rather, it is their

whole worldview that must be considered and reflected within climate adaptation strategies. Hence, it is necessary for Indigenous people to directly integrating their worldviews into climate adaptation legislation to ensure appropriate interpretations of their worldviews are applied is essential.

2.2.3.2 British Columbia Coastal Indigenous Communities

Indigenous communities in British Columbia are diverse and culturally rich populations that have thrived in this region for thousands of years. Each community encompasses a range of cultures, languages, and traditions. For example, "the Tlingit on the islands that make up southeast Alaska, the Haida of Haida Gwaii, and the Nuu-chah-nulth of western Vancouver Island are the best-known 'outer coast' groups" (McMillan & McKechnie, n.d.). The provinces natural landscapes hold profound spiritual and historical significance for these Indigenous communities. Despite the historical challenges of colonization, many Indigenous communities in BC have demonstrated resilience in preserving their unique heritage and forging a path toward self-determination.

Indigenous languages are capable in conveying more than just a place name, but can capture the geomorphological, cultural and historical significance of a location over time. The Gitga'at Nation attribute names to significant places not only to convey stories about the territory and its history, but also to reflect the geographical, geological and ecological characteristics of the place and type of activities that would take place there (Reid et al., 2014). For example, names like Ksgank'o signify a location abundant in kelp, K'agwentks designates a place associated with spring, and Si'alaeo denotes a spot where trout can be found (Reid et al., 2014). Additionally, in Glacier Bay, Alaska, the English name merely labels a bay with a glacier. Wheras, the Tlingit name, Sı ́t' Eeti Geeyi, means 'bay taking the place of the glacier', which signifies the process of how the bay formed as the glacier receded (Wyllie & Thornton, 2019). However, with the changing geology and ecology of the region driven by climate change, this may lead to inaccuracies in these traditional place names.

These alterations to the land, such as through sea level rise, not only impact the names of traditional places, but also pose risk to numerous significant elements, including harvesting and hunting grounds, grave sites, totems, and pictographs that hold significant cultural and traditional value (Reid et al., 2014). Coastal Indigenous communities, like the Stellat'en First Nation, deeply connect water with their creation stories, viewing it as the core of life's interconnections

(Sanderson et al., 2015). Given this profound relationship with the land and water, changes resulting from climate change have far-reaching impacts on various facets of Indigenous communities' lives.

Changes to the land can impact food security, trade, and cultural connection, harvesting and preserving food resources that include herring, salmon, halibut and many others (Whitney et al., 2020; Vierros et al., 2020). It is also important to note that much of Gitga'at culture is learned and passed on through doing—by going out with parents and elders and learning first-hand the place names, songs, dances, and harvesting methods (Reid et al., 2014). If climate change makes it more difficult to get out and practice cultural activities, then knowledge transfer will not occur, and the knowledge will erode.

The depth of Indigenous knowledge is evident in how it has enabled communities to maintain their livelihoods and resilience in the face of a changing climate. Unfortunately, colonial government practices have often overlooked the invaluable traditional knowledge held by Indigenous communities regarding their lands. As articulated by the Heiltsuk, Kitasoo/Xai'xais, Nuxalk, and Wuikinuxv Nations, their ecological adaptation actions to prioritise were improved fisheries management, development of regional forums for education and training opportunities to support stewardship, and monitoring practices among communities (Whitney et al., 2020). Within the Nuxalk Nation, they have already implemented a Guardian Watchman monitoring and stewardship program, but, there are still improvements to be made in order to ameliorate monitoring practices (Whitney et al., 2020).

In terms of the social adaptation actions that are of priority, these Nations had indicated, strengthen social networks, community groups, and intergenerational knowledge sharing, stronger Indigenous governance, and more Indigenous participation in regional and higher scales of management and decision making (Whitney et al., 2020). Similarly, when the values of the Gitga'at Nation were explored with the intentions of integrating them into adaptation planning, the values found were, culturally important food sources, culture, preserving and restoring environmental resources, self-sufficiency, health, infrastructure that enables them to live well, and Gitga'at pride and cooperation (Reid et al., 2014).

More broadly, there is an evident trend of Indigenous communities wanting to have more validity found within their local knowledge and for stronger Indigenous governance autonomy and authority. As the Councillor of the Heiltsuk Nation noted "Our inability to be legitimized as

knowledge keepers is a big factor ... Until they [Crown Government] understand the legitimacy and the importance of traditional knowledge, then we're going to continue to have this struggle." (Whitney et al., 2020, pg.6). Therefore, to advance adaptation efforts, particularly within coastal BC Indigenous communities, there is an urgent need for increased acknowledgment and appreciation of Indigenous knowledge, governance, and autonomy. This is fundamental in rebuilding trust between Indigenous communities and the Canadian government.While there has been recent recognition and appreciation for Indigenous people's knowledge among policymakers both at international and national scales, as seen by recent IPCC and UNDP reports and Canada's National Adaptation Strategy, it is critical to comprehend the foundations of Indigenous worldviews and learn how to appropriately apply these worldviews. With recent discourse around the impacts of residential schools and the thousands of unmarked graves that were discovered, reconciliation is at the forefront of environmental justice groups and advocates. To achieve a sustainable and equitable future for all, reconciliation must be a priority. By acknowledging and appreciating Indigenous worldviews, we can foster further innovation, meaningful engagement, and Indigenous leadership. This approach will ultimately enhance Indigenous communities' adaptive capacity and lead to effective responses to climate change. Highlighting these worldviews to current and new adaptation strategies will allow for more inclusive strategies, while also attempting to break colonial approaches to navigating climate change. All in all, to understand how Canadian jurisdictions are conceptualizing and addressing environmental equity, examining if there are any efforts towards reconciliation or integrating Indigenous Traditional Knowledge within adaptation strategies and plans is an indicator to count on.

2.2.4 Sea Level Rise Impacts

With BC's extensive coastlines, it is crucial to acknowledge what the impacts will be for varied communities facing sea level rise. Specifically, Indigenous communities, low-income, homeless, women, and the elderly are most vulnerable to flooding and sea level rise in BC (Hoogeveen et al., 2021; Hoogeveen & Klein, 2021).

Indigenous Communities

With the many First Nation communities whose traditional lands are along the coastline, they are exposed to sea level rise and associated impacts from permafrost melt, erosion, and storm surges (Wade, 2022). Some communities that are exposed to sea level rise are the Old Massett

Village, Skidegate, Semiahmoo, Tsawwassen, Musqueam, and Tsleil-Waututh (Wade, 2022). Overtime, the loss of coastal land will lead to population displacement (Liang & Kosatsky, 2020). Specifically in regard to Indigenous communities their force displacement and relocation has fuelled environmental injustice though settler-colonial violence (Bacon, 2019, as cited in Yumagulova, 2020). Historically, planning has led to the marginalisation of Indigenous people by imposing external values and a top-down approach to land and resource planning (Yumagulova, 2020). This top-down approach has led to the rejection of cultural, spiritual and other concerns important to Indigenous communities as irrational (Hibbard et al., 2008, as cited in Yumagulova, 2020). Under the Indian Act, Indigenous populations were forced and placed on 'reserves'. These reserves were intentionally placed on marginalised lands, deemed undesirable for colonial settlements (Harris, 2004, as cited in Yumagulova, 2020). As such, Indigenous communities residing on reserves in BC face greater vulnerability to climate change, specifically sea level rise. As indicated by Manrique et al., (2018) the impacts faced by coastal Indigenous communities include "socio-environmental impacts, such as food insecurity due to changes in species distribution and availability, impacts on infrastructure, drinking and firefighting water availability, loss of access to common natural resources, landlessness, loss of identity, increased morbidity and mortality and marginalisation" (pg.5).

Low-Income

In 2018, there was a flood that occurred in Grand Forks, BC. It was reported that the neighbourhood most heavily impacted was the low-income neighbourhoods, which are North and South Ruckle and Johnson Flats (Hoogeveen & Klein, 2021). These neighbourhoods were impacted the most as there was a large proportion of rental housing than other parts of Grand Forks. Renters who had lost their homes during the flood had nowhere to go. With even less supply of rental properties, landlords would often increase rent, require higher damage deposits, and made it difficult to access housing for those already more at risk (Hoogeveen et al., 2021; Hoogeveen & Klein, 2021).

Homeless

For those who often camped by the river, lost access to their home. Therefore, increasing the number of unhoused folks and a trend of 'couch surfing' rose (Hoogeveen & Klein, 2021). Especially after the atmospheric river in November 2021, there was an increased need of beds in shelters to accommodate those out on the sidewalks or in parks (Chek News, 2021). However,

shelters in BC were already having difficulty accommodating for the number of homeless individuals on a daily basis, thus, the atmospheric river had elevated the need for more shelter beds and resources exponentially.

Women

Women often play a caregiving role in supporting their family, therefore, bear much of the burden of getting through a crisis like a flood. Within the Grand Forks Flood in 2018, a lot of local businesses in the downtown core were lost, which is challenging for women who traditionally maintain a caregiving role for children due to lack of economic security. Moreover, within the temporary housing provided, there was an increase in gender-based violence as limited shelters available forced families to co-habit, despite the potential risk and harm with this. With that, there was an increase of women demanding for transition house spots due to safety concerns.

Elderly

Elderly people are vulnerable to flooding and sea level rise as they experience exacerbated health challenges during a flood (Hoogeveen & Klein, 2021). Furthermore, these relocation of health infrastructures poses a risk to long-term care facility occupants. In BC, 97% of long-term care facility occupants have chronic diseases such as cardiovascular, pulmonary, and musculoskeletal, and 95% are over the age of 65 (Wollschlaeger et al., 2022). As such, this population are more sensitive to extreme heat, flooding, and reduced water quality, and will require more support and accommodations if relocation is required.

Overall, sea level rise and flooding causes vulnerability to a variety of communities in unique ways. However, there are impacts that impact all communities. For example, the relocation of health infrastructure will be felt by all populations. As articulated by Liang & Kosatsky (2020), a lot of BC's existing health infrastructure will require relocation because of sea level rise, disrupting health services for people living on the coast but across the province as well. Richmond and Delta hospitals serve a population of 300,000 people, and are vulnerable to a 1-in-500 year storm surge even at today's sea level (Liang & Kosatsky, 2020).). Moreover, given that 48% of all foods consumed in the province are produced in BC, flooding and saltwater intrusion pose serious food security risks (Liang & Kosatsky, 2020).). Specifically, for fisheries-dependent communities, coastal erosion due to sea level rise will reduce BC's salmon and shellfish populations (Liang & Kosatsky, 2020). This will particularly impact Indigenous

communities who rely on and hold cultural and spiritual significance within the fish and shellfish they harvest. Although rising sea levels is a slow onset, it is crucial to acknowledge how equity-denied populations will disproportionately face challenges and what interventions and plans can be implemented to address them.

2.3 Theoretical Background of Environmental Equity

2.3.1 Equity and the Environmental Justice Movement

The historical background on the US environmental justice movement (EJM) is a well-known narrative (Cook&Hegtvedt, 1983; Mohai et al., 2009; Brulle & Pellow, 2006; Ashton & Wang, 2003; Schlosberg & Collins, 2014). Stemming from the Civil Rights Movement, the EJM quickly grew in popularity and seemingly brought together various inequities. Yet, there are broad discussions on what spearheaded the EJM and what the main goals of the movement were. Some argue the location of hazardous waste sites in neighborhoods that predominantly consisted of people of color spearheaded the development of the EJM (Agyeman et al., 2016). Yet, other scholars argue the early stages of the EJM were primarily white, working- and middle- class organizations focused on issues such as the 1942 Love Canal contamination (Taylor, 2000) or population control and wise resource management (Bullard,1993). Conversely, the Warren County landfill siting protest in 1982, compelled the US Government Accountability Office (GAO) in 1983 and United Church of Christ in 1987 into studying the issues of race and the prominence of communities of color around landfill sitings (Taylor, 2012). Over the years the popularity of the EJM rose, along with a corresponding expansion in capturing a broader range of issues beyond those of race and class. As such, this marked the beginning of deeper considerations regarding the origins of inequities, how social factors such as gender and sexuality shape the struggles faced, and the interconnectedness of these issues.

Although this new breadth within the EJM is pivotal, it has also led to some disorientation on what appropriate terms to use. A decade after the issue of waste site locations became mainstreamed, the US Environmental Protection Agency (EPA) created an Office of Environmental Equity in 1992 (Agyeman et al., 2016). Although the movement had been utilizing the terminology of environmental justice, there were groups such as the EPA who utilized the term environmental equity (EE) to narrow its scope to focus on distributional equity (Taylor, 2012; Schlosberg, 2013). Distributional equity along with the other dimensions of equity are further explored in subsequent sections. Yet, there have been various iterations of

what environmental equity in relation to environmental justice means. For example, Ashton & Wang (2003) defines equity as "an ideal that shapes our view of what is right or just. It is predicated on the notion of common good and, at times, calls on some to sacrifice for the sake of others" (pg.2). This definition highlights the morality of equity and how it shapes how we interact and make decisions. There are also more compartmentalized understandings of equity, where environmental equity is seen as either procedural, geographic, social, distributional, and generational (Zimmerman, 1993; Kuehn, 2000; Bullard, 2002). This compartmentalized version of environmental equity is widely used and accepted; however, distributive and procedural equity have been the most common dimensions (Ikeme, 2003). Despite their popularity in use, these dimensions are used as generalizations for equity, excluding the other facets and interconnections of equity that need to be addressed for a more nuanced approach to environmental equity. Consequently, the term environmental equity was not long lived, as conceptions of environmental justice grew beyond distributional impacts, and activists believed that the term environmental equity "... represented a distortion of their agenda" (Holifield, 2001, pg.80).

Through the growth of the EJM, the scope of inequities addressed began to encapsulate all dimensions of equity, rather than just one dimension. As such, activists within the EJM did not want the new movement to be perceived as solely a distributional activist group. Hence, the terminology shifted back to environmental justice, as it better reflected the aim and goal of addressing injustices that extend beyond distributional concerns, encompassing other dimensions such as procedural and structural aspects. Although these dimensions of justice are well explored, it is evident how other dimensions of justice (distributive, procedural, recognition, structural etc.) can aid in unpacking injustices deeper. As Swanson (2021) notes "[procedural] justice complements distributive justice by focusing on process rather than outcome, taking into account the power and participation disadvantages of marginalized groups" (pg.291). With that in mind, it is important to further explore other divisions of justice, such as recognition, as it paints a robust picture of the complex nature of injustices faced. Inequities cannot be perceived within one division, nor can they be addressed in such a manner. Shifting the conceptualization of (in)justices in a multivalent way highlights the interconnections among injustices, while also furthering the dialogue away from observations into analysis (Klinsky & Mavrogianni, 2020, as cited in Swanson, 2021).

Concurrently, with the adoption of the term environmental justice, the challenge of defining environmental justice rose. A common definition of environmental justice is from Bullard (1996) which states "all people and communities are entitled to equal protection of environmental and public health laws and regulations" (pg.493). Similarly, the Environmental Protection Agency (EPA) defines environmental justice as "[t]he fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" (Brulle & Pellow, 2006, pg. 104). Recently, there has been an emergence of a critical lens in defining environmental justice. Sultana (2022) argues, for instance, that : "A critical climate justice perspective investigates how and why different groups of people face inequities in different ways from climate change, integrating insights from a range of academic theories (such as feminist, anti-racist, anti-capitalist, post-colonial, decolonial scholarship), as well as insights from activist movements for climate justice, in order to foster praxis of solidarity and collective action" (pg.119). The emergence of a critical lens to previous environmental justice definitions is crucial in advancing environmental justice knowledge, as previous definitions tend to be quite vague and broad. Such vagueness and ambiguity in defining environmental justice falsely alludes to the idea that there is a universal definition that captures and speaks to a variety of community values and barriers. As Ikeme (2003) discovered, the global South's perception of fairness emphasizes basic rights which extend to historical rights and accountability. In comparison, the global North emphasizes the outcomes of programs, looking more at economic efficiency and a disregard for historical responsibility when perceiving fairness. There is an acknowledgement that there are varied values to identify, upon which the conceptualization of equity or environmental justice will be based.

Below I've outlined a brief timeline on key EJM milestones throughout history. This is by no means a complete timeline as it predominantly focuses on the EJM in the US, but I acknowledge that there have been efforts prior and after this timeline across the globe that I did not include.

Environmental Justice Movement History

- Early 1970s, substantial body of literature was developed that documents the existence of environmental inequality in the US
- 1980 CERCLA (aka superfund) was released
- 1980 US Trade Unions Protest, Just Transition

- 1982 Warren County Protest
- 1983, the US General Accounting Office conducted a study focused on the location of hazardous waste sites
- 1986 EPCRA 8 the anti-toxics movement created a great deal of momentum for providing public funds to clean up hazardous waste and giving citizens greater legal authority to monitor polluting facilities
- 1987 the United Church of Christ Commission on Racial Justice released the national study titled *Toxic Waste and Race in the US*
- 1990, Mohai and Bryant organized the Conference on *Race and the Incidence of Environmental Hazards* at the University of Michigan
- 1990 Bullard published *Dumping in Dixie*
- 1991, First National People of Color Environmental Leadership Summit
- 1991, Hauge summit, Bali principles, US Principles of Environmental Justice
- 1992, EPA published its findings and recommendations in Environmental Equity: Reducing Risks for All Communities
- First official acknowledgement of the problem by a federal agency in a position to do something about it
- 1992 Rio Earth Summit, places great emphasis upon the need to ensure a better quality of life for all, in a just and equitable manner, whilst living within the limits of supporting ecosystems (Agyeman et al., 2001)
- 2001, Environmental Justice and Climate Change initiative was founded
- As a result of the first Climate Justice summit at The Hague (1989) and during the COP 16 meeting of the UNFCCC
- 2004, The Black Congressional Caucus released a report on the potential injustice of climate change; *African Americans and Climate Change: An Unequal Burden*
- 2004, Durban Group for Climate Justice further developed the concept of climate justice
- 2006, California Global Warming Solutions Act

(Agyeman et al., 2001; Ashton & Wang, 2003; Brulle & Pellow, 2006; Foster, 1998; Mohai et al., 2009; Schloberg & Collins, 2014, UNDP, 2022)

As illustrated through the timeline, there has been a long evolution within the movement on what issues are being covered and who equity-denied populations are. As Taylor (2000) notes, the principles of the EJM in response to the First National People of Colour summit, there was no mention of distributional equity, which contrasted with previous EJM efforts. Rather, the principles linked cultural integrity with environmental sustainability, and re-emphasized our relationship with other living beings (Taylor, 2000). In parallel to this evolution, the EJM moved beyond examining individual injustices, such as environmental racism, socioeconomic disparities, and inequitable distribution of impacts and resources. Alternatively, "...this movement also shows us the possibility of employing a variety of notions of justice

simultaneously in a comprehensive political project" (Schlosberg, 2007, pg.45). This shift towards addressing multiple dimensions of equity advances the idea of intersectionality, acknowledging how various forms of discrimination intersect and compound. Furthermore, it also emphasizes the role that government and societal systems play in perpetuating rooted discrimination, which urges for systemic and transformative changes to be made to achieve environmental equity.

Within the EJ literature, it has been commonly illustrated to have these multiple social dilemmas articulated side by side, without exploring the intricate ways multiple forms of oppression shape, create, and reproduce one another (Malin & Ryder, 2018). As Kaijser & Kronsell (2014) indicates, "an intersectional analysis goes beyond identifying power patterns to problematizing the underlying social categorizations and see how these are reinforced or challenged in light of climate change" (pg.422). In doing so, it becomes possible to comprehend how these inequities are mutually reinforcing and sustain systems of individual and collective power, privilege, and subordination (Pellow, 2018). Intersectionality, although one of many theories to unpack environmental equity, demonstrates a lens on how environmental equity can be deeply understood and addressed. Incorporating or highlighting aspects of intersectionality within climate adaptation strategies can be the difference between a surface-level acknowledgement of equity versus a comprehensive and deep understanding of what environmental equity entails. As such, looking for remnants of intersectionality within adaptation strategies will shed light on surface level versus deeper conceptualizations and practices to address equity.

In effort to maintain consistent dialogue, while reflecting the dialogue that is currently being used within Canadian climate adaptation strategies, the term environmental equity (EE) and environmental justice (EJ) are utilized interchangeably in this thesis. Despite the literature emphasizing the fundamental differences between environmental justice and environmental equity, in practice within the Canadian government, it appears these terms are used in similar fashion. This is illuminating the gap between academics and practitioners, as these two spaces have unique goals, capacities, and practices that shape their knowledge. As such, when attempting to understand how jurisdictions are conceptualizing and addressing equity, it is important to keep this discrepancy in mind as government workers face various challenges and barriers that are often overlooked by academics. Academics often generate a different conception

on how the government functions, that is contrasting to what occurs in practice. Therefore, recommendations that are made by academics may not be feasible or realistic in practice, due to the ambiguous reality of how the government functions.

2.4 Equity Conceptualizations

Despite equity being a relatively new addition to the climate adaptation regime, there are common conceptualizations found within the adaptation strategies. It is common for the conceptualizations to fall within one of the dimensions of procedural, distributive, and structural equity at a high-level. However, there have been recent emergence of other conceptualizations such as just sustainability (Schlosberg, 2013) and cultural preservation (Agyeman et al., 2016; Schlosberg & Collins, 2014). However, despite these recent conceptualizations, the conceptualizations of distributive, procedural and recognition will be explored below, as they were the most utilized conceptualizations within literature and Canadian government practice.

2.4.1 Distributive Justice

Distributive justice looks to fair allocation of resources, services and impacts through social exchange (Ikeme, 2003). Distributive justice is a common conceptualization of justice that is explored, as it relates directly to the uneven distribution of waste facility sittings, explained previously. Related to this research, distributive justice can be illustrated through the distribution of adaptation interventions. For example, within flood-prone areas, managed retreat will often be directed at communities of lower income **(**Dolsak & Prakash, 2022). Managed retreat means the purposeful relocation of people and homes from hazard-prone areas and relocating them in relatively safer areas (Hino et al., 2017). Despite distributive justice being a common concept of justice that is addressed, scholars argue that it "fails to challenge the underlying power structures that facilitate environmental injustice" (Pellow, 2018). Addressing distributive justice in adaptation strategies involves distributing interventions to protect individuals from extreme weather events and providing access to educational resources for understanding climate change risks. Or more radically, redistributing wealth to address structural drivers of economic vulnerability.

2.4.2 Procedural Justice

Procedural justice is a reference to fair procedures that organize distributive justice. As Dolsak & Prakash (2021) articulate: "Procedurally just processes incorporate informed consent through inclusive public participation and provide access to remedies to correct the harms that

policies might impose on citizens" (pg. 285). Procedural justice rises from the ideas of participatory democracy, shifting distributive justice towards decision-making processes and the importance of recognition (Pellow, 2018). As such, addressing procedural through climate adaptation would prioritize engaging with community members and equity-denied populations along decision-making processes, development, and implementation phases, and throughout monitoring and evaluation. Yet, this seems to be missing in many adaptation strategies as community members tend to only be consulted during one aspect of the project often near the end of the project (Few et al., 2007). This ideology is thought of as 'passive participation' and 'self-mobilization', where passive participation is seen when participants are simply recipients of information about decisions that have already been made, whereas self-mobilization allows people to take initiatives independently and be actively participating along all-stages (Few et al., 2007). Although strategies comprising these surface-level efforts would claim that procedural justice is being tackled, it is apparent that this participation is not meaningful or beneficial for all parties.

2.4.3 Recognition

Recognition in terms of justice is "linked to spatial geographies through the stigmatization and devaluation of places and – through the often-inextricable connection between individual/community identity and place – to the people who inhabit those places" (Agyeman et al., 2016, pg.327). Recognition can be seen in action through community engagement and participation, similar to procedural justice, along with including local knowledge (Agyeman et al., 2016). Recognition is a branch from procedural justice, where it focuses on recognizing the marginalized groups and their unique experiences with oppression (Pellow, 2018). Lastly, recognition can be seen within adaptation strategies through acknowledging the inequities that are being faced by communities, and where these inequities stem from. Recognition flows across scales, thus, considering historical barriers and systemic barriers that are keeping communities within these disadvantaged positions.

With that in mind, I argue that these high-level conceptions of justice (distributive, procedural, and recognition) are not providing a deep or critical analysis of the inequities being faced. As I have seen countless times within climate policies, governments tend to adopt these terms as 'buzzwords', yet, in action only implement surface level efforts. This is demonstrated within adaptation legislation as simply announcing that an 'equitable' or 'environmentally just'

lens will be applied, to acknowledge the disproportionate impacts being faced by communities. Yet, beyond these claims, there are no definitive actions that elaborate on what these disproportionate impacts are, let alone what solutions or interventions governments plan on implementing. Similarly, when governments claim to value the knowledge Indigenous peoples hold and want to integrate this knowledge into climate adaptation, at face value is seemingly positive. However, as Deborah McGregor notes, "Indigenous knowledge is not a noun, it is not a commodity or product that can be drawn upon as a last-ditch effort to be integrated into a battalion of adaptive solutions to save us all" (as cited in Dhillon,2022, pg.5). Shedding light on the empty claims often articulated within adaptation strategies, reflects how governments understand that these inequities need to be addressed, yet lack addressing or understanding how deep these disparities are within the government system. Rather than just acknowledging the different conceptions of justice and how those are impacted or reinforced by climate change, Pellow (2018), looks deeper into how the injustices interact with one another, the role the state plays in reinforcing these challenges, as well as a telling reality to the racial hierarchy experienced in our racially white-dominated world. As such, taking on an intersectionality lens, I argue, is one that differentiates between surface-level claims to address EE and deeper-level ones.

2.5 Climate Adaptation and Equity

Socially disadvantaged groups are most vulnerable to climate change. Socially disadvantaged groups include people who face challenges due to social factors such as race, class, (dis)ability, and gender, on top of the unanticipated challenges from climate change. Impacts such as uneven access to flood protective infrastructure due to gender biases, lack of consideration for disabled populations in adaptation plans, psychological stress, Indigenous water security, and widespread displacement of vulnerable communities are widely covered within the literature (Anguelovski et al., 2016; Bell et al., 2020; Solecki & Friedman, 2021; Mearns & Norton, 2009**;** Leonard, 2020; Swanson, 2021). When exploring injustices that are faced by populations, it is evident to then define who the vulnerable populations are. Benevolenza & DeRigne (2019) defined vulnerable populations as groups who "… undergo hardships and may encounter prejudice, discrimination, and stigma due to their socio-economic status, race/ethnicity, gender, age, cognitive and/or physical ability etc" (pg. 268). However, there has been a recent push to shift away from "deficit" language and rather to focus on giving a

voice to disadvantaged groups. Swanson (2021), for example, defines disadvantaged populations as "those for whom underlying social inequity – and corresponding reduced adaptive capacity – causes disproportionate suffering from the adverse effects of climate change" (pg.289). However, this project employs the term "equity-denied populations" as suggested within interviews conducted with government workers. Equity-denied populations that are commonly acknowledged are women, children, elderly, chronically ill, 2STLGBQIA+, BIPOC, unhoused folk, geographically isolated communities, mentally ill, and those who do not speak English as their first language.

Climate change is often conceptualized as solely an environmental issue, but as more extreme weather events occur it is apparent that it must be considered a social issue as well. As mentioned above, climate change does not impact all individuals and communities to the same extent. It is often communities who already experience social barriers such as financial strains, mobility issues, in access to resources, and many more. Climate adaptation needs to address these barriers, as vulnerable communities are least likely to bounce back from hazards and extreme events. Moreover, as Swanson (2021) articulates, climate change adaptation planning tends to favour certain privileged groups while simultaneously denying representation and resources to marginalized communities. This can result in a lack of consideration for who gains and who loses from adaptation policy decisions (Swanson, 2021). Some of the unanticipated consequences from climate action planning are urban segregation, spatial inequity, widespread displacement of vulnerable communities, and undesirable land use planning and development interventions (Swanson, 2021). Likewise, Indigenous communities and other communities along the coast are forced by climate change to relocate, inflicting physical and spiritual removal from their lands (Maldonado et al., 2013). This climate-induced relocation will also create strain on resources, jobs, real estate, and government funding further inland (BCCDC, 2020; Maldonado et al., 2013; Wilmsen & Webber, 2015).

Climate adaptation focuses primarily on the social and ecological aspects of climate impacts. Through government legislation and local plans and strategies, climate adaptation can protect, prepare, and prioritize communities when facing climate change. With climate change disproportionately impacting equity denied groups, these policies and plans must be flexible and inclusive of the diverse needs of the community. Adhering to these needs will prevent reinforcing social inequities among those who are already most vulnerable. It is crucial to

investigate whether these adaptation efforts are "… effectively prioritizing the needs of marginalized and vulnerable populations or whether they merely re-package business-as-usual planning approaches" (Anguelovski et al., 2016, pg.333). Mainstream adaptation programs often claim to provide social and environmental benefits called "win-win solutions" but end up obscuring uneven costs and benefits across socioeconomic groups (Anguelovski et al., 2016). This provokes the question of "adaptation for whom, by whom, and how?" (Anguelovski et al., 2016, pg.333). Through government neglect of existing vulnerabilities, lack of institutional capacity, and historical development patterns; the risk is unevenly distributed (Kuhl et al., 2021).

2.6 Addressing Environmental Equity

With EE being a new concept addressed by governments, there has been an absence of research that directly indicates best practices on how to address EE within government adaptation strategies and plans. Exceptions include those who advocate for understanding vulnerable populations as key actors of change (McManus et al., 2014), creating stable and sustainable jobs (Pelling & Garschagen, 2019), and integrating Indigenous worldviews within adaptation and mitigation work (Leonard, 2021). When attempting to integrate EE within adaptation strategies and plans, being cognizant of the complexities within multi-level governments is pivotal in achieving highest chance of creating transformative change. As such, the practices listed below aim to better address EE concerns within adaptation strategies and plans, while also increasing functionality and adaptability within multi-level government systems.

2.6.1 Equity as collaboration and meaningful engagement

Collaboration and community engagement have been long-held practices within the adaptation regime. Although I have referenced collaboration and community engagement together in unison, these terms are not always interchangeable. Within the climate adaptation literature, collaboration has been reviewed within a government context (Ansell & Gash, 2007; Feist et al., 2020) and community engagement has been focused on involving historically underrepresented groups, such as Indigenous communities (Pearce et al., 2009; Hotchkiss, 2022). Accordingly, collaboration has been defined as "a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their limited vision of what is possible" (Gray, 1989, pg.5; as cited in

Feist et al., 2020). Similarly, Ansell & Gash (2007) defines collaborative governance as "a governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets" (Pg.545). These definitions highlight the key goal for collaboration, which is to include different stakeholders and parties in the conversation and receive their feedback on what solutions should be implemented. Conversely, Pearce et al. (2009) articulates that community engagement may include "… involving local people as informants, interpreters, guides, and research partners. Communities have also been invited to share traditional knowledge of Arctic human environment systems, and the complex social and environmental factors that underpin them" (Pearce et al., 2009, pg.13). To this extent, it appears that community engagement conceptualizes community members and stakeholders to be equal partners and that their knowledge and voices should be captured. Increased collaboration and meaningful engagement can ensure that the values and needs of equity-denied populations are seen and addressed. In parallel to meaningful engagement, there can also be integration of other knowledge systems, which can bring forth innovative solutions to climate change.

2.6.2 Equity as division of responsibility and accountability

Climate adaptation causes a lot of tensions between jurisdictions, as there is a lack of responsibility and accountability for it. In Canada there are three levels of government: federal, provincial, and municipal. Each level of government has its capacities and responsibilities. The federal government is the highest level of jurisdiction and identifies areas of prioritization with respect to climate adaptation (Amundsen, Berglund & Westskog, 2010). These prioritizations establish the direction for the provincial government, to then "… *coordinate* policies, science, information systems, and emergency support" (Ontario Low Water Response, pg.1, as cited in Crabbé and Robin, 2006). Therefore, local, or municipal governments can begin to collect information, interpret these policies, implement them, and *respond* directly to any emergencies (Ontario Low Water Response, as cited in Crabbé and Robin, 2006). Although there are jurisdictional divisions within the government, there are some interwoven demands across jurisdictions, especially when developing and implementing climate adaptation strategies. Various literature on adaptation emphasize that the local and municipal government scale is the most appropriate locus for adaptation action, but still acknowledge that adaptation is shared

between jurisdictions. This is primarily due to the impacts that are being faced and what solutions are needed in response to those impacts. However, despite this responsibility falling onto local governments, they are seen as the weaker jurisdiction with the least resources, finances, and capacity (Nalau et al., 2015). Therefore, it is evident that local governments should not be the sole bearers of responsibility for adaptation efforts. Instead of attributing one jurisdiction to hold the responsibility for all adaptation efforts, it should be a shared responsibility with engagement across all levels (Nalau et al., 2015). Yet, with this statement, there is still acknowledgement that there is a need for a higher-up leadership role that needs to guide the rest of the jurisdictions. In the case of Canada, the federal government would be the ones leading the path forward. The role of leadership across jurisdictions will be explored in the following section.

Nonetheless, climate adaptation must be a shared responsibility across jurisdictions and with non-governmental actors. Similarly, environmental equity must be a shared responsibility across jurisdictions and not thought of as assigned to one jurisdiction or department to cover. Shifting mindsets to consider equity and adaptation in tandem with one another, can increase shared responsibility to consider equity within all jurisdictions, throughout each step of the adaptation process. A sense of shared responsibility can allow for further coordination of equity efforts within the government. With that being said, further coordination of equity efforts can ensure that shared goals are being achieved, and due to the shared responsibility from each jurisdiction, these efforts are being done collectively, rather than individual efforts.

2.6.3 Equity as inclusivity: moving beyond "silos"

Institutional silos are a historic problem (Critchley and Scott, 2005, as cited in Measham, 2011), but with the recent emergence of prioritizing climate adaptation, this can provide a need and opportunity for cross-sectoral and/or inter-jurisdiction collaboration and communication. There are three levels of government in Canada, and each level of government has its capacities and responsibilities. The interwoven nature of the Canadian government system lends to the complexity of developing and implementing climate adaptations from any jurisdiction. A lack of attention to climate change at the national and state level leads to a lack of attention at the local level (Amundsen et al., 2010, as cited by Measham, 2011). As climate adaptation is increasingly becoming more prevalent globally, the literature around climate adaptation has emphasized local or municipal level governments as key actors (Amundsen, Berglund, & Westskog, 2010;

Thomalla et al., 2006; Measham, 2011; Pasquini & Shearing, 2014). This emphasis is due to the geographic variability in climate impacts, which presents the need for 'place-based' approaches to climate vulnerability and adaptation (Adger and Kelly, 1999; Cutter et al., 2000; Turner et al., 2003, as cited by Measham, 2011). Due to the smaller scale of municipalities, they are the closest level of government to community action (Measham, 2011).

According to a study done with administrative staff and councilors in Western Cape Province in South Africa, municipalities' actions have led to attitude changes among the municipal residents as well as the opportunity to share their green vision with others in their community (Pasquini and Shearing, 2014). Despite this opportunity for action, it is increasingly more common for municipal governments to have less capacity because they are more financially constrained. This is due to more responsibilities being shifted from provincial or federal governments down to the municipal level (Crabbé and Robin, 2006; Measham, 2011). As a result, inter-jurisdictional collaboration needs to occur to help finance and support community-based municipal action (Amundsen, Berglund, & Westskog, 2010), as well as establish a joint agenda (Thomalla et al., 2006). A joint agenda will establish clear goals and systems for each jurisdiction, in effort to support local action and provide transparency amongst jurisdictions. Yet, with the limited finances, resources, and capacities of local/municipal level governments, it is important to design and modify adaptation plans according to local institutional strengths, civil society capacities, and urban climate adaptation needs (Chu, Anguelovski, & Carmin, 2016; Shi et al., 2016).

Without providing adequate support and tailored approaches, adaptation efforts can further disadvantage the vulnerable communities and the poorer and less capable municipalities in being able to launch adaptation planning (Shi et al., 2016). All in all, urban adaptation approaches should be adjusted to accord to different multilevel political opportunities and constraints, while also being cognizant of the interconnection adaptation plans have on the various government scales (Chu, Anguelovksi, & Carmin, 2016). Unfortunately, adaptation regime suggests a coordinated effort from actors to work towards a common goal, whereas the reality of adaptation is more disjointed and haphazard (Falzon, 2021). If fragmented efforts continue, transformative change will not be acquired. As Berke et al., (2023) notes, "multiple groups could be creating plans in pursuit of their own interests, resulting in a complex network of plans that are poorly coordinated and could potentially conflict and increase risk" (pg. 152).

As such, coordinating equity efforts across jurisdictions is more likely to create transformative change, rather than through fragmented efforts that can work together.

2.6.4 Equity as leadership

With climate adaptation strategies accumulating over the years, there is a significant lack of action taking place at the same rate (Vignola et al., 2017). When there is little to no action to advance adaptation efforts, adaptive capacity (adaptability) is also diminished. As articulated by Vignola et al., (2017) leadership refers to "... the capacity of an individual to convince others to accept/follow his decisions and/or associated underlying paradigm" (pg.85). This is influential for climate adaptation efforts as pro-adaptive leadership can impose transformative changes not only within legislation, but departmental and jurisdictional mindset shifts (Pasquini & Shearing, 2014). As such, leadership within a multi-level government can aid in mobilizing resources for concrete action (Vignola et al., 2017) improve government adaptability (Scholten et al., 2015), increase better coordination across policy-making levels, and influence greater adaptation legislations to be accepted and implemented (Meijerink & Stiller, 2013). As such, the following section will explore the different leadership types that can help enable adaptability.

Understanding which leadership style and type is needed can help identify ways to promote engagement in identifying and mobilizing resources to plan and implement adaptation measures (Vignola et al., 2017). Leadership style more broadly looks at whether a top-down or bottom-up leadership approach is adopted. As Butler et al., (2015) articulates, "top-down planning involves government-level decision-making based on long-term regional climate change modeling and impact projections, and adaptation strategies identified through technocratic cost-benefit analyses" (pg.327). On the other hand, "bottom-up community-based vulnerability and adaptation aims to empower communities by encouraging self-assessment of climate impacts..." (Butler et al., 2015, pg.327). Leadership type on the other hand goes further into identifying specific foci and tasks that are achieved, through a specific leadership type.

According to the literature there are 4 leadership types: Policy Leadership, Connectivity Leadership, Complexity Leadership, and Sustainability Leadership (Meijerink & Stiller, 2013; Scholten et al., 2015). Each leadership type focuses on different goals that jurisdictions want to be achieved, while also highlighting which style of leadership (top-down and/or bottom-up) is best suited to achieve those goals. Policy leadership addresses the role of leadership in changing and implementing public policy. Connectivity leadership discusses the role of leadership in

connecting different levels, sectors, and actors. Complexity leadership explores how leadership can enhance adaptive capacity. Lastly, Sustainability leadership focuses on leadership in maintaining social-ecological systems and achieving sustainability. Leadership is actively needed within the climate adaptation space as it allows for "trust building, managing conflict, linking actors, initiating partnerships, compiling and generating knowledge, and mobilizing broad support for change" (Folke et al., 2005, pg.451; as cited in Meijerink & Stiller, 2013).

Leadership that favours promoting equity can make those mind-shifts and provide reasoning on why integrating equity is so important. As articulated within the University of San Diego's *An Equity-First Approach to Climate Adaptation,* leadership can help provide power to influence equitable outcomes and create space for fair participation and equal decision-making power. Moreover, although there are different ways that equity can be integrated within government, strong leadership tends to be a common enabler (Cannon et al., 2023). Proactive leaders can also help establish better coordination and funding within governments (Shi et al., 2016) which as previously argued, can help with improved functionality within multi-level government.

2.7 Gaps within the research

Extensive research has been conducted on climate change and equity, but there are notable gaps that need to be addressed. The growing breadth of injustices covered by EJM and environmental justice studies highlights the need for a critical and intersectional understanding of environmental (in)equities. Coupled with the lack of a shared understanding, insufficient encouragement of multilevel government regarding adaptation strategies is reinforcing institutional silos that need to be broken.

With a lack of multilevel conceptualization and the inconsistent language around equity, climate adaptation strategies will continue reinforcing social inequities among those most vulnerable. Furthermore, this is not to insinuate a 'one-size fits all' approach to climate adaptation, but rather to encourage researchers to delve deeper into the intersections between all sectors of society. Coupled with addressing the current language being used around equity, interviewing stakeholders along all levels of government will contribute to a deeper familiarity with how adaptation policy in Canada is being constructed. Therefore, unpacking realistic ways Canadian jurisdictions can integrate equity within climate adaptation processes and ways to go about this process.

Furthermore, there is a lack of literature exploring the concept of multilevel adaptation planning. This oversight disregards the potential cumulative injustice implications that are a result of disconnected adaptation plans (Shi et al., 2016). This lack of consideration for a multilevel adaptation system emphasizes the isolated nature of current adaptation efforts and the uncertainties and complexities around integrating equitable adaptation approaches.

2.8 Conclusion

Environmental justice and the complexities of analyzing numerous injustices that communities face due to climate change have received considerable global coverage. Exploring different dimensions of environmental justice highlights the various conceptualizations of environmental justice and equity that researchers and government can adopt. However, these conceptualizations have not been examined within the context of Canada's multi-level government system.

Establishing this foundation of conceptualizations, along with understanding how the climate adaptation regime came to be, opens opportunities for integrating the two fields. It is well-known that climate adaptation strategies and plans can exacerbate those most vulnerable; however, little research explores interventions that can address equity concerns within these strategies. But some practices advocated for broader government advancements have been recognized as opportunities to also address equity concerns, establishing co-benefits to these practices.

This research establishes a strong foundation for exploring these research gaps, such as identifying how environmental justice has been conceptualized within climate adaptation across multiple government scales, and assessing efforts made to advance equitable adaptation strategies. Exploring these gaps will shed light on how government jurisdictions can better integrate environmental equity within climate adaptation strategies and plans. Climate change and equity are both complex and intersecting issues, however, they are inescapable and must be navigated effectively.

Chapter 3: Research Philosophy

3.1 Research Paradigm

The philosophical approach chosen by a researcher reflects their position on how reality comes to be and is understood. Accordingly, *critical realism* (CR) is the selected philosophical approach for this project. Originating from UK scholar Roy Bhaskar in the 1970s and 80s, critical realism is a model of understanding how organizations and broader society operate with intentions to achieve greater social justice. A critical realist lens looks to identify unobservable structures (i.e., climate adaptation legislation) which influence individuals' experiences of reality (i.e., environmental inequities). Despite these structures being unobservable, they are seen as real on the grounds that the effects of those structures can be experienced or observed (Walsh & Evans, 2014). Fundamentally, CR acknowledges an objective reality independent of individuals (ontology) while simultaneously recognizing the role people's worldviews play in how they come to understand reality (epistemology). Furthermore, CR recognizes that systems of oppression exist in this objective reality. Yet, it is the experiences faced by individuals that derive from systems of oppression which shape their perceptions and worldviews of reality. When analyzing the disproportionate impacts that equity-denied populations face due to climate change, it is critical to unpack the root causes of these inequities and understand how these inequities shape communities' perceptions of the world. The ontological, epistemological, and axiological dimensions from a critical realist lens are further elaborated below.

3.1.1 Ontology – Realist

Through a critical realism lens, a realist ontology position is adopted. This acknowledges that there is a reality and world that exists beyond our perception and constructions of the world. Bhaskar (1989) argues there are three levels of ontology: the real, actual, and empirical (Walsh & Evans, 2014; Fletcher, 2017; Anderson, 2020). A common metaphor used to explain these layers of social reality is by imagining an iceberg (see Figure 1). The 'real' level of social reality is seen as the deepest level of reality. In the case of the iceberg metaphor, this level is unseen and deep under water. This is where causal mechanisms or social structures can enable or constrain people's actions, creating events at the 'empirical' level. The 'actual' level of reality is the middle of the iceberg, both visible above waters, but still extending below the water levels. This level of social reality is where events occur as a product from the 'real' level of reality. These events occur regardless of whether or not we observe or experience them, but they are known to

be true. This level of social reality is also seen as the layer of opportunity for transformative change. Lastly, the 'empirical' level is the tip of the iceberg and the most superficial level of reality. At this level, we experience and observe the events that result from the 'real' level. These events would be everyday experiences we face and are perceived by our personal interpretations. Therefore, when looking at inequitable impacts that are being experienced by communities, a CR lens highlights the connections between social structures and inequitable impacts, while providing insight on where transformative change can occur.

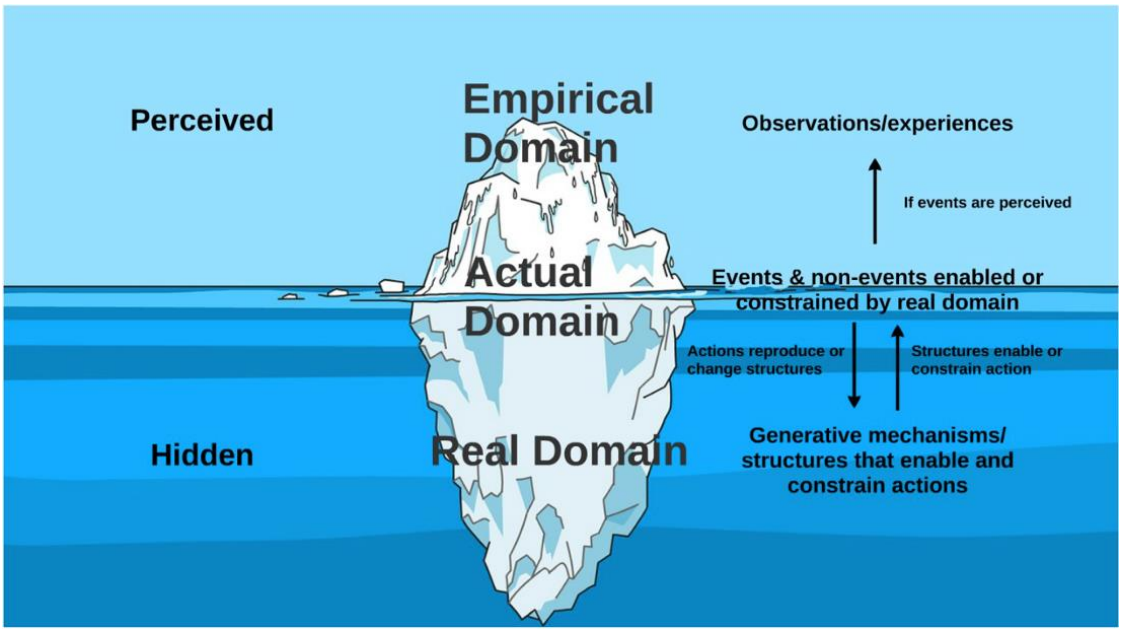

Figure 3. 1 – Critical Realisms Stratified Reality (Anderson, 2020)

3.1.2 Epistemology – Constructionist

Researchers are part of the object of enquiry and are influenced by their own experiences and perceptions through time. Acknowledging this reflection enables the recognition of biases and rationales that can influence and shape a study. To buttress a CR lens, I have adopted a constructionist epistemology. Through a constructionist epistemology, our understanding of the world is shaped by our experiences and values. As such, when trying to discern these three layers of reality, our knowledge is partial and incomplete. This is due to all experiences and events produced by unobservable systems (the 'real' level) are not always observed (the 'actual' level). Therefore, the events that are experienced and observed (the 'empirical' level) fill in the gaps for what was not observed and experienced. This epistemology coupled with a realist ontology, allows for deeper exploration on the impacts of structures and root causes of lived experiences.

As Walsh & Evans (2014) articulate, from an ontological perspective racism is real, not in the sense of materiality but real in the power racism holds in shaping experiences at the 'empirical' level. Alongside, the constructed knowledge gained from these generative mechanisms (the unobservable structures) have enabled individuals to see what the causal agent of their oppression is and how they can create change. Furthermore, through their constructed knowledge, critical realists accept that there are different perspectives on reality. In parallel to this project, a CR lens can help appreciate how disproportionate impacts being faced by communities due to climate change differ across different groups. Thus, these disproportionate impacts cannot be addressed uniformly.

3.1.3 Axiology – Value-Laden

The values a researcher holds can play an influential role in how a project is conducted, executed, and analyzed. This project is value laden as, the worldviews and values I hold as a researcher play a role in how the project came to be. Through the adoption of a critical realism lens, the aim of my project is to shift systems of oppression and power found within the Canadian government in effort to move towards a more sustainable and equitable future for all.

As a graduate student, I have been exposed to mainly Western science ideologies and teachings. This shapes my understanding of the world and more specifically, shapes my understandings of inequities and injustices being faced. I recognize that Western teachings can be restrictive in the oppressive events and injustices that are recognized, specifically injustices that derived from the Canadian government. By recognizing this, I valued looking at other knowledge systems such as Indigenous Traditional Knowledge. Due to colonialism being entrenched within the Canadian government system, Indigenous knowledge systems and viewpoints needed to be addressed, allowing for reconciliation to be a prominent topic within my project. I argue that reconciliation must be a priority for the Canadian government, if a sustainable and equitable future for all is to be achieved. Indigenous knowledge is highlighted within the literature review and Indigenous perspectives on climate change impacts and SLR were obtained through local Indigenous news sources in BC. Although I value elevating the voices of Indigenous peoples and listening to the solutions and knowledge they bring, I was unable to engage directly with Indigenous communities. Engaging with Indigenous communities and other equity-denied populations need to be mutually beneficial. I acknowledge past unethical practices of engagement from researchers who would engage with communities for the benefit of

their project and disregard the needs of the community they are visiting. Therefore, I was unwilling to engage directly with Indigenous communities and equity-denied populations as they would not have benefitted from the interaction, nor my project. As such, I attempted to obtain Indigenous communities insights through local Indigenous news sources and the work from Indigenous scholars.

The purpose of my research is not only to further understand the systems of oppression present within the Canadian government, but also to contribute to finding realistic solutions that can improve the current situation. Although there is a long history of colonization and discrimination driven by Canadian governments, I hope to get insight from the government workers themselves and provide space for them to share their values and priorities. Moreover, I also hope that my research can start an ongoing conversation about environmental equity within the Canadian government. I assume that environmental equity was not widely talked about or integrated within past adaptation efforts, due to the seemingly daunting task of identifying equity and finding solutions to address it. However, with the findings and conclusions of my research, I hope to persuade government workers that it is not as daunting of a task as it may seem. The way in which my findings are framed, are through practices that would benefit government operations in general, while also providing opportunities to reach equity goals. With this, it seems more achievable to begin integrating equity within government practices, as they will need to adopt these practices regardless to improve general efficiency. Overall, my project is just one way of integrating equity within government adaptation strategies, but I hope that it is a gateway for policy analysts and workers to begin doing this work.

Through a critical realism lens, I can understand and recognize social systems that underlie day-to-day experiences. Often within a CR lens, the focus is on understanding how these experiences that derive from the unobservable systems shape individuals' realities and worldviews. However, my project focuses on exploring the social system that create these inequities to be faced, rather than on the inequities themselves. By analyzing climate adaptation strategies, I aimed to further understand the Canadian government system and recognize the different conceptualizations of equity the government may hold. I believe that there is no single way to conceptualize equity but, some conceptualizations may be more productive in creating transformative change to social systems over others. As such, this provides reason on why I did not distinguish a definition of equity prior to the study. The focus of the study was to explore

what conceptualizations are currently adopted and utilized across jurisdictions and literature, rather than compare them to my own conceptualization.

In summary, specifying one's philosophical, epistemological, and ontological lenses allows researchers to understand and reflect on the position they hold within their own studies. This section has explained the choices made in this study to contextualize the rationales and decisions being made during the research process, which have impacted the findings and conclusions.

3.2 Research Objectives

Climate adaptation research has grown in popularity within the past few years, in comparison to the established field of climate mitigation research. With climate induced events becoming more frequent and destructive, holistic/systems-based adaptation approach need to be integrated across jurisdictions. What a holistic or a systems-based adaptation approach would entail is ensuring that climate change impacts are addressed as a whole system, rather than focusing on individual impacts separately. This would allow for recognition of how different impacts can potentially reinforce one another along with look at the whole system and how everything is interconnected. It is known that climate change has disproportionate impacts on vulnerable communities, who have unique needs that must be accommodated. Without tending to their needs, climate adaptation strategies can reinforce socially inequitable impacts systematically. As such, the objectives for this project are to:

1. Examine how equity and environmental justice have been conceptualized within discourses of climate adaptation across multiple scales of analysis (municipal, provincial, national and global).
2. Identify what efforts are currently being made (or lack thereof) to advance equitable adaptation strategies.
    a. Compare how levels of government vary in their capacity and resources on tending to the needs of those most vulnerable.
3. Evaluate how an equity lens or framework can be integrated within adaptation policy development and implementation across jurisdictions.

3.3 Research Design Strategy

This project employed a multi-method approach consistent with discursive policy analysis (DPA) and semi-structured interviews. Prior to conducting research, a literature review was

completed to accumulate a contextual foundation for different conceptualizations of equity and what practices are utilized to better address equity concerns. Moreover, the literature review also provided insight on the evolution of the climate adaptation regime, the influence the Environmental Justice Movement had on different conceptualizations of equity, and what Indigenous Traditional Knowledge systems entail and the importance of recognizing other systems of knowledge to advance environmental equity. The conceptualizations found within the literature review were then used to compare conceptualizations identified within the discursive policy analysis and interviews. Key terms such as climate adaptation, equity, environmental justice, sea-level rise, policy development and policy implementation were used to accumulate relevant articles for the literature review.

The DPA provided insight into how equity is being conceptualized and addressed within climate adaptation strategies. Specifically, sea level rise adaptation strategies produced by the Government of Canada, the Province of British Columbia, and various municipal governments in British Columbia (Delta, Squamish, Port Alberni) were analyzed. In addition to government policies, local Indigenous news outlet data was collected, to capture the impacts and viewpoints of coastal Indigenous communities in British Columbia. News outlets such as Coastal First Nations Great Bear Initiative, Ha-Shilth-Sa, Raven's Eye, and Central Coast Indigenous Resource Alliance were reviewed. Reviewing the news sources aimed to understand Indigenous peoples' perspectives and insights about the impacts they faced, especially following the mass flooding in November 2020. Lastly, semi-structured interviews were conducted with key informants (government workers, policy analysts, engineers, planners) across jurisdictions to obtain further insight into the strategies that were analyzed and identify further conceptualizations of equity by those responsible for designing or implementing these strategies. In addition, I sought to highlight if there were disparities with how key informants described and articulated equity in comparison to how they were outlined in the strategies themselves. Contextual information included how these strategies were formulated, what challenges were faced, what funding processes looked like, and what aspirations were also explored.

3.3.1 Discursive Policy Analysis (DPA)

My project adopted a cross-sectional temporal scale because a longitudinal study was out of scope. The policy analysis captured adaptation strategies and plans from the past 12 years (2010-2022). This time frame captured the most relevant strategies and plans that were

developed, as well as compare previous versions of strategies. Often, climate adaptation strategies are updated on a 5–10-year basis, so this time frame allowed for previous versions of strategies to be analyzed. Moreover, there was limited access to government adaptation strategies and plans, yet the strategies that were accessed fell within this time frame.

Policy analysis broadly examines forms of communication which reveal knowledge about society, culture, or relationships between individuals (Bryman & Bell, 2019). Various terms have been used to describe this process, which is indicative of what the analysis is used for. Some may call it a content analysis (Bryman & Bell, 2019), environmental discourse analysis (Kanazawa, 2017), policy discourse analysis (Allan & Tolbert, 2019), and document analysis (Patton & Patton, 2002; Creswell & Creswell, 2018), to name a few. Each of these types of policy analyses centres on different objectives and foci. This study used discursive policy analysis (DPA), which is "an approach to policy analysis that foregrounds the discursive shaping of policy problems as a mechanism for advancing social justice" (Allan & Tolbert, 2019, pg.141). With the intention to evaluate how an equity lens or framework can be integrated within climate policy development and implementation, conducting this form of policy analysis identifies where windows of opportunities lie. Key term searches to find such documents and policies included: adaptation, sea-level rise, flooding, inundation, equity, environmental justice, vulnerable, resilient, climate change, and coastal community. Such key terms will be used through online databases such as GoogleScholar or Ebscohost, and government or news outlet websites. This study followed Allan & Tolbert (2019)'s steps in conducting a DPA, as summarized below.

Step 1: Sorting documents and texts, deductively coding them based on the research question

During this step, the adaptation strategies and plans were collected using the key terms above. This allowed for climate adaptation strategies that had mentioned equity to be identified. This project also focused specifically on adaptation strategies that identified sea-level rise (SLR) and coastal flooding as a concern to scope the strategies that were found.

Step 2: Inductive and deductive coding

Conducting inductive and deductive coding, allowed for in-depth analysis of the adaptation strategies to be made. By not having predetermined codes to search for in the strategies and plans, researcher biases were avoided.

Step 3: Theme building, generating categories and grouping the codes

Based on the codes that were inductively and deductively coded, thematic groupings were made. The codes were examined apart from their original sources and grouped based on the study's research question and the conceptualizations and practices to address equity identified in the literature.

Step 4: Second round of codes to identify what is not talked about (i.e., gaps) and reconstruct categories.

A second round of coding allows for gaps of discourse to be acknowledged. After the first round of coding and themes were identified, further analysis on what was not talked about and being able to distinguish from meaningful articulation of equity concerns, versus high level acknowledgements were able to be made. As such, reconstruction of the themes was made.

Step 5: identify what the dominant discourse is and establish subject positions.

Lastly, this phase allowed for main findings to be identified and observe what the main conceptualizations and practices around equity concerns were.

Although these steps are listed in numerical order, there is a fluidity and iterative nature behind conducting a policy analysis. Each phase aided in understanding key terminology, patterns, and context on how equity is being conceptualized and addressed across jurisdictions. Phases were conducted multiple times to not only achieve thorough analysis, but to have the results from the interviews inform part of the policy analysis as well. As such, the whole DPA process was conducted twice through.

3.3.2 Semi-Structured Interviews

3.3.2.1 Population and sample

This study undertook a purposive sampling method. Purposive sampling involved searching for individuals who are likely to be a rich source of information on the issues of the study. As such, the sample consisted of government workers from all targeted jurisdictions, as well as planners, engineers, and academics. Initial recruitment was made from the strategies that were analyzed in the DPA. Often strategies had a list of officials who worked on developing the plan and groups who were collaborators. These lists also led to exploring the government directories, which were categorized by departments. Scholars who had formerly worked with the Canadian government were contacted and provided additional contacts. Lastly a snowball sampling strategy was used by asking the participants if they knew of anyone else who would be willing to get interviewed. Each participant was recruited by email (Appendix.) , which

introduced the project and its motivations. Thank you emails (Appendix) were sent after all interviews were conducted.

Semi-structured virtual interviews were used as a secondary method for data collection. The 15 interviews were conducted over Zoom and lasted about one hour each. Each participant was sent a letter of consent (Appendix X) providing an overview of the project and asking for their consent to participate. Interviews were chosen as a second method conducted for various reasons. They have a high response rate, in comparison to other methods that are dependent on the participants to initiate (e.g., surveys). Moreover, interviews allow for more in-depth conversations and perspectives to be captured, which helps when talking about complex and subjective topics such as equity. Having the opportunity to probe for complete answers decreases inaccurate answers and provides more depth to the conversations. When talking to a wide audience, it has been interesting identifying where each person's knowledge is based and where equity has come into play. Conducting semi-structured interviews has provided an opportunity for participants to freely share their knowledge of equity. In brief, semi-structured interviews were selected to create space and freedom for participant responses, while creating general boundaries. The semi- structured interviews allowed for in-depth insight into the logistics behind policy development and implementation process. Understanding how priorities are determined, the level of collaboration amongst departments and governments, and whether there was variability in how each group conceptualized equity was explored. Furthermore, the SSIs will supplement the information gathered by the DPA leading to more credible results.

The interviews began with introductory and demographic questions such as the participant’s role within the government or their organization as well as what their department or company was responsible for. Further in-depth questions regarding adaptation strategy development and implementation were then posed. Discussion concerning intentions and barriers faced when developing and implementing adaptation strategies followed. Lastly, questions regarding equity and how it has been conceptualized and addressed were discussed. The interviews followed a funnel structure (Dunn, 2016) where broader and easier questions were asked at the beginning, while progressively narrowing down to more specific topics, such as equity. This structure allowed participants to feel more comfortable in the interview and transitioned them to discuss equity (see appendix XX for interview questions).

3.4 Data Analysis

The discursive policy analysis was conducted in two rounds utilizing the NVivo software. The first round was conducted prior to any interviews, whereas the final round was conducted after the interviews. By conducting the first round of DPA prior to the interviews provided insight into what current strategies and governments were articulating around equity concerns. Thus, providing insight for follow-up questions during the interviews. This order of conducting the project also contributed to the triangulation of my findings. The triangulation of my thesis is discussed further below. A first round of analysis of the policies was used to develop an initial coding scheme. Being able to quickly see what the main themes were, while ensuring that these themes corresponded to both parts of my research question. Advancing into the second round, a list of key themes that was informed by the literature and what was discussed in the interviews were formed. This allowed the second round of analysis to be rigorous, in addition to ensuring that any biases were not overshadowing key themes that emerged. For that reason, two rounds of DPA allowed for enough rigour and accuracy, while also being flexible and representative of the current Canadian discourse around equity and adaptation.

After receiving consent from the participants, each interview was recorded. The recordings generated an interview transcript that helped with analyzing the dialogue after completing all the interviews. These recordings were then deleted once all the interviews were conducted. Any identifiable information was removed from the transcripts and any quotations were anonymized. Each participant was given an identification number. After the transcripts were cleaned, they were analyzed in Microsoft Word using a colour coding method (see Table 1). This method allowed for similar themes discovered in the DPA to be applied to the transcripts; ensuring cohesive analysis across both methods.

	Leadership
	Collaboration & Engagement
	Moving Beyond Silos
	Responsibility & Accountability
	Enablers to Climate Adaptation
	Barriers to Climate Adaptation

Table 3. 1 – Colour Code Index for Interview Transcripts

As a multi-method study, it was important to understand how the data was triangulated. As defined by Bryman & Bell (2019) triangulation refers to "the use of quantitative research to corroborate qualitative research findings or vice versa" (pg.334). Originally conceptualized by Webb et al., (1966) as a manner to strengthen confidence in findings (Bryman & Bell, 2019). Within this study, the findings and data from the DPA were corroborated with findings from the interviews. By conducting the first round of the DPA prior to the interviews, common themes and discourses were identified early on, which helped frame the interview process. Furthermore, by analyzing the strategies and plans before consulting with the key informants, knowledge about the strategies they worked on was already accumulated. Thus, I had greater insight on follow-up questions and knowing where to shift the conversation. Similarly, conducting the second round of DPA post interviews also provided a refreshed outlook on my themes and coding strategy. The interviews provided an opportunity to discover what discourse was used, motivations behind strategies, and the extent of interviewees' knowledge on equity. These insights may have originally been overlooked or disregarded, but the interviews provided a new layer of contextual insight. All in all, having both methods and information from the literature has enabled rigorous and reliable findings.

3.5 Methodological Limitations

While a strong effort to triangulate the data and ensure accurate and representative findings were made, there were still a few limitations to note. The first was the limitations of snowball sampling. Although this was a main form of recruitment, it does not ensure that all voices and groups are represented. By asking participants to refer other key informants, there is a risk of recruiting other participants with the same viewpoints. Moreover, only 15 interviews were conducted, limiting the generalizability of the findings across jurisdictions. The interviews were unintentionally conducted following a BC election, which limited response rates. Therefore, interview findings cannot be generalized across the jurisdiction or department. Similarly, not all adaptation strategies were made available online, thus, the analysis is not necessarily representative of all efforts being made within the government.

Chapter 4: Conceptualizations of Equity

This chapter explores how three Canadian government jurisdictions and Indigenous communities conceptualize and understand environmental equity, as explored through a discursive policy analysis (DPA), interviews, and Indigenous news sources. I consider how these jurisdictions identify equity-denied populations, differ in terms of terminologies used in parallel or in opposition to equity and what challenges and inequities are highlighted. I argue that Canadian governments' adaptation strategies have conceptualized equity within four main categories: distributional, procedural, intersectional, and triple bottom line. Although these categorizations are organized into groupings, they are by no means static and independent from one another. Most of the strategies encompass a combination of two conceptualizations. Therefore, it is important to understand that these groupings are spectrums that have varying levels of acknowledgement to equity, rather than discrete groups. It is also important to note that there were no significant variations among jurisdictions that favored a certain conceptualization. The following sections explore what these conceptualizations entail, how in-depth acknowledgements of inequities are, and how initial strides to integrating equity within Canadian climate adaptation processes are beginning to occur.

4.1 Equity-Denied Populations

Among the adaptation strategies and interviews across jurisdictions, there was significant overlap among jurisdictions of who was deemed equity denied, yet there was variation in terminologies being used. However, the degree to which radical strategies were naming these groups directly varied, shaping their conceptualizations of equity. For example, some strategies adopted a very vague conceptualization of equity, resulting in the use of terms such as "systematically marginalized" or "traditionally underserved". Examples of this can be found in the Pan-Canadian Working Group Adaptation and Climate Resilience Report (n.d.), Provincial Flood Emergency Plan (2019), and Community Climate Action Plan Squamish (2020) strategies, among others. Even so, using these broad terms does not narrow down the demographic which the jurisdiction wants to identify and support. Using generalized terminology may be politically easier compared to naming populations directly, but this can create tensions over who is acknowledged and who is not. Similarly, there was prominent discourse around identifying vulnerable populations based on regions. As a participant articulated, vulnerable communities are "...dependent on the context, so remote, coastal, and small communities tend to be more

vulnerable to climate change" (P2). This type of acknowledgement provides insight into who the jurisdictions' efforts are for; but acknowledgement alone will not spur transformative change. It is crucial for jurisdictions to name groups directly within adaptation strategies, as this provides clarity on who requires support while also recognizing and addressing the specific struggles and challenges these communities face.

There have been a few strategies that have identified equity-denied populations (see Table 4.1). However, there is a significant lack of consideration towards communities of color. The new federal government's Canada's National Adaptation Strategy (2023) included the term 'racialized communities' as being vulnerable to climate change but did not elaborate on why this is the case and what can be done to alleviate the vulnerability being faced. Similarly, within the federal government's *Planned Retreat Report (2020),* it notes how in the US, "mostly white communities were able to garner state and federal support for mass movement... Communities with lower socioeconomic status, often communities of color, frequently encountered patchwork retreat..." (pg.16). This illustrates how communities of color are disadvantaged when it comes to managed retreat, compared to their white counterparts. Although this is an important acknowledgment to make, it would be more critical and radical if the government were to do such reflection within the Canadian context. Nevertheless, most strategies collected did not identify racialized communities or people of color at all. Thus, this raises questions about why this gap exists. Although there are advancements with identifying equity-denied populations, there is inconsistency in the terms being used to identify them. For example, the federal government uses the term 'homeless,' whereas the provincial government refers to 'people experiencing housing insecurity.' Furthermore, using the terms 'low-income' and 'people facing financial hardship' can insinuate the same population, but there is no clarity provided. Moreover, there was no indication on what level of income was considered 'low-income' and what 'financial hardships' meant. The inconsistency in terminology can become disorienting on which jurisdictions are identifying and wanting to support.

As seen within Table 4.1, jurisdictions and departments use different terms to address the same population. It is evident that the federal government utilizes a multitude of terms to characterize equity-denied populations, in contrast to the provincial and municipal levels. Moreover, it is intriguing how the federal government identifies both geographical and social vulnerabilities among these populations, whereas the provincial and municipal levels tended to

focus primarily on social vulnerabilities. Furthermore, there was acknowledgement of both physical and mental health factors, allowing for a robust understanding on what communities face. Moreover, within the federal and provincial governments there was notable discussion focusing on lived experiences of injustices. As highlighted in Table 4.1., numerous populations were described as 'people who experience…', which emphasizes the experiences populations face, rather than letting those experiences define their identity. Arguably, this framing of equity-denied populations is more transformative than defining them solely by the injustices they face. Municipalities did lack in their ability to identify equity-denied populations, despite their proximity to communities. Considering that municipalities are anticipated to be leaders in climate adaptation efforts, their inability to recognize equity-denied populations within their own regions introduces a concerning prospect. This oversight may result in adaptation interventions that do not support communities in responding to climate change and exaggerate their vulnerabilities.

While strategies and interviews acknowledged equity-denied populations to some degree, these populations were discussed as vulnerable communities and as partners requiring consultation. First, there was a dominant discourse around the vulnerability of these communities. The federal government's *Canada's National Adaptation Strategy (2023* notes "... [marginalized populations] are more likely to live in places that experience higher exposure to climate impacts like flood risk zones, as well as the neighborhoods and buildings that are the hottest during heat waves" (pg.10). It is important to acknowledge these vulnerabilities; however, moving beyond this deficit-based language can help de-stigmatize populations. As one participant working at the provincial level stated: "We also risk stigmatizing some groups by focusing on their vulnerability… not all urban Indigenous people are susceptible to the impacts of climate hazards, and we need to build nuance around that…" (P14). Therefore, it is important to name populations directly to understand who the support is intended to go towards, while also ensuring that generalizations and assumptions are not made which can stigmatize populations.

Similarly, discourse around vulnerability and adaptive capacity was mentioned by the provincial government's Community Health and Climate Plan (2021), indicating how "… flooding adaptive capacity is determined by factors such as income and social status, education and literacy, physical environments (e.g., housing, social supports, and coping skills)" (pg.23). These acknowledgements are good initial steps in understanding localized climate impacts, but

these strategies failed to discuss what will be done to reduce these vulnerabilities. The majority of strategies only identified that certain communities are vulnerable, and that was the extent of their considerations of equity-denied populations.

Second, there were strategies that perceived equity-denied populations as partners that should be involved in adaptation planning. As articulated in the BC government's Preparing for Climate Change (2012), "Local governments and their communities will need to continue to be engaged with assessing climate change impacts, prioritizing actions, and implementing responses, as long as the climate continues to change" (pg. 21). This recognizes community members as drivers of change and how there is value in elevating their voices and knowledge. These efforts have also extended to look at further engaging with Indigenous peoples and the value they bring within climate action. As articulated in the Pan-Canadian Framework (2020), "Indigenous peoples will be important partners in developing real and meaningful outcomes that position them as drivers of climate action in the implementation of the Pan-Canadian framework" (pg.4). Further explanation on the benefits of engaging community members will be discussed below.

Overall, the vagueness around who is deemed an equity-denied population and how their vulnerability can be assessed raises significant concerns. Without clear indication of who equity-denied populations entail, this raises ambiguity on whom jurisdictions are making adaptation strategies and interventions for. This ambiguity around equity-denied populations may be a tactic in depoliticizing adaptation strategies, attempting to please the public, and avoid criticism. Alternatively, there may be political biases where certain groups are favored, and others are left to be vulnerable. This sentiment was articulated by P14 where "… there's political motivations that want certain groups to be more effective than others because that's the prevailing narrative…" With that, there may still be motivations to favor certain groups over others, and the use of vague terms aids in masking these biases. In any case, there is a pressing need to critically examine how equity-denied populations are perceived. Embracing a more inclusive approach where every communities voices are uplifted, and vulnerabilities are addressed, is essential. There are strides being made in this direction; however, further acknowledgement of existing biases and power imbalances within adaptation strategies are needed. Only then can meaningful progress be achieved in addressing the vulnerabilities faced by various populations and advancing towards a more just and sustainable future for all.

Government Scale	Adaptation Strategies	Equity-Denied Populations Identified
Federal Government	• Adapting to Climate Change (2010) • Canada's Marine Coasts in a Changing Climate (2016) • An Emergency Management Framework for Canada (2017) • Canada's Top Climate Change Risks (2019) • Joint Committee on Climate Action (2020) • National Climate Gathering Report (2020) • Pan-Canadian Framework on Clean Growth and Climate Change (2020) • Canada in a Changing Climate National Report (2021) • Rising Seas and Shifting Sands (2021) • Adaptation Changemakers (n.d.) • Canada's Coastal Adaptation and Flood Mitigation Capacity (n.d.) • Canada's National Adaptation Strategy Building Resilient Communities and a Strong Economy (2023) • Federal Actions for a Clean Growth Economy and Climate Change (2016) • Pan-Canadian Working Group Adaptation and Climate Resilience (n.d.) • Planned Retreat Approaches to Support Resilience to Climate Change in Canada (2020)	• Elderly, Older Adults • Children, Youth, Very Young • Medically at-risk Persons • Homeless • Low-income • Equity-Seeking Groups • Vulnerable Populations • Coastal Communities • Rural Communities • Urban Communities • Northern Communities • First Nations • People with Health Conditions and Disabilities • People who experience structural inequity • People who experience poverty • People who experience isolation • People who experience discrimination • Traditionally Underserved • Marginalized Populations • Racialized • Immigrant Communities • Indigenous People • Aboriginal Communities • Lower Socioeconomic Status
Provincial Government	• Environmental Protection Flood Management Strategy (2010) • Sea Level Rise Adaptation Primer BC (2013) • Case studies on climate in floodplain mapping (2018) • Provincial Flood Emergency Plan (2019) • Climate Preparedness and Adaptation Strategy: Actions for 2022-2025 (2021) • Community Health and Climate Change Mapping (2021) • Regional Perspectives Report - CH.5 BC (2022) • BC First Nations Climate Strategy and Action Plan Spring (2022) • Flood recovery, resilience, reconciliation (2022)	• Elderly • People with Disabilities • People experiencing housing insecurity • People experiencing substance use • People experiencing mental health challenges • Pre-existing health issues • People experiencing socioeconomic disadvantage • Socially isolated individuals • Recent Immigrants • Pregnant women • Outdoor workers • Marginalized Populations

	• HealthAdapt Vulnerability and Capacity Assessment (2022) • Co-governance of Marine Protected Areas in British Columbia (2020) • Draft Principles for BC Climate Preparedness and Adaptation (n.d.) • Lower Mainland Flood Management Strategy (n.d.) • Preliminary Strategic Climate Risk Assessment for British Columbia (2019) • Preparing for Climate Change - An Implementation Guide for Local Governments BC (2012) • Together for Climate: Managing Risk Through Community Collaboration (n.d.)	• Infants • People experiencing homelessness • Ethnic minorities • Low-Income • Indigenous Peoples • Vulnerable segments of the population (e.g. homeless) • Traditionally underserved populations
Port Alberni	• Sustainable Cities (2008) • Reconciliation Report (2019) • Together for Climate Change Report - Port Alberni (2020) • Strategic Plan (2023)	• Vulnerable populations • First Nations • Women • Lower-Income
Squamish	• SLRD - Integrated Sustainability Plan (2013) • Adapting to Climate Change in Squamish (2016) • Integrated Flood Hazard Management Plan Squamish (2017) • Official Community Plan – Squamish (2018) • Sea to Sky Multimodal Evacuation Plan Squamish (2019) • Squamish Valley Agricultural Plan - Background Report (2019) • Community Climate Action Plan – Squamish (2020) • Squamish Valley Agricultural Plan - Community Engagement (2020) • Squamish Valley Agricultural Plan (2020) • Floodplain Management Strategy (2021)	• Elderly citizens • First Nations • Economically depressed areas • Vulnerable people • Children and Youth
Delta	• Climate Change Adaptation Program (2013) • Climate Change Adaptation Program (2018) • Delta Flood protection System Risk Assessment (2018) • Delta-RAC Sea Level Rise Adaptation Visioning Study (n.d)	• Elderly • Disabled

Table 4. 1– Equity-Denied Populations Identified Within Canadian Government Adaptation Strategies

4.2 Distributional Justice/Fairness

Among the adaptation strategies and interviews, a distributional conceptualization of equity was adopted. Emerging from the literature on distributional justice, there was a strong focus on how resources, impacts, and support were being distributed to communities. Distributive justice looks to fair allocation of resources, services and impacts through social exchange (Ikeme, 2003). Therefore, a distributional conceptualization of equity highlights the allocations of impacts, resources, and interventions being made available to communities. The distributional conceptualization was a dominant understanding utilized within adaptation strategies, but not as prominent within the interviews and the Indigenous news sources. Overall, I would argue that this conceptualization takes on a high-level understanding of what environmental equity (EE) entails yet demonstrates preliminary strides in understanding how allocation of resources and services can negatively impact those most vulnerable. The next sections will explore what terminologies and definitions are used and the governments' awareness of inequities.

When discussing strategies related to distributive justice, the term "equity" was commonly used. Other terms such as "integrated," "co-produced," "vulnerability," and "multi-dimensional" were also used. It is interesting how these other terms emerged within this conceptualization as they tend to reflect a broader perspective beyond just distributional impacts. For example, the terms "integrated" and "multi-dimensional" can also imply looking beyond the allocation of goods and beginning to examine the historical roots of inequities or the accurate representation of communities within decision-making contexts. However, as articulated by the federal government's *Canada in a Changing Climate (2021)*, a "multidimensional picture of adaptation relates to concepts such as flexibility in responding to resource use, hazard avoidance, and emergency preparedness" (pg. 298). Similarly, "co-produced" points more towards procedural justice over questions of distribution. These terms were often not well-defined, but there was a dominant dialogue that emphasized a distributional conceptualization. The federal government's *Canada in a Changing Climate National Report (2021),* for instance, states that "considering social equity in adaptation decisions will help reduce the vulnerability of those at highest risk and will ensure that benefits are distributed fairly" (pg.53). The notion of fairness is also evoked by the municipality of Squamish in its *Integrated Flood Hazard Management Plan*

(2017), which highlighted the importance of trying to "reduce flood risks and share them fairly between everyone who uses the floodplain" (pg.1-2).

Although fairness was frequently referenced in the adaptation strategies reviewed, there was little to no explanation of what fair distribution consisted of. There was some dialogue from a participant who noted that "finding people who are disproportionately exposed and vulnerable, help them first and then you can work your way through society" (P12). This implies that those most vulnerable should be helped and supported first, and then support can be distributed to the rest of society subsequently. Although this provides some insight into what a "fair distribution" would encompass, it still does not provide a robust understanding of what is to be achieved. It is also interesting how fairness within the adaptation strategies, interviews, and news sources is correlated with equity when it can also be attributed to equality. As articulated in the federal government's *Joint Committee on Climate Action Annual Report (2020),* "Fairness is essential in ensuring that we achieve equity between knowledge systems and that we are able to get to sharing in a good and appropriate fashion" (pg.34). Similarly, discourse correlating fairness with equity is presented in the federal government's *Planned Retreat Approaches to Support Resilience to Climate Change in Canada (2020)* that states: “Recommendations considered social justice with regard to the equitable distribution of costs and benefits, aiming to promote fairness in retreat processes" (pg.11). Notably, distribution is discussed in terms of equitable distribution rather than equal distribution. Equitable distribution would cater to different communities' needs and tailor interventions to fit what the communities want, whereas equal distribution would mean everyone receiving the same type of support and resources. With that in mind, it is encouraging to see fairness attributed to equity as it will foster more localized and tailored support for communities rather than enforcing a "one-size-fits-all" approach. However, there was no evidence of jurisdictions elaborating on how they hope to achieve fair distribution and what they want to achieve by this distribution. Overall, within a distributional conceptualization, the term "equity" was commonly used, and the notion of fairness was closely linked in a broad and vague manner.

Lastly, the awareness of inequities within a distributional conceptualization was broader in scope than expected. Due to the focus on the allocation of resources, it was expected that the level of awareness of inequities would be quite narrow in scope, focusing only on the inequity of the distribution of resources. Nonetheless, the inequities that were highlighted encompassed

more than the distribution of resources, including employment, adaptation interventions, and geographical impacts. The federal government referred to the "loss of jobs and accessibility to resources" (Government of Canada, n.d.). The BC [] strategy spoke about "Indigenous peoples and communities are more exposed to climate risks due to the location of communities" (British Columbia CleanBC, 2021) and "unequal access to cooling and heating in homes" (P4). Another awareness that was articulated through one of the news articles was Miller's note on how "Indigenous communities across the country tend to be more vulnerable to natural disasters, due to historical lack of infrastructure funding that leaves leadership struggling to respond and prevent emergencies" (NationTalk, 2021). This quote acknowledges how government funding has been lacking, especially towards Indigenous communities, making them more vulnerable and less capable of adapting to climate change impacts.

One participant asked how it might be possible to redistribute impacts: "... which communities are going to be impacted more than others, can we switch that in any way?" (P10). This perspective is intriguing because it aims to shift the impacts of climate change from vulnerable communities to communities that presumably have greater adaptive capacity to recover from these impacts. However, this ideology seems to reflect a 'zero-sum' ideology, where the only solution is to relocate resources to different communities, rather than find new resources to aid those in need. Furthermore, this poses an ethical question on whether it is ethically correct to transfer impacts to another community. In addition, this conceptualization also recognized reconciliation as something that must be worked towards but lacked elaboration on what that would entail. Overall, the distributional conceptualization acknowledges a range of distributions from impacts, employment, geographical location, and resources. However, these acknowledgments do not explicitly state who is being disproportionately impacted by these distributions, except for Indigenous communities. And alluding to fairness begs the question where resources will come from to be (re)distributed. In conclusion, there is much work to be done to make the distributional conceptualization more robust and effective in advancing EE within adaptation strategies.

4.3 Procedural/Recognition Conceptualization

The procedural conceptualization of equity is derived from the dimension of procedural justice, which focuses on the recognition and participation of communities. As described by Dolsak & Prakash (2021), "procedurally just processes incorporate informed consent through

inclusive public participation and provide access to remedies to correct the harms that policies might impose on citizens" (pg. 285). The goal is to focus on participatory democracy and ensure meaningful engagement with citizens, especially those who are deemed equity denied. Recognition is a branch of procedural justice that seeks to recognize the unique experiences of oppression that equity-denied populations face (Pellow, 2018). Recognition can also be seen through integrating other knowledge systems, such as Indigenous worldviews.

Similar to the distributional conceptualization, "equity" was the most common term used within adaptation strategies, interviews, and news sources when discussing procedural notions of justice. Other terms, such as "co-produced," "co-developed," and "alternative solutions," were also used which suggest engaging and working alongside communities rather than just consulting with them during one phase of the process. Engaging communities across multiple phases of a project fosters the establishment of shared priorities, a sentiment echoed by a provincial-level interviewee who underscored the significance of "... extensive engagement internally and externally can help to decide what those priorities and objectives should be in our strategy" (P14). These priorities and objectives are drivers for adaptation strategies, reinforcing the value of community engagement and input integration in preventing inequities from occurring. Furthermore, it is also important to highlight the recurring use of the term "engagement" in the context of community interaction. This aligns with existing literature regarding the benefits of engaging with communities rather than consulting with them. Consulting can be quite transactional, whereas engagement emphasizes the development of a relationship. Using the term "engagement" implies a genuine motive to form relationships with communities, as opposed to the more technical and detached connotation associated with the term “consulting”.

Despite using the term "engagement," there was still evidence of governments merely seeking affirmation from communities regarding their original plans. The Co-governance Marine Protected Area in British Columbia (2020) report by the provincial government, asserts that "Effective stakeholder engagement promotes trust and respect between decision makers and stakeholders...” (pg. 45). However, it also stipulates the use of engagement tools to "...ensure that stakeholders... have meaningful opportunities to learn about and lend their voices to the process" (pg. 45). This suggests that communities and stakeholders are not regarded as equal partners with government workers in the adaptation process; rather, they are positioned to learn about the process that has already been established. In contrast, signs of substantive engagement persist,

where communities are perceived as equal partners within adaptation planning and their voices inform adaptation practices. The provincial governments' HealthADAPT (2022) strategy, for example, emphasizes how "Community engagement leads to a comprehensive understanding of vulnerability, as well as to adaptation strategies that are informed and supported by community health priorities" (pg. 23). In this scenario, government workers viewed community members as equal partners and wanted to elevate their voices. By articulating that community health priorities will steer adaptation strategies, the strategy ensures the fulfillment of their needs and underscores the alignment of the strategy with the values of the communities.

Lastly, the awareness of inequities that were mentioned encompassed a diverse array, with an emphasis on addressing reconciliation and acknowledging the impact of colonial systems. There was a substantial dialogue about engagement and the importance of meaningfully engaging with community members. A participant from the federal government noted how there is a difference between "tokenistic expressions" and meaningful engagement and dialogue. This distinction compels a different framing for community engagement. Moreover, the interviews often talked about uplifting and raising communities' voices. Specifically looking at Indigenous communities' voices, a participant shared how their team of researchers and government workers conducted a series of shoreline walks, rather than traditional semi-structured interviews for a project aimed at placing values at the center of coastal adaptation. They stated "...we do a shoreline walk and it's more open-ended as to what happens. Some ended in sharing lunch together or some started with food and then ended up with walking through the community…" (P5). This exemplifies a meaningful method through which governments can engage with communities, simultaneously highlighting how Indigenous methodologies and knowledge can enrich broader engagement and promote EE. Similarly, Judith Sayers articulated in one of the Indigenous news sources how "UNDRIP talks about our ability to control, manage and use our own forests... and I don't see that reflected in the new forestry policies or law that [the government] is proposing" (Renwick, 2021). This underscores, therefore, the need to address the disparity between existing climate policies and UNDRIP, as the repercussions can be harmful to Indigenous communities. As emphasized by a participant, "...are we advancing [Indigenous communities'] voices or are we falling back into promoting colonial perspectives" (P5).

There is some progress within the government’s pursuit of reconciliation and meaningful engagement, specifically with Indigenous communities. Government workers from the BC

government and federal government strategies, such as the *Canadian National Adaptation Strategy (2023), National Gathering Report (2020), and Canada's Top Climate Risks Report (2019)*, discussed the need to address pre-existing systems of inequity such as colonialism and systemic racism to help improve adaptability (British Columbia CleanBC, 2021). Yet, these efforts tend to be concentrated at the municipal and provincial level. In effort to advance towards reconciliation, there has been discourse around translating adaptation strategies into local languages. Translating such documents and strategies not only enables communities to comprehend and learn from the strategies, but also signifies a representation of these communities by providing them with a translated version of the strategy. The federal government's *Adapting to Climate Change (2010)* emphasized the need to "Translate all public notification and planning documents into local languages (in this case Inuktitut) before they are released" (pg.11). The engagement referred to in strategies involving community members often revolves around fostering a collective understanding of climate change and the interventions that are in place. As elucidated by the Squamish *Integrated Flood Hazard management Plan (2017)*, "Public outreach and education increases community awareness of the flood risk mitigation program" (pg. 5-5). While raising awareness about the impacts of climate change, increased engagement provides opportunities to solicit input from communities regarding desired interventions and priorities for implementation. By listening and learning from the community, it becomes apparent who should be involved during adaptation planning, whether that involves the community directly or their governing body.

Prioritizing active listening to communities, rather than making assumptions about their needs and wants, prompts inquiry into how meaningful engagement can effectively tackle distributional inequities. For example, a main concern for Indigenous communities is the lack of control and access to their land and resources. However, how can meaningful engagement with Indigenous communities' aid in tackling this issue if Indigenous communities do not have full rights to their territory? This issue is beyond the scope of this thesis, however, raises an important question for jurisdictions to consider. Specifically, within the procedural/recognition conceptualization, there was consistent dialogue around integrating Indigenous knowledge. However, there have been varying degrees of the government's awareness of Indigenous worldviews. As noted by a participant, a BC project is attempting to "weave the Sendai framework with their traditional knowledge and their traditional values" (P5). Although

provincial workers are making efforts towards integrating Indigenous knowledge with Western science, it seems like Indigenous knowledge is being referenced as a noun rather than a full worldview (McGregor, 2022). Similarly, within the Port Alberni Sustainable Communities (2008), they put it quite crassly, “First Nations – tap into knowledge” (pg.18). In contrast, there have been some great acknowledgments being made at the federal and provincial level, appreciating the complexity and holistic nature of Indigenous knowledge. As illustrated in the BC *Climate Preparedness Strategy (2021)*, “For Indigenous Peoples, local knowledge informs decision-making about fundamental aspects of day-to-day life. These cumulative bodies of knowledge are integral to cultural systems that include language, systems of classification, resource use practices, social interactions, ritual, and spirituality” (pg.17). Similarly, the federal government’s *Canadian National Adaptation Strategy (2020)* notes, “Indigenous Knowledge, which includes intergenerational knowledge, values, worldviews, and relations, are a source of strength and resilience for Indigenous Peoples and position them as leaders in adapting to climate change” (pg.10).

Incorporating these profound insights from Indigenous worldviews, their strategies exemplify a commitment to engaging with Indigenous communities in a manner that is both respectful and meaningful. The BC *Climate Preparedness Strategy (2021)* articulates this approach, stating, "The Province will work closely with Nations and organizations to collaboratively integrate Indigenous knowledge and perspectives on climate change, as well as climate risks and adaptive measures, into our work together, such as in stewardship forums and land use planning" (pg.24). Overall, the procedural/recognition conceptualization emerges as a particularly robust and comprehensive framework for understanding equity, as evidenced in this study.

4.4 Intersectionality/Interconnectedness

The intersectionality conceptualization examines how various inequities interact with each other. There are different variations of intersectionality in the literature, which focus on different factors and how they compound inequities. Similarly, in interviews, adaptation strategies, and news sources, a range of different understandings of intersectionality were demonstrated. Some focused on ensuring that adaptation strategies considered future generations, while others took a traditional approach and looked at how various aspects of identity (such as race, culture, age, etc.) can create compounding inequities. Lastly, others emphasized root causes

of inequities and the need to address them. Overall, the intersectionality conceptualization was commonly seen throughout interviews, adaptation strategies, and news sources. I argue that there is a wide variety of understandings of what equity entails through an intersectionality conceptualization, which can be a starting point for thinking about equity in a critical manner.

The term "equity" was most prominently used to evoke the concept of intersectionality. Other terms such as "holistic," "systems," and "equity and inclusion" were also used. There was a lack of definitions regarding what intersectionality meant within the adaptation strategies, interviews, and news sources. Some strategies did provide some context of what is hoped to be achieved through intersectionality. As critiqued by the federal government's National Climate Gathering Report (2020), "... a deep and holistic understanding of the root causes of the climate crisis is a false dichotomy that must be challenged to enable an acknowledgement of holistic, integrated, and systems-based solutions that get at the existential threat that is climate change" (pg. 2). Despite these sentiments, there was no definition of what holistic meant within this strategy. Moreover, the accumulation of small impacts can position populations more vulnerable to climate change. This was articulated by a participant, noting "... the cumulative effects of all these small things that make certain populations much more vulnerable…" (P11). Many of the strategies evoking intersectionality mentioned co-benefits being desirable. As acknowledged in the federal government's Canada's Top Climate Change Risks (2019), it hopes to "... inform adaptation decision making by factoring in co-benefits and looking for adaptation strategies that provide solutions to multiple challenges…" (pg. 34). Although this is a high-level acknowledgement, I would argue this is a step in the right direction towards understanding EE.

Often, strategies will focus on more technical climate change interventions, such as retrofitting buildings, building dykes, or floodplain development. But now we are starting to see governments branch out and consider various impacts and how impacts can be reinforced with one another. A common approach that derived from this is a systems-approach, which encourages re-focus on looking at bigger-picture impacts and less on individual communities. This is to ensure that unexpected impacts are limited, as focusing too deeply on one part of the larger system can enforce blinders to other areas. As articulated by a participant, "more of these higher-level systems-based views are required to actually be effective and as a result there are going to be some priorities that don't look like the priority of the community but are the priority of the system" (P12). This point raises an interesting discussion about priorities and potential

trade-offs. Although there is a need to address communities' unique needs, it is important to also acknowledge what trade-offs might be made to ensure that their needs are met. All in all, the intersectionality conceptualization is presented in a variety of manners within the government but presents itself as an opportunity to further understand inequities and thus advance EE.

For the awareness of inequities, there were a lot of acknowledgements of various inequities and how these can interact with each other. Some strategies even referred to the importance of acknowledging the root causes of inequities that were being faced. As seen through the federal government's National Climate Gathering Report (2020), "... climate conversations often disregard the historical legacy of colonization which has included relocating First Nations, forcibly removing children from their families and placing them in Residential schools, and prohibiting the use of traditional languages and practices, among other atrocities" (pg.6). Similarly, within the BC Regional Perspectives Report Ch.5 (2022), it indicates how "... [Indigenous communities'] ability to address climate-related challenges has been profoundly affected by the historic inequitable relationship between Indigenous peoples in B.C. and the Government of Canada" (pg.12). These acknowledgements demonstrate how jurisdictions can acknowledge the root causes of the injustices that communities have endured along with how these institutionalized discriminations are hindering communities to adapt to climate change nowadays.

In addition, dialogue around specific factors such as "Race, ethnicity, and socioeconomic status affect vulnerability, which could contribute to a higher risk of comorbidities and disparities in access to air conditioning, land cover characteristics, or environmental justice issues" (British Columbia Ministry of Environment and Climate Change Strategy, 2019, pg.312). An intersectionality conceptualization is an effective way of looking at a range of impacts from climate change in a critical manner. As a participant noted "need to look at things from a systems perspective, for example if we were to raise ground floor levels to prevent flooding, but everyone using that building uses wheelchairs than we would need ramps to be built, not just raising floor levels" (P12). Therefore, emphasizing the need to look beyond just a project site or one aspect of adaptation interventions. The necessity to address the multiple factors that lead to climate change impacts is crucial.

Lastly, it was very prominent the focus on colonization and how that has impacted Indigenous communities in Canada. This acknowledgement is a great step towards

reconciliation; however, it is the long-term commitment that is needed to create transformative change. Further dialogue on how advancing reconciliation is needed but should be addressed in an intersectional approach is noted in this news article from the BC Assembly of First Nations articulating "I believe that the world's failure to embrace such a holistic perspective lies at the root of the imbalances that are propelling our planet's destruction. We cannot continue to make the same mistakes. And that means following through and building on the commitments contained in the UNDRIP and engage us fully in discussions of issues affecting us" (Teegee, 2020). This emphasizes how Indigenous worldviews inherently aim to adopt a type of 'intersectional' conceptualization, however, expands beyond the Western science version of intersectionality. As articulated by the BC government's Provincial Flood-Emergency Plan (2019) "due to historical grievances and experiences, there may be a lack of trust in current institutions and practices. Awareness and understanding of historical and present relationships between communities and emergency management partners is vital to build and maintain trust" (pg.7).

4.5 Triple-Bottom Line

A goal that the Triple Bottom Line (TBL) theory aims to address are the social, environmental, and economic aspects of climate change (Elkington, 1998). Like intersectionality, a TBL lens attempts to look beyond just the environmental or economic impacts and tries to capture a more comprehensive understanding of the impacts faced. Advocates who support the integration of a TBL approach claim that it emphasizes the social and environmental aspects of a business, in parallel with the economic aspects (Norman & MacDonald, 2004). Although it is a well-known and utilized framework, it may not be the most exhaustive or critical framework available. As argued by Norman & MacDonald (2004), "it is rarely clear exactly what most people mean when they use this language or what claims they are making on behalf of 'taking the TBL seriously'" (pg.245). Within the context of environmental equity, a TBL conceptualization would look at understanding the social, environmental, and economic impacts that communities face.

Despite the aim of a TBL conceptualization being to address these three realms of climate change, this was not found within interviews and adaptation strategies. I would argue against the implementation of the TBL conceptualization as it appears to exhibit a superficial bias toward the economic dimensions of climate change, rather than weighing all three pillars evenly. The

benefit with achieving a form of ‘evenness’ among the three pillars, allows opportunity for well-dispersed prioritization among them. By prioritizing all pillars evenly, this prohibits governments to continue prioritizing economic impacts of climate change while disregarding social and environmental impacts. I would also assume if there was balance among all pillars, this may catalyze more radical transformations within government efforts. Moreover, it is also interesting to note how this conceptualization was not found among Indigenous news sources. This speaks to the differences among Western worldviews and Indigenous worldviews.

The primary term used in this conceptualization was holistic, and other terms such as whole systems & collaborative, equity, resilience, and integrated were used. These terms allude to looking beyond the environmental and/or economic impacts of climate change to also consider social impacts. As summarized in the federal government's Adaptation Changemakers (n.d.), "The process [towards adaptation planning] would include vulnerability and risk assessments to evaluate climate change impacts across built, social, economic, and natural systems" (pg.2). Another example has been critiqued by the Ken Watson, the City Manager of Port Alberni, where he argues “… in the past, we spent a lot of time on financial side” thus, advocating for “… social, economic, environment, and health integrated [for climate action planning]” (Port Alberni, 2008, pg. 44). Conversely, although the TBL conceptualization wants to expand beyond one pillar of climate change impacts (economic, social, and environmental) it does not go about this in a critical manner, in comparison to the intersectionality conceptualization. Although it attempts to address all pillars in unison, it does not attempt to find the co-benefits or overlapping opportunities among them. Rather, each pillar is addressed in a siloed manner. Addressing impacts in this way omits the opportunity to address common root causes to environmental, social, and economic impacts. Overall, despite the TBL conceptualization adopting a fragmented approach to understanding and addressing climate impacts, it is a highly adopted conceptualization among the Canadian government.

The TBL conceptualization of climate change adaptation fails to properly acknowledge inequities. Most of the strategies and interviews that adopted a TBL conceptualization did not note any impacts or simply noted that there is a need to "balance economic, environmental, and social benefits" (City of Port Alberni, 2023, pg.4). Yet, there was no discussion on what 'balancing economic, environmental, and social benefits' meant or what would be needed to achieve 'balance.' This vagueness and ambiguity on what 'balance' entails presents a barrier in

how equity can be more radically conceptualized by the City of Port Alberni. There was some cross-over between intersectionality and TBL conceptualization as both refer to “co-benefits” As mentioned in the District of Squamish's Community Climate Action Plan (2020), "Climate action often has significant co-benefits that help many aspects of a community environmentally, socially, and economically" (pg.1). Despite the claim to take action on environmental, social, and economic pillars, there was no dialogue on what this would entail or need. All in all, the Triple Bottom Line conceptualization demonstrates the least robust awareness of inequities compared to all other conceptualizations.

4.6 General Findings

With the varied conceptualizations identified among interviews, adaptation strategies, and news sources, there was a prominent lack of definitions for the equity-related terms adopted. This poses numerous questions about whether this is intentional or a simple oversight. Based on what the adaptation strategies and interview participants have discussed, I would presume that this lack of definitions is intentional. Due to the advancements within the EJM and the new definitions being advanced by academics, it is very disorienting to know which definitions should be used. Not to insinuate that there should be only one definition of equity, yet this creates a lot of confusion in trying to navigate this content. Therefore, presenting a knowledge gap that jurisdictions hold around EE. There may also be political barriers on who they deem equity-denied and how they frame equity, as they will be heavily critiqued if groups are left out. As such, leaving these terms vague can be a tactic used to attempt to depoliticize adaptation strategies and please the mass public. Yet, this results in a lack of action and accountability within the government, sustaining status-quo practices, and further disproportionately impacting populations. Overall, this question is beyond the scope of my thesis; however, it does raise interesting questions about how the government functions and makes decisions.

Although there are considerable variations in conceptualizations present across interviews and adaptation strategies, there was a noticeable progress of increased conceptualization being made when the strategies looked at extreme heat, specifically in relation to the heat dome. Although extreme heat was not a disaster that was the focus of this thesis, some of the broader strategies had highlighted the impacts that the heat dome brought upon equity-denied populations. Strategies were able to name specific equity-denied populations that were impacted and what inequities were faced. Moreover, the BC government had commissioned a

Lived Experience of Extreme Heat BC report which unpacks the inequities that were faced during the heat dome and how EE must be better rooted within adaptation strategies and plans (Yumagulova et al., 2022). This report is making a large stride on why EE is a critical aspect that must be addressed within climate adaptation efforts. Moreover, it provides examples of how EE can be integrated within the adaptation space. All in all, I am curious to know what other advancements may or may not occur when other natural disasters occur in the near term.

Lastly, there was a large focus by governments across all jurisdictions on Indigenous communities and mention of reconciliation. This is encouraging to see such dedication; yet, as elaborated above, these efforts are not making large strides in creating change. There is a need to better include Indigenous communities when initiating and beginning to develop climate interventions, as this poses a great opportunity to include Indigenous knowledge systems and methodologies within climate adaptation strategies and plans. With all, I am curious about why Indigenous communities have been a focus within climate adaptation strategies over the past decade. Is it due to the colonial history of the Canadian government? Perhaps it is within each jurisdiction's mandates? Either way, it would be interesting to further unpack the reasoning and motivations behind focusing on Indigenous communities. To the same extent, I also believe that this level of dedication needs to happen for all equity-denied populations as well. There is a need to address the discrimination and violence imposed upon Indigenous communities for centuries by the Canadian government. Nonetheless, when focusing on Indigenous communities, other equity-denied populations can often be overlooked. Thus, further efforts to ensure all equity-denied populations are acknowledged and engaged can also help advance EE within the climate adaptation regime.

Chapter 5: Addressing Equity

Now that the conceptualizations of equity have been determined, exploring how jurisdictions are addressing equity is critical. As conceptualizations of equity shed light on how jurisdictions understand EE, addressing equity demonstrates what practices and efforts are needed and beneficial. As articulated in one of the news articles "Legislation is a step forward, but actions are louder than words. It simply isn't enough to say that 'reconciliation with Indigenous peoples is a matter of rights, respect and justice' while ignoring the rule of law and the Supreme Court of Canada's Delgamuukw-Gisday'wa and Tsilhqot'in judgements" (NationTalk, 2020b). With this in mind, it is important to explore the depth of efforts being made by jurisdictions to assess the extent to which they reflect the high-level conceptualizations that were identified. I argue that Canadian jurisdictions address equity in four distinct ways: collaboration and engagement, division of responsibility and accountability, moving beyond 'silos', and leadership. The following sections explore these practices, explain how they aim to address equity concerns and identify barriers that inhibit these practices. Barriers articulated were difficulty in monitoring all efforts being made across jurisdictions, lack of accountability, and accelerating the release of strategies due to competitive motives.

5.1 Equity as Collaboration and Engagement

Collaboration and community engagement (C&CE) are best practices explored within climate literature to advance environmental justice targets. Advocating for further inclusion of community voices, values, knowledge, and opinions aligns with the emergence of the EJM. However, only slight advancements have been made in conducting C&CE meaningfully. While C&CE brings in new knowledge systems and ideas for climate adaptation, it can be time-intensive and requires transdisciplinary skillsets that stakeholders may lack (Fernandez-Bou et al., 2021). Therefore, coordinating efforts may help fill the gaps if collaboration does not occur. I argue that better coordination of equity efforts and meaningful engagement with communities are essential for advancing equitable adaptation. The following sections explore the differences between collaboration and coordination within government and how coordinating efforts can provide more capacity for meaningful community engagement.

Although collaborating with communities is praised, community-inclusive research can be time-consuming and demand different skill sets from regular non-inclusive operations (Fernandez-Bou et al., 2021). An interesting debate arose in the interviews regarding the need for

coordination over collaboration. The argument suggests that collaboration is not always needed or beneficial, and coordination is better suited. As noted by a participant, "I don't think that collaboration is always the answer; I think that coordination should precede collaboration. You could collaborate yourself to death and in the wrong direction, but you need to coordinate" (P14). This idea, initially discussed within the context of inter-governmental collaboration, can be applied more broadly to include a wider array of stakeholders such as NGOs, academics, and businesses to advance equitable adaptation strategies. Therefore, what are the differences between collaboration and coordination? As defined in the literature, "coordination among two or more organizations is a process of designing and implementing programs and policies to achieve common goals" (Bahadori et al., 2015, pg.275). In contrast, collaboration "entails the most extensive structured and routinized contact between individual organizations… collaboration requires an organizational commitment, comprehensive planning, and pooled resources" (Scott&Gong, 2021, pg.24). The difference lies in whether all stakeholders work side-by-side throughout each step of the process (collaboration) or whether each stakeholder conducts their processes, working towards a shared goal or outcome (coordination). While collaboration is still essential, coordinating efforts to advance equity presents a great opportunity.

In the interviews and adaptation strategies, there was ongoing dialogue around better coordinating adaptation efforts, particularly to tackle financial barriers, which were frequently discussed in interviews and news sources. As expressed by a participant, "If we're all working together and pulling in the same direction, there are enough resources for us to make a significant impact, but we don't. We fragment them and so we go up in small areas and run small pilot projects that never scale up nationally, and so our resilience outcome never improves" (P12). Although there is a demand for further coordination, authorities such as secretariats at the federal level are responsible for coordinating across the government. As discussed by a secretariat worker, "As a secretariat, we provide coordination across the government… Coordination, support, and leadership to the rest of the provincial government on climate adaptation" (P13). Having a designated department to help coordinate government efforts ensures that this work can be done.

With efforts already occurring to better coordinate adaptation efforts, this provides an opportunity to also coordinate equity efforts. Similar ideation was seen within the *National Adaptation Strategy (2023)* which indicates that it "sets out a common purpose and shared goals

to help people in Canada begin moving together in the same direction…and sets collective priorities for urgent action on the threats we are already facing and also focuses on the structural changes we need to make over the long term" (pg.14). Coordinating equity efforts would entail articulating shared visions and priorities among departments and jurisdictions that encompass equity concerns. By including equity as part of the shared goals and priorities being collectively addressed, it can be considered throughout all aspects of the adaptation process, while also being addressed constantly with complementary work. An example of coordinating equity efforts was seen at the provincial level through the implementation of a value statement. As one participant discussed, "what we started out with is creating and developing a value statement for our group... The point is to recognize and respect a diversity of knowledge, and a diversity of approaches within adaptation. Then to incorporate that into our research as well as our solutions and sharing the research" (P3) This example of a value statement exemplifies the benefits of acknowledging what shared goals and values the group was working towards and how they have mainstreamed these values throughout all aspects of their work.

Coordinating equity efforts also encourages further meaningful engagement to occur. Not only will meaningful engagement most likely derive from equity being a shared priority and goal, but I argue, coordination will likely open the capacity for further engagement to occur. It is important to mainstream engagement with equity-denied populations to receive their input, specifically Indigenous communities. It is important to try to adopt their worldviews within government climate practices, and this can be best achieved when meaningful engagement is done with Indigenous communities. As a participant noted, "We did a ton of engagement with the public with indigenous nations and organizations with nonprofits and NGOs with health authorities and other levels of government, so engagement was a really big part of it" (P13). It is apparent that this work is beginning to be common practice occurring within strategies as most strategies had highlighted that they were engaging with Indigenous communities. However, there were distinct differences between the strategies that were doing meaningful engagement and those that were more so consulting. As part of the Government of British Columbia's *First Nations Climate Strategy and Action Plan (2022)*, the province "Developed a BC First Nations Climate Change Competency Toolkit that contains knowledge, roles, skills, and training required when working for First Nations governments or organizations on the topic of climate change" (pg.20). A resource like this is beneficial, as it can help with ensuring meaningful and sensible

engagement is being made with Indigenous communities. Similarly, as one of the news articles notes “as we continue our work towards reconciliation, it is imperative we continue to strengthen our government-to-government relationship. An integral part of our work together includes the province’s commitment to supporting carbon-credit sales and the world-class work of our stewardship offices and guardian watchmen” (NationTalk, 2020a).

Although these efforts are starting to occur, there has been discourse around barriers to coordinating efforts and engagement with communities. One of the barriers articulated by a participant who works for the secretariat was the difficulty in keeping track of everything that is occurring within the government. As they noted “The problem is that government is so massive so it's really hard to stay on top of everything that's going on across all” (P12). Therefore, to coordinate across the government, there is a system that is needed to help navigate all efforts that are occurring and at what level these are occurring. A second barrier is the lack of meaningful engagement that is still occurring. As one of the participants who work at the provincial level noted: “[engagement] that's actually informing the process that's aiming to build the capacity of people across the region, which is very much part of what climate adaptation planning should be doing, but that is not typical” (P8). This points to the issue that engagement does not always help advance communities’ adaptive capacity when it should be a very central part of what adaptation planning should achieve. Therefore, further attention must be given to understanding the importance of meaningfully engaging with communities and how to go about doing it. Similar sentiments were shared by BC Central Coast fisheries manager Mike Reid in a news article stating “In Heiltsuk territory the problem is the same. ‘It seems the DFO does their due diligence regarding their duty to consult with us... but in a lot of cases, it seems simply like a process they are going through. They come into the room, nod their heads, and leave and then do exactly what they originally intended to do in the first place” (CCIRA, 2017). This type of engagement needs to change if advancements toward reconciliation are to be made. Moreover, broader equitable adaptation will not be achieved unless meaningful engagement becomes a mainstream practice. By improving coordination across the government, further opportunities will arise to engage meaningfully with communities. Meaningful engagement can play a pivotal role in further addressing equity concerns, while also, working towards building trust and relationships with communities.

5.2 Equity as Division of Responsibility and Accountability

When engaging with climate equity and environmental justice, there is a level of responsibility and accountability that must be upheld. This can be seen within the positionality that governments uphold, jurisdiction roles and responsibilities, alongside holding jurisdictions accountable for the actions and claims being made. As such, I argue that there must be acceptance that adaptation, specifically equitable adaptation, is everyone's responsibility. As such, departments and jurisdictions should collectively be working towards shared goals and priorities. This perspective has been reflected within the literature, as Nalau et al., 2015 notes "It would therefore seem that multi-level government arrangements, with clear roles and responsibilities, would increase the effectiveness of adaptation and its implementation, rather than simply delegating responsibility for adaptation to the local government and other local actors" (pg.95).

There are three levels of government in Canada: federal, provincial, and municipal. Although there are jurisdictional divisions within the Canadian government, there are some interwoven demands across jurisdictions, especially when developing and implementing climate adaptation strategies. Despite the cross-cutting nature of climate adaptation and equity, a federal government study indicated that only a few departments within the federal government believed that climate change risks were part of their department's responsibilities. As indicated in *Canada's Top Climate Change Risk (2019)* "… there was a need for government-wide priority setting … establishment of clear roles and responsibilities and measuring and reporting. The audit found that only 5 of 19 departments and agencies reviewed had considered the risks of climate change in relation to departmental activities" (pg.39). With that, there must be a shift in acknowledging that all jurisdictions are involved and multiple departments within each jurisdiction have responsibility for adapting to climate change. As reflected in the federal government's *Canada's Marine Coasts in a Changing Climate (n.d.)*, "Adaptation is a shared responsibility, involving all levels of government, the private sector, civil society and individuals" (pg.12). As currently seen from the Canadian government, there is a sense of deflecting responsibility for adaptation efforts more broadly. This notion was expressed by a participant, who reported "It's no longer about this is my responsibility, this is your responsibility there's greater recognition that this is our responsibility and together we can tackle these problems" (P9). By adopting collective responsibility for adaptation, this can also contribute to

the barrier of limited human capacity. As indicated by a participant who worked in Port Alberni, "… it's one person in the City of Port Alberni and one person in the Regional District and that's it. There's only two people [doing adaptation and climate change efforts]" (P10). This shortage of personnel responsible for climate change efforts is a common challenge faced by many municipalities. However, this also presents an opportunity for federal and provincial governments to step in and provide support and capacity to bolster adaptation efforts further. As such, if there is an adoption of collective responsibility for adaptation efforts, there can be a collective responsibility for equitable adaptation efforts as well. This not only ensures that equity is being considered throughout all aspects of the adaptation process but also ensures that it is consistently being addressed. All in all, despite equitable adaptation needing to be a shared responsibility, it is still important to distinguish the roles each jurisdiction plays within the broader adaptation regime.

When taking responsibility for tasks and roles, I also argue that there is a need to implement further accountability from departments and jurisdictions. This is both in a logistical sense of taking accountability for what has been contributed to the climate adaptation regime, along with the accountability of privilege and power. As reflected in some interviews, it can be difficult to take accountability for successful adaptation, as this is measured through a disaster not occurring. As explained by a participant from the provincial level "In public health it's like success for us is something not happening and that's a lot of the case in climate adaptation. Success, the next time it gets really hot, fewer people die. How can we possibly say that that was the result of all the activity that we and all the constellation of actors have taken" (P14). Yet, when a disaster does occur, it can be challenging to navigate which jurisdiction(s) are responsible for the disaster. Although this is a real barrier that is beyond the scope of this thesis, jurisdictions cannot keep deflecting responsibility onto other departments or jurisdictions for their potential wrong-doings or inaction. This was shared by a participant who works for the federal government, who noted "I think it's really important for us to actually take the hard look at the decisions that get made without pointing fingers and blaming people for decisions that are suboptimal decisions" (P12). As such, while taking on responsibility for certain actions, there is a need to similarly take accountability for the impacts those actions make.

Specifically for the federal government, there is a need to acknowledge the positionality of jurisdictions. Positionality within this thesis refers to settler government practices and the

colonial history that the Government of Canada generated towards Indigenous communities. As a result, jurisdictions are acknowledging the discrimination, violence, and systemic inequities that are being sustained due to colonial government. This ideation was reflected by a participant who said, "…in developing solutions, until fairly recently, there have not been enough considerations given to the values of Indigenous peoples in Canada and how they would like to adapt or how they see adaptation" (P2). Similarly, as noted in the federal government's *National Climate Gathering Report (2020)*, "The lived reality of First Nations must be understood and incorporated into analyses of the distribution and experience of climate-related impacts. In this regard, addressing the climate crisis cannot be separated from the broader project of First Nations self-determination and reconciliation" (pg.6). This has been an emerging theme of dialogue across governments, through various decolonization training and sessions, mentioned amongst the interviews. Recognizing the power and privilege we hold as settlers on Indigenous land and if we as settlers can control and navigate rights and ownership of the land is a huge colonial assumption. Acknowledging the Canadian history of colonialism and systemic disregard towards the Indigenous communities has been more explicitly recognized in response to the various Indigenous protests that have occurred.

The ways that researchers have taken on this accountability and responsibility have been practicing a listening-first approach. As noted by P10, "Your number one role as a researcher is to sit back and listen to [the community] first before coming in with your little box of 'here's what I want to do'" This emphasizes the importance of not coming into engagement or projects already knowing what the solutions are, prior to discussing and consulting other groups. As a participant noted, it allows opportunity for "Confronting our own biases and perspectives about what we want to do, what success might look like, and that resulted in a value statement" (P5). This has been a common practice when researchers engage with equity-denied populations, as they would often come in with pre-conceived solutions. As articulated among interview participants, researchers would simply assume what the communities need, rather than allowing them to articulate what exactly their needs are and how they can be fulfilled. As articulated in a news source "Canada's and BC's climate change plans do not represent the point of view of First Nations and are not aligned with the UN Declaration on the Rights of Indigenous Peoples or BC's Declaration Act. That can change, but it requires listening to First Nations' concerns and priorities" (BCAFN, 2021). This listening-first approach also lends itself to adopting Indigenous

methodologies and worldviews and drifting away from Western science methodologies and accepting diverse knowledge systems.

Although taking responsibility and accountability may seem easy on paper, it has been proven to be quite difficult in action. Time and time again, there are large claims of wanting to integrate equity or a social lens into policy work; however, no real metrics or action tend to follow these claims. I argue that this is due to the lack of accountability that follows such a commitment. As a participant noted, when they are naming equity directly and stating that their practices are anti-racist and gender-inclusive, it should be prominent within their work and their priorities (P8). Similar ideologies were also articulated from a participant "the accountability related to the values if we're making the values explicit then it also has to show up explicitly in our work" (P6). This participant is taking that further step in attempting to take accountability for their work and actions and being sure that it is prominent and evident that they are integrating equity, anti-racist, and gender-inclusive practices. Unfortunately, this is not often seen amongst most of the federal adaptation strategies. Without having those actionable steps to demonstrate the work is being done, empty claims are made. Therefore, if equity is to be further integrated into climate adaptation work, then more direct action must be established and apparent.

5.3 Equity as Inclusivity: Moving Beyond Silos

Climate change disregards governmental and geographical boundaries. It is essential to work beyond boundaries and silos to tackle climate change. Silos within the context of this paper are associated with governmental, sectoral, and academic backgrounds. Groupings of individuals to focus on specialized topics with specific responsibilities are a result of silos. The argument around breaking silos has been quite popular within advocacy efforts; however, it is important to identify that some silos are necessary. As P14 noted, "...the distinction between climate resilient facility workers and public health workers is a good distinction to have" Both disciplines work together; however, having these silos and specialized knowledge is beneficial. As such, I argue not that all silos must be broken, rather, further efforts across-government needs to occur. Bringing specialized knowledge bodies that have never previously interacted together can bring forth innovative and transformative interventions to tackle climate change. Furthermore, moving beyond silos can fill knowledge and capacity gaps that may have been barriers when working from a siloed approach. Yet, these interactions cannot happen if groups stay within their

specialized silos and do not branch out. The following sections explore deeper into how we can move beyond silos amongst the Canadian government, industrial sectors, and academia.

5.3.1 Canadian Government Silos

Government silos are a historic problem (Critchley and Scott, 2005, as cited in Measham, 2011), but with the recent emergence of prioritizing climate adaptation, this can provide a need and opportunity for cross-sectoral and or inter-jurisdiction collaboration and communication. The interwoven nature of the Canadian government system lends to the complexity of developing and implementing climate adaptations from any jurisdiction. A lack of attention to climate change at the national and state level leads to a lack of attention at the local level (Amundsen et al., 2010, as cited by Measham, 2011). However, it has also been seen that lack of attention to climate change at the federal level has also motivated provinces and municipalities to take action and be the leaders on this front. With that, climate adaptation is increasingly becoming more prevalent globally and being emphasized as a local or municipal-level responsibility. As the federal government *Adapting to Climate Change* (2010) notes "…the local nature of many climate impacts means that municipalities are often on the front line to ensure effective management of risks, protect community safety and promote economic sustainability" (pg.4). Canada's multiple levels of government can present some challenges with coordinating efforts, yet also brings forth the opportunity to create innovative hubs of data and knowledge.

Without providing adequate support and tailored approaches, maladaptation can further disadvantage vulnerable communities while impeding their capacity to adapt (Shi et al., 2016). There is a lack of literature exploring the idea of multilevel and multi-scalar adaptation planning, let alone the cumulative justice implications of disconnected adaptation plans (Shi et al., 2016). This lack of consideration for a multilevel adaptation system emphasizes the isolated adaptation efforts that are currently in place. Each department is ordered to receive a mandate letter which guides what each department is supposed to achieve and responsible for. As a participant noted, "A lot of our work we have to do in partnership with other ministries because it's their mandate to be doing adaptation in their areas so, the nature of the way we're set up helps kind of promote some silo reduction but it's not always effective" (P13). Therefore, these collective efforts and coordination with other departments and ministries are not only enforced through mandates but can also improve the efficiency of work. As articulated in the District of Squamish's *Integrated Flood Hazard Management Plan (2017)*, for example, "co-operation and information sharing

between the two authorities was key in obtaining improved flood hazard assessment results for the Stawamus River" (pg.4-5). All in all, urban adaptation approaches should be adjusted to accord with different multilevel government opportunities and constraints.

5.3.2 Sectoral Silos

In terms of sectors and industries, it is obvious that there are categorizations within the sectors, as these are necessary. However, with climate change impacting all sectors and fields, it is crucial to have these disciplines conversing and working with one another to navigate climate change. Everyone has a part to play in navigating climate change, so all sectors should work together and coordinate. For example, the healthcare, urban planning, and insurance sectors should all be in contact and working alongside one another in an equalizing playing field. As articulated in the federal governments *Canada's Top Climate Change Risks (2019),* "Managing coastal flood risks is one such area, as it may implicate local, Indigenous, provincial/territorial, and federal governments, port authorities, and public and private landholders. Adaptation efforts by any one of those groups may enhance or undermine adaptation efforts pursued by the other groups; shared strategies may therefore be necessary" (pg.42). Yet, when coordinating efforts across sectors, it is important to avoid falling back into old silos, where financial damages and impacts are of main priority and focus, neglecting any social impacts. As P15 noted, when working on the National Adaptation Strategy, there was a prominent financial and economic lens throughout the strategy. Little was mentioned regarding the financial inequities and how those who are within the lower-economic status can be supported.

Another industry that must be better involved is the healthcare sector. When catastrophic events occur, it is important to protect individuals and their property, but protecting critical infrastructure is also a priority. Ensuring that hospitals are retrofitted and can be resilient against climate change is a cross-section that is often overlooked. As illustrated by a participant "… we've had hospital closures which forced people to drive extreme distances to get to it. Is that fair that those people who live up north don't have access to a first-class hospital treatment?" (P14). Furthermore, when looking at climate impacts, it is important to look beyond just physical health impacts, but also mental health impacts. This was seen within the DPA extensively, which demonstrates a positive shift in integrating healthcare within climate adaptation. Within the provincial level, a participant noted that the cross-over between equity and climate adaptation was concentrated within the health space. They note "Within BC equity and climate adaptation is

really living in that public health space in terms of government leadership" (P6). This indicates that integration of equity within the adaptation regime is starting to occur, but they are found within specific sectors rather than the whole of society. As such, there is a need to expand these efforts beyond just one sector and encompass all sectors.

5.3.3 Academic Discipline Silos

The role that academic institutions play in climate adaptation planning was a prominent dialogue in the interviews that were conducted. Some participants argue that the way in which academic departments are siloed per discipline does not allow for interdisciplinary work to be done. This not only reinforces this form of siloed working but also does not encourage holistic and multi-perspective thinkers who will end up developing new climate adaptation plans in the future. As articulated by P5 "I think in terms of education I think there's a little bit of a challenge here in Canada... we don't really have programs or degree programs that educate people [a holistic] way. We're very much still in silos thinking" In a sense, shifting academic institutions into adopting and encouraging multidisciplinary curricula, tackles the siloed approach at its root. Furthermore, academic institutions are large collaborators with governments. Institutions tend to have innovative and impactful researchers who conduct boundary-pushing research projects that are funded by governments. Therefore, institutions also play a role in providing knowledge for the government to adopt. Lastly, with these academic disciplines being siloed, there is a reflection on how climate change has been conceptualized as an engineering or science problem. This perspective disregards other knowledge systems but also disregards the other dimensions of climate change that go beyond financial and physical impacts. As shared by a participant "We've relied for a really long time on engineers, and we need them to do that work but they also approach this as engineers and so we need to bring the social sciences and the humanities into that side as well" (P10). This is not to argue that Western science and engineers are not needed in the issue, but climate change is equally a social, political, economic, health, and engineering problem. Climate change can no longer be conceptualized as a single discipline's issue. Interdisciplinary thinking must be adopted within government and academic institutions, to generate transformative solutions to climate change.

5.4 Equity as Leadership in Government

The role of leadership within climate adaptation and environmental justice is widely captured in the literature. The influence that higher jurisdictions and employers have on what

priorities and strategies get developed and implemented is well-known. As such, those with less acclaimed power and agency tend to be bounded by the scope of those in power. As reflected by interview participants and strategies they noted if local governments are to succeed in climate adaptation, leadership and/or support is required from other orders of governments. Furthermore, due to the reliance local governments have on upper orders of government, it is evident that everyone is responsible and must take the lead in some piece of the adaptation puzzle. For example, local governments must lead in the discussion of environmental issues and community buy-in (VCH, 2022). Provincial governments must support and harmonize adaptation across the province, while also providing strategic focus and funding streams for adaptation (ICLEI, 2020). Lastly, the federal government needs to lead at the national and international levels relating to emergency management within its exclusive fields of jurisdictions, and similarly to the local government, communicate with Canadians about the importance of immediate action on adaptation (Government of Canada, 2017).

Despite these attributed roles and areas to take the lead, when a jurisdiction does not take lead, this can cause ripples in efforts being conducted among other orders of government. As articulated within the City of Port Alberni's *Together for Climate Project Report (2020),* "The federal government acts as the overarching voice on climate leadership in Canada and a strong commitment to climate action at this level is more likely to lead to climate leadership at local levels of government" (pg.6). This reliance on other jurisdictions can create friction and tension, especially when timelines and agendas don't align. However, there is an opportunity for leadership within higher jurisdictions to help navigate and address EE. As discussed in Squamish's *Community Climate Action Plan (2020)* "In Canada, the federal and provincial governments play a very large role structuring income tax systems in a way to reduce the burden on those with lower incomes" (pg.14). As such, it is acknowledged that federal and provincial jurisdictions have the resources, capacity, and power to address EE, yet there is still a lack of commitment and effort specifically from the federal government.

The lack of commitment from the federal government may be due to the lack of understanding about EE. As seen from the interviews, those who hold power lack knowledge of what EE is and what equity efforts are. Furthermore, it may also be a political decision not to address equity even if jurisdictions were to have a sufficient understanding of what EE is. Nonetheless, increasing equitable knowledge to those within power can help create more

equitable adaptation leaders. Having established experts for a variety of topics and specialties, allows jurisdictions to learn from one another. For example, municipalities can learn from provincial and federal level governments how to write funding grants more effectively. These shared learning opportunities can occur during cross-jurisdiction meetings, or there can be lunch-and-learns hosted to help further the discussion and dialogue. As articulated by a participant "monthly lunch and learns that are open to all of the climate action secretariat to come" (P13). These can also help when talking about equity and environmental justice, where the content is heavier and may require more time to process and consume.

Although there is evidence that there are leaders within the government, promoting and advocating for equitable adaptation solutions, there are some barriers that were noted that prohibit this work. One barrier noted by a participant from the provincial government was how "between ministries, between teams, between entities, there's also a competitive element…" (P14). Where they elaborated on how they are motivated and, in a sense, incentivized to take the lead on different climate adaptation interventions, which can translate into rushing projects to complete them. I would presume there is also an incentive in releasing a 'first of its kind' strategy, such as the *Lived Experience of Extreme Heat BC,* as it demonstrates innovation and proactive planning. Ultimately, this urge to release innovative and proactive strategies can be a rationale behind omitting definitions and general vagueness around equity. Yet, these are not the proper motivators in wanting to advance climate adaptation interventions, nor, effective in advancing equitable adaptation. Moreover, as P1 said, "There's a lot of different guidance out there, from different agencies that sometimes can be contradicting each other"

5.5 General Findings

In opposition to the conceptualization of equity findings, there are considerable efforts being made at the provincial level regarding addressing equity. This is interesting, as all jurisdictions demonstrated a vague and high-level conceptualization of equity. As such, I would have assumed that high conceptualization would lead to further action, whereas low conceptualization leads to inaction. Yet, the BC province proves to be an outlier to my hypothesis.. The BC government seems to be pushing the boundaries on ways to engage with communities, taking a values-based approach, and exploring inter-sectoral innovations. At this point, I would argue that the provincial government are the leaders in respect to advancing equitable adaptation. Yet, I wonder why this is the case. Lastly, a key finding that was shared

among the interview participants was the idea of bringing people back into climate change planning. This idea resonates with the need to move beyond technical solutions to address climate change, but to address climate change as a social issue that needs to acknowledge those that face climate challenges. I would argue that this manner of framing climate change as a technical issue is a large barrier in advancing equitable adaptation strategies and plans. Without considering climate change as a human issue, inequities and communities will never be prioritized. Interview participants have noted that this is mostly due to the saturation of climate adaptation work being done by engineers and less by social scientists, planners, and Indigenous peoples. If a more diverse knowledge system were adopted to tackle climate adaptation, then bringing the people back into climate change would have already been implied. There have been a lot of advancements made with regards to climate change, which have brought forward amazing technological advancements and tools. Yet, we cannot lose foresight on addressing the social side of adaptation as well.

Chapter 6: Conclusion

6.1 Key Findings

Sea level rise is a primary concern for coastal communities on the west coast of British Columbia. Equitable adaptation strategies are crucial in preparing for the incremental effects of SLR and navigating other disasters to pave a sustainable and socially just future. This thesis aimed to understand how British Columbia's climate adaptation strategies and plans conceptualize and address equity concerns. Through a mixed-method approach, this research acknowledges the various conceptions of equity held within the government, identifies practices used to address equity concerns and explores opportunities for environmental equity (EE) to be further integrated within climate adaptation policy .

Although there is evidence of Canadian jurisdictions beginning to conceptualize and understand equity, the lack of consistency in conceptualizations is troublesome. It is enlightening to see that efforts are being made to capture EE within climate adaptation efforts. However, with such a broad range of conceptualizations present within the government, it can be disorienting. With such diverse understandings, how does one navigate which conceptualization is being the 'right' one? I argue against one sole definition of equity, as it is much too complex and necessarily evolving. Yet, addressing all conceptualizations can be challenging, especially for those who are just beginning to enter the realm of EE. However, adopting a type of critical intersectionality conceptualization, allows for various conceptualizations to be captured. Accordingly, I am curious to explore the genesis of these varied conceptualizations. Did they come from diverse workers who joined the government, or perhaps it derived from a passionate political leader? Nonetheless, it is interesting to see such a range of different conceptualizations adopted, yet there is still a lack of overarching understanding of what EE is.

It is unclear whether jurisdictions, departments, and workers are aware that there is such a wide variety of conceptualizations of equity being adopted. Some variation between jurisdictions would be appropriate to match the scale and scope they work within, but these varied conceptualizations were present among all jurisdictions. As such, I presume that jurisdictions are unaware that various conceptualizations exist within the government. Consequently, this lack of awareness can be troublesome as jurisdictions will continue to 'reinvent the wheel' around equity each time there is a new project, strategy, or plan is made. This is not only inefficient in advancing government operations but also continues to add further variations of

conceptualizations generating more disorientation. For this reason, I argue not that there should be one conceptualization of equity the Government of Canada should adopt, rather, establishing shared goals and values on what EE should entail and achieve. These shared goals and values would be representative of all jurisdictions and articulate what broader outcomes the government wants to achieve. By framing it as a shared outcome or goal, this can be understood beyond the idea of achieving equity, rather, what does success look like to folks and how can we achieve it. I recognize that success will differ per person and group, however, I also believe that there will be some amount of overlap. Furthermore, when establishing a shared outcome or goal, this seems less intimidating than trying to establish a definition that everyone must adopt. Technicalities and political bias on what should and should not be included within a definition is eliminated when a shared vision or goal is adopted.

While identifying government practices that address equity concerns, it was very prevalent how these practices coextend to improve government operations more broadly. As seen within my findings, the Canadian government addresses equity within four practices: collaboration and engagement; division of responsibility and accountability; moving beyond 'silos'; and leadership. Although these practices were highlighted as practices to help integrate equity within adaptation planning, it was evident within the interviews that these efforts help address barriers within broader government operations. This was not an expected finding, as the scope of this thesis focused on how governments addressed equity concerns. However, these findings emphasize how addressing equity has a myriad of co-benefits. As one participant noted, rather than sell people on the moral end of addressing equity, the improved efficiency within government is what must be highlighted (P12). One of the practices that was highly praised by interview participants was the need to coordinate across the government to improve efficiency and communication. Yet, a participant who works for the climate action secretariat noted a barrier with attempting to coordinate, namely that the government is so large that it is almost impossible to try and navigate all departments across all jurisdictions. This raised a significant point that was not evident when initially conducting this research. Nevertheless, it is a huge opportunity for governments to navigate a solution around this barrier.

Now that we understand how the government conceptualizes and addresses equity concerns, the question of depth and commitment arises. The government can have these conceptualizations and adopt such practices, yet no advancements or progress can occur. As

such, it is necessary to understand the level of commitment the government holds towards addressing equity. Due to the lack of clarity within the conceptualizations, this would insinuate that the government still maintains a surface-level sense of equity. Political will can also play a role in the lack of commitment from the government. When there is a lack of commitment and motivation from policy and government workers, any efforts in advancing towards EE risks being discarded due to change in government leadership. Studying the role of political will was beyond the scope of this thesis, but there was nevertheless evidence within the interviews that there was support from government workers for integrating equity within adaptation planning. As such, despite my findings being non representative to all the Government of Canada, lack of political will could be a barrier presented in some areas of the government. While policy-makers were not interviewed, my findings are not representative of all the Canadian government, thus, lack of political will could be a barrier presented in some areas of the government.

This study argues that governments tend to have surface-level conceptualizations of equity, I.e., a lack of ongoing recognition and commitment to address the historical and reinforcing oppressive structures that often control and dominate certain communities while privileging powerful actors (Malin & Ryder, 2018). Even so, the advancements that have been made focus primarily on colonialism and the role the Government of Canada has played in positioning Indigenous communities further at-risk to climate change. What is needed is further recognition of the historical context of oppressive systems and how they exacerbate social inequities. As Malin &Ryder (2018) articulates "analyses that fail to link these environmental injustices to relevant hegemonic systems of racism, nativism, sexism, colonialism, ableism, heteropatriarchy, ageism, and beyond, prove inadequate for developing a deeply intersectional environmental justice" (pg. 4). Therefore, a deeper level of commitment towards equity is necessary in effectively addressing climate challenges and preventing further inequities from occurring.

Overall, Canadian jurisdictions are in the preliminary stages of conceptualizing and addressing equity concerns within adaptation strategies, yet further progress is needed. It is up to the climate leaders within departments and jurisdictions to work together and attempt to institutionalize their efforts towards EE. With sea level rise posing imminent pressure on coastal communities to adapt, equitable adaptation responses and interventions need to be in place to prevent reinforcing social inequities among those most vulnerable.

6.2 Broader Research

Considerable prior research has highlighted the important role of integrating equity or environmental justice within climate adaptation legislation (Swanson, 2021; Shi et al., 2016; Agyeman, 2002; Ikeme, 2003; Ashton & Wang, 2003; Pelling & Garschagen, 2019). My findings do align with much of what the literature has articulated, such as a lack of consideration for which groups are benefiting from adaptation efforts and who is being impacted the most (Swanson, 2021; Maldonado et al., 2013; Anguelovski et al., 2016). Also, the need to meaningfully engage with them (Pearce et al., 2009; Hotchkiss, 2022). However, my findings do contradict the notion that municipalities would integrate equity to a further extent in comparison to the provincial and federal levels, due to their proximity to communities (Pasquini & Shearing, 2014; Measham, 2011). In comparison to the other jurisdictions, the municipalities had presented a lack of awareness on EE and did not present leadership on initiatives to address equity. In comparison to the municipality of Port Alberni and Delta, the District of Squamish demonstrated the most leadership and commitment in addressing and conceptualizing equity concerns. Yet, this progress may be due to factors beyond the scope of this thesis such as municipal funding, resources, capacity, as well as access to the strategies and plans. However, this research helps fill the gap of looking at multi-scalar adaptation planning within Canada. Further understanding how each jurisdiction functions and navigates adaptation planning provided opportunities on where further integration of EE within the adaptation regime can occur. Furthermore, recognition on where jurisdictions can support one another within general adaptation operations were identified.

6.3 Future Research

This research adds to the body of literature on how equity can be further integrated within climate adaptation planning. With the increase in urgency around climate adaptation legislation, it would be interesting to see what findings would come out of other provinces in Canada, with respect to conceptualizing and addressing equity concerns. One province that comes to mind is Nova Scotia, as it has been heavily involved in moving towards reconciliation and promoting equity with the Indigenous communities there (Waldron, 2021). It would be fascinating to see if there are variations within the conceptualizations and perhaps, ways that researchers or government can track these conceptualizations. Perhaps using a type of mapping exercise or shared database to track which departments and jurisdictions are using certain

conceptualizations. This can also address the barrier of coordinating across the government, by having departments do this type of 'tracking' themselves.

Moreover, further research is needed to evaluate the roles of different levels of government in advancing adaptation planning and EE more closely. According to my findings, there are further advancements in addressing equity within the provincial government, in comparison to other jurisdictions. This poses questions such as what does the provincial government have that is different than federal governments? Why are advancements more easily developed at the provincial level, in comparison to the other jurisdictions? Exploring these questions is beyond the scope of this thesis, however, further research is needed to better understand the realities of multi-level government systems.

Researchers must also consider better ways to measure and assess equity within recent and ongoing adaptation planning efforts, as emphasized by Shi et al., (2016). It would be interesting to see future research go about this tracking of conceptualizations within government, especially looking internationally at different government structures. Beyond the scope of government efforts towards addressing equity, there is opportunity for researchers to explore the role of coalitions or advocacy groups and their contributions with climate adaptation planning (Cannon et al., 2023). Are they a group that can help provide an insightful and long-term relationship with? Lastly, it would also be insightful to conduct a similar study with Indigenous communities directly and receive their input and knowledge on how they conceptualize and address equity. This information can help inform colonial government climate practices and potentially generate new partnerships. Lastly, as Swanson (2021) notes, there is a demand for future research to address the challenges and trade-offs of featuring justice and equity considerations prominently in urban adaptation planning, while also ensuring long-term program stability. This would be interesting as it may highlight barriers and inhibitors that are preventing jurisdictions to commit to this kind of work.

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APPENDIX A - Letter of Information / Consent

Thy Huynh, Hons. BA,

Masters Candidate in Environment, Resources, and Sustainability

A Study of Equity Considerations of Future Coastal Flooding in British Columbia

Principal Investigator:
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Purpose of the Study:
Adults who are 18 years of age and/or older working on developing and/or implementing climate adaptation policies at all levels of Canadian governments, with a focus on British Columbia, are invited to take part in an interview to explore how Canadian governments understand and act upon equity concerns in climate adaptation strategies. The purpose of this study is to learn how equity concerns are portrayed and understood and what motivations are involved with formulating adaptation strategies. This research is being undertaken as part of my (Thy Huynh) MES thesis. I want to hear from you so that I can better understand the motivations behind constructing adaptation strategies, and how the topic of equity impacts that.

Procedures involved in the Research:
If you agree to take part in the interview by providing written consent, you will meet with me so I can learn more about your unique experience and motivations about equity concerns and how they are understood and addressed in climate adaptation strategies.

Here are some examples of questions I will ask:

- What process is needed to develop an adaptation strategy?
- What goals do your department have in moving forward with developing adaptation strategies?
- How do these adaptation strategies consider different populations and the varying impacts being faced?

The interviews will be 1hr long, taking place via Zoom. Zoom has implemented technical, administrative, and physical safeguards to protect the information provided via the Services from loss, misuse, and unauthorized access, disclosure, alteration, or destruction. However, no Internet transmission is ever fully secure or error free. A link to Zoom's privacy policy is available here. If you are concerned about this, we would be happy to make alternative arrangements for you to participate, perhaps via telephone. Please reach out to me if you have any concerns.

If you provide consent to participating in the study, I will record the interview audio and video and Zoom will save it to the cloud automatically. During the interview, participants are given the option to turn off their camera without consequence. The interview will be recorded to ensure accurate transcription of the interview. If you do not want to be recorded or you would prefer that we did not save your interview to the cloud, just let me know and I can adjust accordingly:

- If you consent to being recorded, but do not consent for your recording being saved in the cloud, then I can use my cellphone for the recording. This means your recording will not be saved in the cloud and I can proceed to type out the transcript by hand.
- If you prefer not to be recorded at all, I will type notes by hand during the interview.

While the recordings are being saved and transcribed in the cloud automatically, unless you request otherwise, I will immediately delete the recording from the cloud and edit the transcript so that it will not include any identifiable data (I.e. name, department, job title). Instead, I will use a unique study ID number as a replacement. Once the recording is transcribed or typed out, the audio and video file and transcription will be deleted from the cloud and only the transcription will be saved in a secure drive hosted by the University of Waterloo called 'Microsoft OneDrive'.

Potential Harms, Risks or Discomforts:
The risks involved with this study are low. However, you may feel uncomfortable sharing your thoughts and feelings, or you may be worried that what you share with us may impact your reputation with the City of Vancouver or any associated relationships.

Taking part of the interview is optional and you can choose to withdraw at any time, even if you have already started. I can send you the interview questions beforehand so that you can prepare your answers in advance.

During the interview, you can skip any questions that you do not want to answer, turn off your video, and stop the interview at any time. If you choose to stop the interview, the researcher will delete the audio recording immediately.

Every effort will be made to protect your confidentiality and privacy. I will not use your name or any information that would allow you to be identified (I.e. department, job title). However, we are often identifiable through the stories we tell. Please keep this in mind in deciding what to tell us.

If following the interview, you change your mind and would rather me not use your information, you can contact me or James Nugent, before April.1st, 2023 to let us know to delete your interview records.

I plan on capturing the main themes through your feedback, but I am also interested in capturing some quotations. While I as the researcher will know what you said in the interviews, all direct quotes will be anonymized. To be sure that you are comfortable with the quotes we use in our report, I will contact you in January via your preferred method and ask for your permissions to use the quote. At that time, you can choose not to have your quote used, and you can clarify your quote before it is used. If we do not hear from you in one week after an email on any revisions or request to omit the quotes is sent, we will assume that you are okay with using them.

Potential Benefits

This research may benefit you by discussing how equity has been and is being conceptualized and understood, which can help advance more equitable adaptation strategies be implemented. While not benefitting you directly, taking part in this interview will also contribute to advocacy efforts of coastal communities in British Columbia facing these extreme climatic events.

Confidentiality

Every effort will be made to protect your confidentiality and privacy.

- Your identity will be known by the investigators, but we will store your data and quotes only under a unique ID number, rather than your real name.
- Audio and video recordings can be personally identifying; however, we will be deleting the recording and transcripts from the Zoom cloud 30 days following your interview and will only store the transcription file on the university's OneDrive platform, which will only be accessible by the investigators. The transcript file will be deleted from OneDrive on April 1, 2023.
- Participants are allowed to turn their camera's off during the interview recordings.
- The information you provide will be stored with a unique ID number in a password protected OneDrive account. All interview transcripts, personal information, and related records will be deleted once the study is complete and no later than April 1, 2023. Only summary results will be kept, which will not include any identifiable information.
- We will also delete any related emails from my records on April 1, 2023.

Participation and Withdrawal:

Your participation in this study is voluntary. It is your choice to be part of the study or not. If you decide to be part of the study, you can stop (withdraw) from making your interviews available for research purposes for whatever reason, even if you had originally agreed and up until April.1, 2023. If you would like to withdraw from the study, just let me know and I will delete all associated files, recordings, and emails right away.

Information about the Study Results:

I expect to have this study completed by approximately May, 2023. If you are interested, I will send you a copy of my report to your email address.

Questions about the Study:

If you have questions or need more information about the study itself, please contact James Nugent at:

Dr.James Nugent
james.nugent@uwaterloo.ca

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board (REB #43771). If you have questions for the Board contact the Office of Research Ethics at 1-519-888-4567 ext. 36005 or reb@uwaterloo.ca.

A Study of Equity Considerations of Future Coastal Flooding in British Columbia

CONSENT FORM

Principal Investigator:
Dr. James Nugent
Department of Environment
University of Waterloo
Waterloo, Ontario, Canada
E-mail: james.nugent@uwaterloo.ca

Student Investigator:
Name**:** Thy Huynh
Department of Environment
University of Waterloo
Waterloo, Ontario, Canada
E-mail: t29huynh@uwaterloo.ca

By signing this consent form, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

Please sign this consent form and e-mail it back to the student investigator by: Dec.31st, 2022

1. I have read the information presented in the Letter of Information about a study being conducted by Thy Huynh of the University of Waterloo
   [ ] Yes
   [ ] No

2. I have had the opportunity to ask questions about my involvement in this study and to receive additional details I requested.
   [ ] Yes
   [ ] No

3. I understand that if I agree to participate in this study, I may withdraw from the study at any time or up until April.1, 2023
   [ ] Yes
   [ ] No

4. I understand that I can choose to decline use of any quotes within one week of being contacted in January.
   [ ] Yes
   [ ] No

5. I have been given an electronic copy of this form.
   [ ] Yes
   [ ] No, I don't want or need an electronic copy
   [ ] No, but I would like one sent to me at this email address: _____

6. I agree to participate in the study
   [ ] Yes
   [ ] No

7. I agree to have my interview audio and video recorded
   [ ] Yes

[ ] No

8. Would you like a copy of the study results?
   [ ] Yes, please send them to me at this email address: _____
   [ ] No

Signature: _____ Date: _____

Name of Participant (Printed) _____

APPENDIX B - Email Recruitment Script

Thy Huynh, Hons. BA,
Masters Candidate in Environment, Resources, and Sustainability

A Study of Equity Considerations of Future Coastal Flooding in British Columbia

E-mail Subject line: University of Waterloo Study - Equity Considerations of Future Coastal Flooding in British Columbia

Hello _____,

My name is Thy Huynh and I am writing to invite you to participate in a semi-structured interview as part of my master's thesis for the School of Environment, Resources and Sustainability at the University of Waterloo. My study examines equity considerations of climate adaptation strategies. If you are available, our one-on-one interview would take place virtually over Zoom and be about 1 hour. With your permission, I would like to record the audio and video of the interview to ensure accurate transcription and analysis.

As you played a key role in developing/implementing these climate adaptation strategies, I would like to speak with you about your perspectives on equity/distributional impacts in climate adaptation strategies.

Please read the attached Information Letter for more details regarding what participation in this study would involve. If you would like to participate, or you require additional information to assist you in reaching a decision about participation, please do not hesitate to contact me at t29huynh@uwaterloo.ca.

If you are available for an interview, please respond to this email and I will send you a virtual meeting link.

Sincerely,

Thy Huynh, Hons. BA,
Masters Candidate in Environment, Resources, and Sustainability
Department of Environment
University of Waterloo, Waterloo Ontario
t29huynh@uwaterloo.ca

APPENDIX C - Phone Recruitment Script

Thy Huynh, Hons. BA,

Masters Candidate in Environment, Resources, and Sustainability

A Study of Equity Considerations of Future Coastal Flooding in British Columbia

P = Potential Participant; I = Interviewer

I - May I please speak to ***[name of potential participant]***?

P - Hello, ***[name of potential participant]*** speaking. How may I help you?

I - My name is Thy Huynh and I am a Master's student in the Department of Environment at the University of Waterloo. I am currently conducting research under the supervision of Dr.James Nugent on equity considerations within climate adaptation strategies. The purpose of this study is to learn how equity concerns are portrayed and understood and what motivations are involved with formulating adaptation strategies. The interview will be approximately 1hr in length, via Zoom.

As you played a key role in developing/implementing these climate adaptation strategies, I would like to speak with you about your perspectives on equity/distributional impacts in climate adaptation strategies. Is this a convenient time to give you further information about the interviews?

P - No, could you call back later ***[agree on a more convenient time to call person back]***.

OR

P - Yes, could you provide me with some more information regarding the interviews you will be conducting?

I - Background Information:

I will be undertaking interviews around November- December, 2022. The interview would last about an hour and would be arranged at a time convenient to your schedule. Involvement in this interview is entirely voluntary and there are no known or anticipated risks to participation in this study. Examples of some questions that may be asked are: What process is needed to develop an adaptation strategy? What goals do your department have in moving forward with developing adaptation strategies? How do these adaptation strategies consider different populations and the varying impacts being faced?

You may decline to answer any of the interview question you do not wish to answer and may terminate the interview at any time. With your permission, the interview will be audio and video recorded to facilitate collection of information, and later transcribed for analysis. Your identity will be kept confidential, and if quotes are used, you will be identified by an anonymous study ID number. The data collected will be kept in a secure OneDrive through the University of Waterloo, where I am the only one with access to. If you have any questions regarding this study or would like additional information to assist you in reaching a decision about participation, please feel free to contact Dr. James Nugent at james.nugent@uwaterloo.ca.

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board. After all the data has been analyzed, you will receive an executive summary of the research results.

With your permission, I would like to email you an Information Letter which has all these details along with contact names and numbers on it to help assist you in making a decision about your participation in this study.

P - No thank you.

OR

P - Sure ***[get contact information from potential participant i.e., mailing address/fax number]***.

I - Thank you very much for your time. May I call you in 2 or 3 days to see if you are interested in being interviewed? Once again, if you have any questions or concerns please do not hesitate to contact me by email at t29huynh@uwaterloo.ca.

P - Good-bye.

I - Good-bye.

APPENDIX D - Participant Appreciation Letter

Thy Huynh, Hons. BA,
Masters Candidate in Environment, Resources, and Sustainability

A Study of Equity Considerations of Future Coastal Flooding in British Columbia

[Insert Date]

Dear ***[Insert Name of Participant],***

I would like to thank you for your participation in this study entitled *A Study of Equity Considerations of Future Coastal Flooding in British Columbia*. As a reminder, the purpose of this study is to learn how equity concerns are portrayed and understood and what motivations are involved with formulating adaptation strategies.

The data collected during interviews will contribute to a better understanding on how to further support future policy-making that better integrates equity considerations into adaptation policies.

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board (REB #43771). If you have questions for the Board contact the Office of Research Ethics, at 1-519-888-4567 ext. 36005 or reb@uwaterloo.ca.

For all other questions contact Dr.James Nugent at james.nugent@uwaterloo.ca.

Your identity will be confidential. Once all the data are collected and analyzed for this project, I plan on sharing this information with the research community through seminars, conferences, presentations, and journal articles. If you are interested in receiving more information regarding the results of this study, or would like a summary of the results, please provide your email address, and when the study is completed, anticipated by May, 2023, I will send you the information. In the meantime, if you have any questions about the study, please do not hesitate to contact me by email as noted below.

Thy Huynh, Hons. BA,
Masters Candidate in Environment, Resources, and Sustainability
Department of Environment
University of Waterloo, Waterloo Ontario
E-mail: t29huynh@uwaterloo.ca

Dr. James Nugent
Associate Professor
Department of Environment
University of Waterloo
Waterloo, Ontario, Canada
E-mail: james.nugent@uwaterloo.ca

APPENDIX E - Interview Questions

Thy Huynh, Hons. BA,

Masters Candidate in Environment, Resources, and Sustainability

A Study of Equity Considerations of Future Coastal Flooding in British Columbia

Background Context: Climate change is expected to unequally impact already vulnerable social groups. With recent climate-driven crises in British Columbia, developing climate adaptation policies that consider the livelihoods of these social groups has become urgent. Through my research I will be focusing mainly on rising sea level adaptation plans as 80% of British Columbia's population lives within 5km to the coast and near sea level. Not to mention the valuable agricultural lands, important infrastructure, and main highways that will be impacted due to rising seas. Rising sea levels is a pressing issue for British Columbia's population, and I hope to initiate change within adaptation strategies to protect those who will be facing the impacts on the front-line.

Research Question: How government climate adaptation strategies and plans for British Columbia's west coast communities are conceptualizing and addressing equity concerns.

Demographic Questions:

1. What does your department handle/is responsible for?
2. What is your role at _____?

Contextual background

3. What process is needed to develop an adaptation strategy?
    a. Can you describe the process that should lead to the development of an adaptation strategy?
4. What factors can lead to the development of an adaptation strategy?
5. What metrics are used to measure the effectiveness of the adaptation strategies prior to implementation?

Intentions and barriers to development/implementation

6. How are priorities determined in these strategies?
    a. What actions can be undertaken to increase priorities?
7. What challenges have been faced when implementing climate strategies?
8. What goals do your department have in moving forward with developing adaptation strategies?

Conceptualization of equity

9. How does your department classify different populations?
10. How do these adaptation strategies consider different populations and the varying impacts being

faced?

   a. How are these impacts being organized to support effective decision making and action?

11. What frameworks does your department use to measure distributional impacts?

   a. Is this framework used by other departments/ministries?

   b. What is the rationale and motive behind integrating these frameworks? What level of priority does it hold?

Grey Literature

12. What projects, strategies, and plans are currently being worked on that is advancing equitable adaptation strategies?