Beyond the Flood: Achieving Equitable Compensation in Flood-Specific Property Buyout Programs

by

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Abstract

The ongoing climate crisis has increased the severity and frequency of flooding events in Canada. In response, the Government of British Columbia has recognized the need to strengthen its approach to community resiliency, including exploring managed retreat as a flood-adaptation tool. Managed retreat, the purposeful and coordinated movement of people and assets out of harm's way, can be achieved through property buyout programs, whereby governments purchase flood-risk property and compensate eligible homeowners. Both costly and controversial, property buyout programs can exacerbate existing social inequities. This study utilizes a review of literature and findings from expert interviews to identify policy options that can deliver equitable and effective homeowner compensation within mandatory, local government-led, reactive buyouts. Four options are proposed and analyzed. Ultimately, this study found that two out of the four options, both grounded in the principle of equivalent reinstatement, would provide equitable and effective homeowner compensation.

Keywords: managed retreat; property buyout program; flood risk management; flood risk mitigation

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List of Acronyms

AB	Alberta
BC	British Columbia
DFA	Disaster Financial Assistance
DFAA	Disaster Financial Assistance Arrangements
DMAF	Disaster Mitigation and Adaptation Fund
DRIPA	Declaration on the Rights of Indigenous Peoples Act
EMAP	Emergency Management Assistance Program
EMBC	Emergency Management BC
EMCR	Emergency Management and Climate Readiness
FEMA	Federal Emergency Management Agency
FMV	Fair Market Value
ISC	Indigenous Services Canada
PARA	Protect, Accommodate, Retreat, Avoid
SK	Saskatchewan

Chapter 1.

Introduction

Background and Research Gap

Canada's climate has been warming at twice that of the global average, leading to more frequent and more intense extreme weather events (Saunders-Hasting et al., 2020). Rising temperatures have led to more extreme precipitation, caused annual snow melts to occur earlier, changed storm activity and caused rising sea levels all of which have increased the frequency and severity of inland and coastal flooding (Zhang et al., 2019). These challenges are only expected to increase and become less predictable in the face of rising climate pressures. As a result, flooding has become Canada's most common and most expensive natural hazard (Public Safety Canada, 2022).

Canada's flooding challenge is compounded by historic patterns of settlement around waterways, with nearly 80% of Canadian cities built on floodplains (Golnaraghi et al., 2020). This exposes populations, property and infrastructure to flood risk, with the socioeconomic impacts of flooding expected to worsen as population growth drives development and densification in flood prone areas (Chakraborty et al., 2021a). Beyond the cost implications, flooding is an equity issue. Flooding disproportionately affects socially vulnerable groups as they are both more likely to live in high-risk areas and lack the basic resources needed to prepare for natural disasters (Calil & Newkirk, 2017).

Flooding is a significant issue for the province of British Columbia. As the province's climate continues to warm, many communities have experienced record-breaking flood events in recent years, with 2021's Atmospheric River being the costliest severe weather event in the province's history (Insurance Bureau of Canada, 2022). Nearly 22% of residential property in British Columbia is exposed to flood risk (Chakraborty et al., 2021b).

Within this context, managed retreat has gained considerable attention as a flood risk reduction strategy. Managed retreat is the intentional relocation of homes, buildings and valued infrastructure away from risk areas, or the abandonment of land to manage flood risks (Doberstein et al., 2019; Siders, 2019a). It can be achieved through property

buyout programs, in which a government agency purchases flooded or flood-risk properties, and compensates homeowners accordingly (Baker et al., 2018). Managed retreat, and more precisely property buyout programs, can be controversial with fears they exacerbate existing social inequities (Martin, 2022; Siders, 2019b; Greer & Binder, 2016a). Moreover, property buyout programs are expensive, with homeowner compensation a significant component of program costs (Thistlethwaite et al., 2023).

Managed retreat is not widely adopted or analyzed globally (Hino et al., 2017), with consistent policy improvement hamstrung by a lack of post-buyout program policy evaluation (Baker et al., 2018; Greer & Binder, 2016b). This pattern is mirrored in Canada. Property buyout programs implemented so far in Canada have often been adopted on an ad hoc basis as a reactionary measure to a flooding event, rather than grounded in thoughtful policy design (Thistlethwaite et al., 2020a). The Government of British Columbia does not currently have a policy framework to guide the design and implementation of property buyout programs for the purposes of managed retreat, or a funding program to support them (Government of British Columbia, 2022; Thom, 2019; Luymes, 2023). Within that context, a flood-specific property buyout program has been executed only once in BC so far, following an extreme flooding event in 2018 in Grand Forks (Le Geyt, 2022). Currently, the City of Merritt is attempting to execute a property buyout program as part of a broader flood resiliency plan, following catastrophic flooding in 2021 (City of Merritt, 2022; City of Merritt, 2023; Dawson, 2023). Challenges surrounding the execution of the Grand Forks buyout program highlighted the need for provincial buyout program policy, with the then Minister of Emergency Management BC (EMBC)[1] recognising the need for a provincial approach to homeowner compensation specifically (Thom, 2019). Questions about equitable compensation models in the absence of a provincial framework have similarly arisen in the proposed Merritt property buyout program (Dawson, 2023). Within its revised flood strategy (released March 2024), the provincial government has signaled its support for continued exploration of policy options within this space through a commitment to “[engaging] in discussions on how managed retreat could be used to address flood risk” (Government of British Columbia, 2024a).

[1] EMBC was formally situated within the Minister of Public Safety and Solicitor General but became the standalone Ministry of Emergency Management and Climate Readiness (EMCR) in 2022.

Research Question & Objectives

As a result, this study seeks to address this policy and program gap by answering the question: how should homeowners be compensated equitably as part of an effective flood-specific property buyout program?

It does so by addressing the following:

1. What are the characteristics that make a property buyout program effective and equitable in terms of compensation?

2. What enablers and barriers to the implementation of an effective and equitable buyout program exist in British Columbia?

The objective of this research is to explore considerations for the design of an effective and equitable homeowner compensation model as part of a provincially funded flood-specific buyout program. Specifically, the scope of the analysis is mandatory buyouts, designed and enforced by local governments in a reactive (post-flooding) environment. This study uses a qualitative research approach to analyze the policy problem, develop criteria to evaluate four policy options, and determine policy recommendations. In this way, this study has both academic and practical value. Not only does it contribute to the broader body of literature on buyout programs, but it also highlights priorities and identifies trade-offs that can facilitate more intentional policy design.

Capstone Outline

Chapter 2 is a review of relevant literature, both providing background information on flood risk reduction strategies, and situating managed retreat within the broader flood resiliency framework, before outlining the main considerations surrounding managed retreat and property buyouts. Chapter 3 outlines the policy context for property buyouts, outlining relevant governance and funding considerations in Canada and BC, as well as detailing Canada and BC-specific case studies and legislative considerations. Chapter 4 provides an overview of the methodologies used in this study. Chapter 5 presents the research findings from the expert interviews, while Chapter 6 presents the policy options for the property buyout program compensation models. Chapter 7 outlines the multicriteria evaluation framework used to evaluate the options and Chapter 8

presents the analysis of the policy options. Chapter 9 details the study's recommendations and implementation considerations, with the final chapter offering the study's conclusion.

Chapter 2.

Literature Review

A review of research and government reports, journal articles, and other academic and grey literature was completed to situate the research in its broader context and to understand the key policy design considerations for property buyout programs. This supported the study by shaping the policy approaches and analysis framework. As the purpose of the research is to identify policy solutions to address the current policy gap in BC, the review focused on literature concerned with managed retreat and property buyouts in Canada and comparable jurisdictions. This Chapter situates managed retreat within the broader flood risk management landscape, before identifying the key considerations for property buyout program design and implementation.

2.1. Flood Risk Management

In response to the challenges of climate change, an increasing focus is on enhancing the resiliency of communities to flood impacts. In Canada, the most commonly used framework to categorize disaster adaption and risk reduction approaches, for the purposes of increasing community resilience, is the PARA framework (Parnham, 2023). Originally developed to understand adaptation approaches for sea level rise among coastal communities (Doberstein et al., 2019), the PARA framework has been adopted in many jurisdictions inside and outside of Canada (including by the Government of British Columbia) to understand riverine[2] and pluvial[3] flood risk reduction and community resilience (Saunders-Hastings et al., 2020). It comprises four approaches:

[2] Water levels in a river, lake or stream overflows onto adjacent lands or infrastructure. Can be caused by intense rainfall, atmospheric rivers or rapid snowmelt among others (Government of British Columbia, 2022).

[3] Extreme rainfall creates local flooding away from bodies of water. Caused by heavy rainfall that exceeds the capacity of stormwater sewers, culverts, and landscapes to absorb and convey flows (Government of British Columbia, 2022).

- Protect: involves the construction of engineered structures that prevent flood damage or hold back flood water (Government of British Columbia, 2022). This includes dikes, floodwalls and diversion structures (Doberstein et al., 2019).

- Accommodate: allows flooding to occur periodically with measures taken to limit, mitigate or reduce vulnerability to flood damage (Government of British Columbia, 2022) such as elevated homes, grading subdivisions about flood construction levels and flood insurance.

- Retreat: involves the purposeful relocation of homes, buildings and valued infrastructure from high-risk flood plains (Government of British Columbia, 2022). Some tools to execute this include property buyouts, land swaps and leasebacks (Georgetown Climate Center, n.d.).

- Avoid: refers to the prevention of new building in flood hazard areas, allowing for flooding to occur in line with natural cycles (Government of British Columbia, 2022). It's achieved through tools like zoning restrictions, private land acquisition and the transfer of development rights (Doberstein et al., 2019).

The approaches can be conceived as sitting on a spectrum of impact to human activities. At one end of the spectrum are tactics that involve changing human activities to suit the environment (retreat/ avoid), and at the other are activities that attempt to change the environment to preserve existing human activities (protect/ accommodate) (Cooper & Pile, 2014). Importantly, these approaches are not mutually exclusive and are designed to be used in conjunction to address short- and long-term resiliency objectives (Doberstein et al., 2019).

Historically in Canada, communities have tended to prioritize 'protect' activities, particularly in areas where high value land uses and settlements are vulnerable to flood risk (Cottar et al., 2021). This is true for British Columbia (Government of British Columbia, 2022). This approach poses challenges as these activities can never offer full protection and are subject to failure under extreme flood scenarios. A pertinent example is the failure of flood dikes in 2021's Atmosphere River event that, among other things, led to the flooding of the Sumas Prairie. Additionally, it's increasingly recognised that

protect tactics tend to have a detrimental impact on the environment and local ecosystems (Siders, 2013). Within this context, the provincial government has recognized the need to strengthen its approach with regard to the other adaptation tools in the PARA framework, including managed retreat (Government of British Columbia, 2024a).

2.2. Managed Retreat

Managed retreat is defined as “the purposeful, coordinated movement of people and assets out of harm’s way” (Siders, 2019a), which is often accomplished through property buyout programs. In a property buyout program, a government seeks to reduce flood risk by reducing the number of homes and assets in a high-risk area by offering to compensate eligible homeowners for the purchase of their property. Despite the seemingly simple definition, managed retreat can take place in many different ways and encompass a toolbox of instruments (Hanna et al., 2021; Mach & Siders, 2021). The goals of managed retreat can be varied, and can include financial considerations (e.g., to reduce the cost of future flood damage), social factors (e.g., to provide vulnerable groups with the opportunity to relocate) and/or environmental reasons (e.g., re-naturalizing the flood plain). Often the goal of a property buyout program is a combination of these factors. Both influencing and resulting from these goals, are a series of financial, equity and implementation considerations that shape the design and outcomes of property buyout programs.

2.2.1. Financial Considerations

Property buyout programs are expensive (Thistlethwaite et al., 2023). Despite this, economic variables are used to justify them, with the immediate, and one-time cost to relocate evaluated against the longer-term cost of repeated emergency response and property repairs (Freudenberg et al., 2016). One of the major costs in a buyout program is the cost of compensating homeowners for their loss of property. Across the literature, a variety of approaches are apparent, both when considering property valuation and additional compensation mechanisms. As property values are dynamic, the point in time when a property is valued is therefore important. A review of buyout programs in Canada and the United States found that pre-flood fair market value, in contrast to post-flood

value, was the most commonly used baseline for property valuations and therefore homeowner compensation (Le Geyt, 2021). Pre-flood values are typically higher than post-flood values as flooding detrimentally impacts the condition of a property, and therefore its value. As such, buyout programs based in pre-flood values are more expensive, but also more socially acceptable owing to the higher levels of homeowner compensation (Thistlethwaite et al., 2023; Siders, 2019b). Some argue that using pre-flood values creates a moral hazard, as the government is forced to assume the cost of homeowners' risky behaviour (purchasing flood-risk property) which inadvertently increases homeowners' risk tolerance (Young, 2018).

Additional compensation mechanisms and/ or variations on property valuation can also be used to meet buyout program objectives or incentivize specific behaviours. For example, following flooding in Pointe Gatineau in 2019, the Quebec Government implemented caps on homeowner compensation due to public concerns about the cost of the program and the prudent use of provincial resources (Doberstein et al., 2021). Opposingly, a post-Hurricane Sandy buyout in New York in 2012 offered participants a fixed percentage on top of pre-flood value to relocate within the same county (Greer & Binder, 2016a).

Given the expense of buyout programs, how they're funded becomes very important as does who bears the brunt of the costs. This will be explored in more detail regarding the Canadian context in Chapter 3. Irrespective, the literature notes the ongoing negative financial impact property buyouts can have on local levels of government (Thistlethwaite et al., 2023; Freudenberg et al., 2016; Siders, 2019b; BenDor et al., 2020). This is due to two factors, decreased revenue and increased costs to service their community. Property taxes are the primary funding source for local government (Freudenberg et al., 2016); if buyout participants are not incentivized to stay within the community, the size of the local government's tax base will be reduced (Siders, 2019b). This is particularly problematic in coastal retreats, where waterfront properties are typically more expensive and therefore contribute more (in relative terms) to the local tax base (Saunders-Hastings et al., 2020). In voluntary buyouts, areas can be left partially vacated if not all community members choose to relocate, which creates a "checkerboard" of vacated lots. Partially vacated communities increase maintenance costs for municipalities, as they still require governments to fund flood defenses and it's more expensive for local governments to service isolated or individual properties

(Thistlethwaite et al., 2020; Thistlethwaite et al., 2023). Political risk is also a consideration for local governments, with concerns about negative political ramifications among elected officials identified as a source of resistance to buyout programs (Gibbs, 2016; Saunders-Hastings et al., 2020).

2.2.2. Equity Considerations

Managed retreat can be controversial, and the literature clearly highlights the potential detrimental impact that buyout programs can have on equity deserving groups (Siders, 2019b). Analysis in the US and Canada has found that levels of socioeconomic vulnerability are often higher in flood zones (Chakraborty et al., 2021a; Calil & Newkirk 2017; Siders 2019b; McGhee, 2017) and those that are wealthier are more likely to experience better outcomes when participating in a buyout program. This is due to having greater resources to better navigate the administrative processes and being able to afford desirable property in other locations (Thistlethwaite et al., 2023; Kick et al., 2011). Property in higher-risk areas is typically more affordable than property in lower-risk areas (Baker et al., 2018). As property buyouts remove property from flood zones, the net effect is to remove affordable housing from the community's housing stock. This loss of housing stock can exacerbate affordability pressures within a community and can incentivize risky behaviours such as staying in or relocating to flood risk areas. A study into the post-Hurricane Sandy buyouts in Staten Island (New York) found that 20% of participants relocated to floodplains with equal or greater risk of flooding, and 98% of participants moved to areas with higher poverty rates (McGhee, 2017). Researchers note that living in lower-income areas not only impacts individuals' immediate economic wellbeing, but also that of subsequent generations (Chetty & Hendren, 2018). Other studies have found that those that permanently relocated after disaster events had higher rates of psychological, physiological, and social problems than those that were only required to temporarily relocate (Baker et. al, 2018).

Additionally, buyout programs can often provide little consideration for renters. In the United States, renters receive no compensation, despite being displaced if the property owner participates in a buyout scheme. The overall reduction in housing stock also increases rents as well as increasing property prices, meaning renters can be forced to pay higher prices, move out of community or potentially become homeless (Dundon & Camp, 2021).

Another important equity consideration is the degree of coerciveness in the buyout program. The majority of buyout programs in Canada have been described as voluntary (Thistlethwaite et al., 2020). Voluntary programs are perceived to be more socially acceptable and therefore politically feasible but are generally considered to be less cost-effective due to the ongoing costs to service partially vacated communities (Thistlethwaite et al., 2020). However, despite being described as voluntary, programs can include non-voluntary elements. The Grand Forks buyout program following the 2018 flooding event for example was described as a 'voluntary land acquisition scheme' as the desire was for homeowners to voluntarily accept the buyout offers. However, for portions of the program, 100% compliance was required in order to fulfill the program's goals of increased flood resiliency (in part delivered through the construction of enhanced flood mitigative structures such as improved dikes). In this sense, the property acquisition was mandatory despite being described as a voluntary program (Le Geyt, 2022). In addition to explicitly mandatory elements, buyout programs can include implicitly coercive elements. De Vries & Fraser (2012) argue that true voluntariness requires individuals and authorities to share in joint decision making, and they question the capability of individuals to make informed decisions and participate on a voluntary basis in traumatic post-disaster contexts. De Vries & Fraser (2012) point to four property buyout programs in the United States, where despite high levels of program uptake, over a third of participants felt their program to be involuntary due to perceived pressure to participate. Moreover, specific implementation choices can increase the coerciveness of nominally voluntary programs. Following the 2019 flooding in Pointe Gatineau, the Quebec Government introduced a cap on the total lifetime value of government provided financial support available to homeowners that didn't participate in the buyout program. This prevented homeowners from accessing financial support to undertake property repairs in the event of future floods once the lifetime cap was reached and was explicitly implemented to encourage participation in the buyout program (Cottar et al., 2021; Doberstein et al., 2021). Other examples include programs that have implemented requirements for non-participants in lieu of participating, such as requiring owners to make costly alterations (e.g., elevating their homes) to reduce future flood-risk (Siders, 2019b). This is more feasible for those with greater means, and therefore reduces the voluntariness of 'voluntary' buyout programs for socio-economically vulnerable groups.

Despite these pressures to participate, there can be significant barriers. Even after experiencing recurrent flooding, individuals underestimate the risk of future flooding events (Costas et al., 2015). This is exacerbated as individuals' perceptions of flood risk decreases with the time elapsed since the last flooding event (Tanner & Árvari, 2018). Another important consideration is 'place attachment'. Buyouts are perceived by some as disruptive to community cohesion, with individuals' sense of belonging to a place or a community significantly impacted through relocation (Saunders-Hastings et al., 2020). Resultingly, research suggests that individuals affected by flooding that feel a place attachment to their home or community are less likely to relocate from flood-affected areas (Kick et al., 2011). The impact of these more intangible factors, or non-market losses, are often difficult to assess. Losses such as loss of knowledge, sense of place, social cohesion and identity are not easily qualifiable and therefore often not considered when assessing whether managed retreat is an appropriate solution for a community (Tschakert et al., 2017).

2.2.3. Implementation Considerations

As outlined above, distance from a flooding event reduces the perception of flood risk, making property buyouts more challenging to implement as a flood risk reduction strategy. Therefore, the immediate aftermath of a flooding event, or repeated flooding events in close succession, provides a window of opportunity to introduce property buyouts as a policy option. An example is Pointe Gatineau, Quebec, where repeat flooding events in 2017 and 2019 were believed to have increased homeowner openness to buyout program participation (Cottar et al., 2021). In addition to providing a policy window, flooding can also provide a funding window, with managed retreat often tied to disaster response and recovery funding programs. In this way, property buyouts are often proposed as a reactive flood risk reduction tool. Some suggest that the reactive, post-disaster environment is not conducive to effective policy discussions about property buyouts. Thistlethwaite et al. (2020) suggest that the traumatic impacts of flooding can reduce individuals' capacity to rationally engage in discussions about property buyouts. Despite the need to capitalize on the post-flood window of opportunity, buyouts are often slow to be implemented. Nearly half of buyouts administered by the Federal Emergency Management Agency (FEMA) in the US over the past 30 years took five years or more to complete (Thistlethwaite et al., 2020).

Community engagement and decision-making models are also key implementation considerations. Hanna et al. (2021) suggest that managed retreat can be mapped onto a governance spectrum, from a high degree of state control at one end to more social autonomy at the other. Saunders-Hastings et al. (2020) present a similar model, highlighting that in Canada different decision making models have been used to initiate and facilitate managed retreat, from a bottom-up approach, top-down and a collaborative model. In this way, the bottom-up model reflects retreats wherein communities themselves make the appeal for assistance which is supported by government agencies, top-down sees government authorities making and implementing decisions, whereas the collaborative model facilitates “a collaborative and iterative process involving several different levels of government, the private sector, community-based organizations, and community stakeholders” (Saunders-Hastings et al., 2020). Saunders-Hastings et al. (2020) suggest that irrespective of decision-making model, ensuring community buy-in, with local support spearheaded by local champions is critical to successful and equitable buyout programs. The alternative, top-down approaches, run the risk of creating community resistance (Hanna et al., 2021).

Finally, post-buyout land use was seen as an important implementation consideration, with alignment required between the goals of the buyout and local land use policies. Land use planning, zoning and development control, all the responsibility of local governments, are useful tools to reduce flood risk and enhance the longer-term benefits of buyout programs (Parnham, 2023). If land reclaimed through a buyout program remains zoned for residential or commercial use, homeowners are unlikely to participate in a buyout program, due to the belief that future development in that area, or a return to that area, could occur (Thistlethwaite et al., 2023).

Chapter 3.

Policy Context

3.1. Flood Risk Management

In Canada, flood risk management is a shared responsibility across the federal, provincial and local governments. Therefore, in order to understand the BC specific implementation barriers and enablers to property buyout policy, it's important to outline the funding and governance landscape.

3.1.1. Funding Sources

Under the powers of the *Emergency Management Act* (2007), the federal government's primary responsibility is to coordinate with and support provinces and territories in their efforts to mitigate, prepare for, respond to and recover from flood emergencies (Public Safety Canada, 2022). One of the main ways the federal government provides support to provinces and territories is financial assistance. Two primary funding pathways are the Disaster Financial Assistance Arrangements (DFAA) program and the Disaster Mitigation and Adaptation Fund (DMAF). Established in 1970, the DFAA is a cost-sharing program that assists provinces and territories with response and recovery costs for large-scale disasters (Public Safety Canada, 2022). It supports the restoration of infrastructure, essential services and personal property following a disaster event by reimbursing provinces for a portion of eligible disaster response and recovery costs (Golnaraghi et al., 2020). Provinces and territories are responsible for designing and administering disaster financial assistance (DFA) programs in their jurisdictions to provide direct assistance to individuals, small businesses, not-for-profits, and local governments (Public Safety Canada, 2022). The DMAF program was established in 2018, with a $2 billion commitment over 10 years to support disaster resiliency projects. The fund was topped up in 2021 with an additional $1.3 billion to be spread out over 12 years (Government of Canada, 2023a). The DMAF program supports large-scale public infrastructure projects (construction of new or modification of existing) that prevent or mitigate the impacts of current or future natural hazards. As with the DFAA program, the DMAF is a cost-share agreement, with the federal government

reimbursing up to 40% of eligible costs for municipal governments and up to 50% for provinces (Government of Canada, 2023b).

With regard to this context and property buyouts, there are a number of issues. Firstly, costs associated with property buyouts are not eligible under the DFAA. There are some provisions for property buyouts under the DMAF, however, expenditures associated with land acquisition are only eligible if they are for natural infrastructure projects (projects that use naturally occurring resources or engineered use of natural resources) (Government of Canada, 2023b). This limits the types of land acquisition programs local governments can explore. Secondly, given the cost of property buyouts, the cost-share nature of these programs can make funding inaccessible to municipalities. Property taxes are the main source of revenue for municipalities from which to pay for capital projects (like property buyout programs). Smaller communities therefore have lower revenue generating capacity, which is compounded in communities with lower value properties. These communities are often unable to generate the revenue required to meet their portion of a cost-share agreement. Thirdly, the long-term viability of both programs has been called into question. Since 1970, over $6 billion has been paid to provinces and territories through the DFAA, with more than 62% of that having been paid out in the last 10 years (Public Safety Canada, 2022). As of September 2022, $2.2 billion of DMAF's $3.3 billion pool of funding had been assigned, despite the 12-year funding window (Major, 2022). As of March 2024, the program is no longer accepting applicants.

The Provincial Government runs two streams within its Disaster Financial Assistance (DFA) program[4], one for individuals and one for local governments and Indigenous communities. Once a disaster event is declared DFA eligible, individuals are eligible for partial compensation[5] for infrastructure costs to their primary residence. Financial assistance is limited to the cost to repair damage to pre-flood state only, meaning flood mitigation or prevention work and relocation costs are not eligible for DFA compensation (Government of British Columbia, 2024b). In this way, individuals cannot

[4] Within the federal DFAA program, provinces and territories are responsible for designing and administering their own DFA program. This is the BC designed and administered DFA program.

[5] Financial assistance is provided for each accepted claim at 80 percent of the amount of total eligible damage less $1,000, to a maximum of $400,000 (Government of British Columbia, 2024b).

use DFA to engage in individual managed retreat. Local governments and Indigenous communities are also provided partial reimbursement for eligible infrastructure repairs. Similarly to individuals, financial assistance is limited to building infrastructure to a pre-flood state with mitigation, prevention and relocation work (i.e., property buyouts) deemed ineligible (Government of British Columbia, 2024c).

3.1.2. Governance

Under the *Emergency and Disaster Management Act* (2023) local authorities in BC are responsible for their own disaster management. Additionally, in 2004, the provincial government passed the *Flood Hazard Amendment Act*. This legislative change transferred responsibility for designating floodplains and flood risk management plans, including the development of flood maps and the maintenance of dikes, from the provincial government to local governments (McElroy, 2021). Accordingly, local authorities are responsible for designing and implementing property buyout programs, typically as part of broader flood mitigation plans. Theoretically, this structure aims to provide greater autonomy to local authorities to deliver services that reflect local knowledge and concerns (McElroy, 2021). However, many local governments have argued that within flood risk reduction, this governance model has led to a fragmented approach to flood risk reduction where "roles and responsibilities are unclear" and "competing mandates and relationships challenge good governance" (Ebbwater Consulting Inc, 2021).

One of the barriers to more effective flood risk reduction, is local governments' capacity both from a financial and a personnel perspective. As previously touched on, local governments are highly dependent on other levels of government for disaster response and recovery resourcing and funding, owing to their limited fiscal capacity, which is constrained by the revenue sources available to them and their dependence on property taxes to fund programs and services (Public Safety Canada, 2022; Freudenberg et al., 2016). Given how expensive property buyout programs are, this presents significant challenges for local governments and highlights the need for available and appropriate provincial and/ or federal funding sources for property buyout programs.

3.1.3. Indigenous Funding and Governance

The ongoing challenges resulting from colonialism and land dispossession have created disproportionate flood risks for Indigenous communities (Public Safety Canada, 2022). Indigenous communities are responsible for developing community emergency management plans. Federally, Indigenous Services Canada (ISC) plays a role in supporting flood risk management for Indigenous communities, by funding on-reserve flood mitigation, preparedness, response and recovery through the Emergency Management Assistance Program (EMAP) (Public Safety Canada, 2022). Provincially, Indigenous communities are eligible for funding through the DFA program (Government of British Columbia, 2024c). However, the unique social and cultural conditions within Indigenous communities, and the existing jurisdictional complexities, means Indigenous communities have often been poorly considered within broader flood risk management strategies (Golnaraghi et al., 2020).

3.2. Flood-Specific Property Buyout Programs

3.2.1. Canadian Context

Managed retreat is infrequently used in Canada, and where it has been implemented it is often used as a reactionary measure in response to a natural disaster (Parnham, 2022; Saunders-Hastings et al., 2020). In 2020, researchers at the University of Waterloo attempted to identify and consolidate Canadian examples. To the best of their ability, they identified 14 unique flood-specific property buyout programs since 1954 that are either ongoing or complete (some programs contained multiple communities) (Partners for Action, 2020). Severe weather events since 2020 have prompted additional communities to explore property buyout programs, e.g., Merritt following 2021's Atmospheric River (City of Merritt, 2022) and multiple communities in Newfoundland & Labrador following Hurricane Fiona in 2022 (Government of Newfoundland & Labrador, 2022).

What is clear across the Canadian examples is the lack of standardization in approach. The programs include fully mandatory buyouts, voluntary buyouts and voluntary buyouts with coercive elements to encourage buyout program participation (Partners for Action, 2020; Cottar et al., 2021). Almost all the buyout programs appear to

be time-limited offers, with the notable exception of the City of Moose Jaw, SK. Limited data on the buyout exists, but the City appears to have run a buyout program over 40 years for residents in the Moose Jaw River Watershed, with rezoning used to prevent further construction in at-risk areas (Partners for Action, 2020; Wittrock et al., 2018). The approaches to homeowner compensation are similarly non-standardized. Examples include using pre-flood market value, pre-flood value determined by tax assessment, pre-flood value up to a capped limit and post-flood value (Partners for Action, 2020). Very limited data exists regarding the details of a number of these buyout programs and even fewer post-buyout evaluations are available. Moreover, unlike in the United States where FEMA maintains records of past buyouts, there is no central repository of information about buyout programs that have occurred around the country (Thistlethwaite et al., 2020). This presents challenges for evidence-based policy decision-making in the property buyout space.

3.2.2. British Columbian Context

As outlined in Chapter 3.1.1 there are currently no funding programs to support managed retreat in BC, and the provincial government does not currently have a policy framework to guide the design and implementation of property buyout programs for the purposes of managed retreat (Government of British Columbia, 2022; Thom, 2019; Luymes, 2023). In 2020, the Province embarked on a process to update its flood strategy (the 'BC Flood Strategy'), releasing an Intentions Paper in 2022 and a summary document detailing its revised vision, outcomes and principles for flood resiliency in March 20204. Included in the BC Flood Strategy is a recognition of a historic reliance on 'protect' activities and a proposed program area that aims to strengthen the Province's approach in all four areas of the PARA framework, including managed retreat (Government of British Columbia, 2022; Government of British Columbia, 2024a). The current publicly available information does not include reference to or consideration of a policy framework for homeowner compensation within buyout programs. In the absence of a policy framework, communities in BC have either been unable to undertake property buyouts for the purposes of flood resilience or have undertaken it without the support of codified provincial guidelines or funding options. The only example to date of a completed buyout in BC is Grand Forks. Work is currently underway in Merritt, BC to develop a buyout program in service of a broader flood resiliency plan.

Grand Forks

Situated at the convergence of the Kettle and Granby Rivers in the Kootenay Boundary Regional District, Grand Forks experienced a 1-in-200 year flood event on May 10, 2018 following a week of week of warm temperatures and three days of sustained rainfall (Dobson Engineering Ltd, 2018; Hoogeveen & Klein, 2021). The worst flood on record, the flooding was exacerbated by large amounts of snow melt, owing to a snowpack that was 240% the average for early May (Hoogeveen & Klein, 2021). The most extensive damage was caused within the Downtown, Johnson Flats, South Ruckle and North Ruckle neighbourhoods (Dobson Engineering Ltd, 2018). Following recovery activities, and after consultation with the affected property owners, the Grand Forks City Council voted to adopt a suite of flood mitigation measures, including property buyouts, in September 2018 (Le Geyt, 2022). Homeowners in some of the affected areas were noted as being in favour of buyouts if compensation was 'fair' (Le Geyt, 2022).

In June 2019, the City received $53 million in funding to support its flood mitigation activities in a cost-sharing agreement between the federal and provincial governments, with only the funds provided from the provincial government ($31.5 million) eligible to support the property buyout program (Le Geyt, 2022). Owing to the level of funding received, the City was only able to afford post-flood homeowner compensation, not pre-flood as originally thought and discussed with homeowners (Le Geyt, 2022; Grand Forks, 2019). At the time, the City estimated the difference between pre- and post-flood property values to be $6.6 million, with affected homeowners losing $79,000 on average (Grand Forks, 2019). In a report produced for Council, the City noted that:

> The impact of the buyout at current market value [post-flood value] on households will vary widely depending on their existing assets or debts and other non-tangible resources, including whether they received Disaster Financial Assistance or insurance. The bottom line is that half of the household would receive less that $100,000 for their property with 24 households receiving less than $60,000 if receiving only current market value. Receiving this amount of compensation would not enable property owners to replace their dwelling with something similar in the area and in many cases is less than what is owed on a mortgage (Grand Forks, 2019).

The City contracted Keystone Consulting & Appraisals to design the buyout program, including determining a homeowner compensation formula (Keystone Consulting & Appraisals, n.d.), which drew heavily from the Expropriation Act (discussed

later in this Chapter). Despite being described as a ‘voluntary land acquisition scheme’, elements of the proposed buyout program required 100% compliance in order to build enhanced dikes to achieve the City’s broader flood mitigation objectives (Le Geyt, 2022). As such, homeowners were required to accept the compensation offer, or have their property expropriated under the powers of the Expropriation Act. In an attempt to mitigate the impacts that post-flood value may cause for homeowners, the Council voted to adopt a range of in-kind compensation options as a means to supplement the financial compensation provided, as well as fast-tracking affordable housing projects in Grand Forks in conjunction with BC Housing (Le Geyt, 2022).

During the buyout process, the City established a case management model to support program participants. This approach offered individualized outreach and engagement to different populations in the community and supported the City to understand the needs and wellbeing of the program participants (Hoogeveen & Klein, 2021). However, funding for this program was not continued past the immediate completion of the buyout program, and the opportunity to understand the short- and long-term outcomes of the program participants (including where they moved to, economic and psychosocial wellbeing etc.) was lost. While research has been undertaken to explore elements of the Grand Forks buyout program, no research has been conducted to understand the longer-term impacts of the program on participants, leaving a research gap.

Merritt

The City of Merritt is located at the confluence of the Coldwater and Nicola Rivers within the Thompson Nicola Regional District. On November 15, 2021 an Atmospheric River event caused severe flooding, resulting in extensive damage to residential and commercial property, and public infrastructure (City of Merritt, 2022). The City developed a flood mitigation plan which involves a property buyout program to facilitate the construction of improved dikes (City of Merritt, 2022; Luymes, 2024; Dawson, 2023). However, the City has been unable to fully execute their plan owing to the lack of provincial direction or funding to support property buyouts (City of Merritt, 2023; Luymes, 2024; Dawson, 2023). City staff have been openly critical about the lack of a policy framework and the impact of that on the City’s ability to execute their buyout program and therefore their broader flood resiliency plan (Luymes, 2024; Dawson,

2023). Questions about how to deliver an equitable compensation model in the absence of a provincial framework have also been raised by City of Merritt staff (Dawson, 2023).

Legislative Landscape

In both examples, the municipal governments' buyout programs included elements that required 100% compliance i.e., the local governments needed to forcibly purchase property irrespective of the wishes of the owners. Local governments currently have the ability to non-consensually claim privately owned land through powers under the *Expropriation Act* (1996). Generally, property buyouts in BC are for the purposes of public projects, with the Expropriation Act allowing expropriating authorities to purchase property quickly while ensuring fair compensation for homeowners. A recent example is the SkyTrain expansion project in Vancouver. The Expropriation Act establishes the legal minimum for homeowner compensation, which is comprised of two elements: the property's market value and disturbance damages. Market value is defined as:

> The market value of an estate or interest in land is the amount that would have been paid for it if it had been sold at the date of expropriation in the open market by a willing seller to a willing buyer (Expropriation Act, RSBC 1996, c 125).

The types and value of disturbance damages are not explicitly defined in the Expropriation Act and are therefore context specific, but are intended to compensate homeowners for relevant costs associated with being expropriated e.g., moving fees, legal costs etc. Unlike other Canadian jurisdictions, BC's Expropriation Act does not include a clause for equivalent reinstatement i.e., a 'home for a home' approach is not included.

Expropriation can be very expensive for local governments with the potential for significant costs due to litigation from homeowners contesting property valuations (Manhas, 2018). Therefore, local governments can be keen to avoid it, instead attempting to negotiate with homeowners (Manhas, 2018). This was the case in Grand Forks where the City achieved a 98% voluntary acquisition rate, i.e., only 2% of properties were acquired directly through the powers of expropriation (Keystone Consulting & Appraisals, n.d.). All the properties were acquired using a compensation model based on the principles of the Expropriation Act (current fair market value for the property plus disturbance damages) (Le Geyt, 2022).

While other jurisdictions have used alternative methodologies to determine homeowner compensation (e.g., pre-flood value), given the current policy gap, the Expropriation Act is the only pricing mechanism currently set out in legislation. It therefore forms the legal backstop for buyout programs. This means that for programs requiring 100% compliance the minimum level of compensation a homeowner is legally entitled to is that which is laid out in the Expropriation Act.

Chapter 4.

Methodology

The objective of this research is to explore considerations for the design of an effective and equitable homeowner compensation model as part of a provincially funded flood-specific buyout program. Specifically, the scope of the analysis is mandatory buyouts, designed and enforced by local governments in a reactive (post-flooding) environment. Primary and secondary sources were used to scope the policy problem, develop policy solutions and inform the policy analysis. Semi-structured interviews with domain experts were conducted to develop policy options and the analysis framework, and to understand the BC-specific implementation barriers and enablers.

Nine semi-structured interviews were undertaken between October 2023 and January 2024 with experts working in the space of flood resiliency, managed retreat and property valuation. A purposive non-probability sampling method was utilized to identify and access the participants, and the sample reflects the nature of the major policy actors in this space: provincial and municipal employees. Six interviews were conducted with current provincial employees responsible for a range of disaster risk reduction policy portfolios, two were conducted with current municipal employees with direct experience of property buyout programs for the purpose of flood resiliency, and one was conducted with an expert in the design and execution of disaster-specific voluntary land acquisition programs. Interviews were recorded to facilitate accurate collection of data and the recordings were transcribed for analysis. A thematic analysis of the interviews was conducted by coding the data in NVivo and identifying commonalities and patterns.

Data Limitations

As detailed in the policy context (Chapter 3) managed retreat is a nascent policy area in BC, with very few municipalities having implemented, or being sufficiently advanced in implementing, flood-specific managed retreat. More broadly, there is limited data on the topic. Managed retreat is not widely adopted or analyzed globally (Hino et al., 2017), with consistent policy improvement hamstrung by a lack of post-buyout program policy evaluation (Baker et al., 2018, Greer & Binder, 2016b). As detailed, managed retreat is infrequently deployed in Canada, leading to a lack of Canada-

specific data on this subject, which creates policy analysis challenges. One notable gap in this study is the impact of flood-specific property buyouts on Indigenous Peoples. This is a complicated space, with intersecting federal and provincial responsibilities, that was unable to be addressed within the scope of this research. More research into this topic would be valuable.

Ethical Considerations

Interviews with property buyout program participants were not conducted for this research, despite being the main focus for the study. The research would have benefited from speaking with buyout program participants to gain a deeper understanding of equity considerations, perceptions of compensation options and longer-term wellbeing metrics. However, in addition to being a very small demographic in BC, flood-specific property buyout program participants should be considered a marginalized group owing to the traumatic experiences of flooding. The time restrictions on the study and the ethical clearance associated with this research did not allow for interviewers with marginalized groups.

Chapter 5.

Research Findings

5.1. Unpacking the Policy Problem

Across the interviews there was clear recognition of the existing policy gap regarding managed retreat, and the limiting impact this has on communities attempting to utilize multiple dimensions of the PARA framework to enhance flood resiliency. This specifically related to the lack of funding available at the provincial and federal level for communities seeking to pursue managed retreat.

Across the interviews, different definitions and understandings of managed retreat were articulated, highlighting the diversity of actions and activities that can be categorized as managed retreat and the challenge this presents within policy development. Some posited that the profile of mountainous British Columbia, where a significant proportion of the population live on the flood plain owing to the challenges associated with building communities on hilly land, makes 'true' managed retreat difficult to achieve. 'True' managed retreat was understood to mean the relocation of large numbers of individuals solely for the purpose of reducing flood risk. Other highlighted the various variables that require consideration when developing policy, including:

- the goal of managed retreat (e.g., re-naturalization of the floodplain, to facilitate the construction of additional flood mitigative structures)
- the timing of managed retreat (proactive vs. reactive)
- the actors pursuing or advocating for managed retreat (e.g., local government, community-led, individual-led)
- the level of coerciveness (e.g., whether 100% uptake is required or not)
- where managed treat is proposed (urban vs. rural settings), and

- the type of property and the people that are affected (e.g., primary residence, investment property and by extension renters, second homes, multi-generational homes).

Regarding coerciveness, the extent to which 100% compliance is required in a buyout program was a very important dimension that permeated into most of the discussions. Within the BC context, the primary policy discussion appeared to be focusing on mandatory buyouts as an initial policy starting point, upon which policy for other types of buyouts could be developed. As such, the majority of the discussions focused on compensation and buyout implementation considerations in programs that require 100% compliance.

Indigenous Peoples and managed retreat was also raised as a complex space that requires due consideration, with the overlapping jurisdictional responsibilities seen as a challenge. There were repeated concerns about the potentially triggering nature of managed retreat given the similarities between forcibly removing people from spaces and the historic treatment of Indigenous People by the Canadian government. The province's commitments under the Declaration on the Rights of Indigenous Peoples Act (DRIPA) were therefore understood to be central in the development of managed retreat policy.

5.2. Program Costs

Property buyout programs were universally considered to be very expensive. Property owner compensation is a significant portion of the program costs, underscoring the importance of developing policy parameters around compensation in a provincial funding program. Moreover, the scalability of program costs was viewed as a concern owing to the spectrum of property prices in the province (with particular concerns about high property prices in the Lower Mainland) and the extensive flood risk that exists throughout the province. The provincial government's responsibility to its taxpayers, its requirement to be financially prudent, and its competing priorities were repeatedly reiterated through interviews. Resultingly, the need to ensure costs associated with a provincial funding program for property buyouts 'didn't get out of hand' was a key theme. Some solutions posited to this included compensation caps. How caps are calculated,

including how regional differences in property prices are reflected were all points for discussion.

This was in tension with the municipal perspective and their exclusive responsibility to their community members. The closeness of municipal employees to those affected by the property buyout program and the more immediate political blowback they would be subject to were seen by some to influence their position on appropriate buyout program compensation structures. More broadly, the unpopularity of managed retreat was discussed at length, which adds to the potential for political blowback for local governments. Programs' unpopularity largely stemmed from homeowners' place attachment (to their homes and community), perceptions of unfairness around compensation, concerns about government overreach and homeowners' challenges around making significant decisions in a traumatic post-flood environment. Specifically, perceptions around fairness of compensation was seen by some to be detrimental to community cohesion. Moreover, municipalities' limited financial capacity was reiterated through the interviews as was their resulting reliance on provincial and federal funding to execute property buyout programs. The idea that some larger, more financially robust municipalities should be liable for some portion of property buyout program costs was also raised. Community capacity more broadly was a key theme, with an awareness that some communities have significantly fewer financial and human resources to respond to flood events or develop sophisticated and equity-centered property buyout programs. This in itself was seen as an equity issue.

5.3. Equity

The province's adoption of and commitment to the UN's Sendai Framework for Disaster Risk Reduction[6] was a key theme. While the details of this were not fully articulated, this broadly meant managed retreat should be community led (i.e., not

[6] The Sendai Framework is a global agreement adopted by UN Member States in March 2015 during the Third UN World Conference on Disaster Risk Reduction held in Sendai, Japan. The framework aims to guide governments, organizations, and communities in their efforts to manage disaster risk effectively, with a focus on preventing new risks, reducing existing risks, and strengthening resilience. It emphasizes the importance of understanding disaster risk in all its dimensions, including its causes, vulnerabilities, and impacts, and promotes a holistic approach that integrates disaster risk reduction into development planning and decision-making processes (United Nations Office for Disaster Risk Reduction, n.d.).

provincially led) and equity centered. There was broad recognition that those living on the floodplain are typically equity-deserving groups as properties on the floodplain are often more affordable and those living there have fewer resources to mitigate against and support themselves after a flood event. Simultaneously, the broader provincial challenge around housing affordability was a key equity consideration, with deep concerns that property buyout programs not only reduce the overall housing stock, but also specifically reduce the housing stock of affordable homes. Consequently, there were strong concerns that, if executed poorly, buyout programs run the real risk of strongly disadvantaging those that are already materially disadvantaged. The need for parallel schemes to offset the loss in housing stock was a repeated theme.

Additionally, particularly among the municipal employees, there was a keen recognition of the trauma associated with both flooding and property buyouts. The lasting psychosocial impacts of flooding were discussed, with the spike in death rates among specific demographics following the flooding in Grand Forks was noted as deeply concerning and worthy of additional exploration. Effective support for buyout program participants was felt to be imperative by some, including a case management approach to help people on an individual level to understand and be supported through their post-buyout next steps. Some felt that additional resources to consistently evaluate the longer-term outcomes of those involved in buyout programs were vital to ensure more effective and equitable buyout policy.

There was a recognition among the interviewees of the need to balance individual hardships caused by a buyout program against community benefits derived from increased flood resiliency. However, that was countered by the perspective that the holistic costs of buyout programs, both financially and more intangible costs (e.g., loss of community cohesion) are not well understood or thought through. While immediate buyout program costs could be contained by reducing the level of compensation paid to individuals, some argued that this pushes the problem elsewhere and ultimately results in higher government spending overall to reduce potentially increased inequity. This includes costs to the municipality but also costs to other government ministries in the form of increased social support provisions and social housing. As such, there needs to be a better understanding of the holistic cost of property buyouts both in financial terms and longer-term equity considerations.

5.4. Compensation

Fair compensation, and a fair compensation methodology, was discussed extensively across all the interviews, with a lack of consensus on the ‘fairest’ approach. Almost all stressed the importance of understanding compensation in relation to the Expropriation Act. The interviewees noted that the Expropriation Act is the only pricing mechanism currently set out in legislation and therefore forms the legal backstop for buyout programs. This means that for programs requiring 100% compliance the minimum level of compensation a homeowner is legally entitled to is that which is laid out in the Expropriation Act. Consequently, any compensation structure proposed through a buyout program must at least equal, if not greater than, the level of compensation available under the Expropriation Act, otherwise the risk of (successful) litigation is significant.

However, many felt that using the Expropriation Act in a post-flood or disaster environment was inappropriate. As outlined earlier, the Expropriation Act determines available compensation based on ‘fair market value’ (FMV) at the time of expropriation (the ‘effective date’). In a post-flood context, the FMV is likely at historic lows owing to both flood-damage to the house and market stigma related to perceptions of increased flood risk. Bearing in mind the existing socioeconomic status of many of those living on the floodplain, this was universally understood to be an equity challenge. Moreover, as outlined in the research, and referenced in the interviews, the value of lower quality houses, which are typically more likely on a flood plain, tends to deplete more rapidly and more significantly as the result of a flood. This exacerbates inequity in a post-flood FMV approach.

Many felt that ‘equivalency’ should be the main principle underpinning a buyout program. In that way, those targeted for a buyout should be able to purchase a house of similar quality, similar size and similarly located as their pre-flood home. When discussing equivalency, two factors were identified as impactful: 1) the movement of the real estate market in the community irrespective of the buyout (general market movements) and 2) the movement of the real estate market as a direct result of the buyout (localized inflation).

It was recognized that there can be a delay between a flood and the execution of a buyout program, which was also borne out in the literature. Regarding point 1 (general market movements), the movement of the real estate market between 1) the point at which the value of compensation is calculated (the 'effective date') and 2) the point at which the compensation is dispersed is very important. Interviewees pointed to recent broader trends in the real estate market that have seen house prices increase significantly in short periods of time in communities across BC. Regarding point 2 (localized inflation), buyout programs can cause significant inflationary pressures within the community where the buyout is happening. This is because the housing stock is reduced while significant numbers of people are simultaneously attempting to buy or rent houses i.e., there is increased demand while there is decreased supply. This is particularly true in small communities, where the pressure on housing stock is greater, and in situations where one segment of housing stock is disproportionately affected (e.g., a significant proportion of affordable housing is removed from the housing stock).

Many interviewees pointed to Grand Forks as an example of this. Following flooding in 2018, the North Ruckle neighbourhood, an area of predominantly lower income households, was targeted for acquisition to create space to build enhanced flood mitigation structures. While the flooding occurred in 2018, owing to the time taken to execute the program, purchasing of properties didn't start until 2020. 101 homes were evaluated as part of the program: their combined pre-flood FMV in 2018 was determined to be $19.3 million, their 2018 post-flood FMV was $11.7 million, and the properties were purchased in 2020 for $13.6 million. However, had no damage occurred to those properties, by 2021 their FMV was $27 million (an estimate based on reported real estate board trends). This change in value was due to 1) broader upward movements in the real estate market generally and 2) localized inflation resulting from the reduction in housing stock due specifically to the buyout program. In real terms, average property prices in Grand Forks increased by 39% in 2021, when many of the affected homeowners were attempting to purchase new homes, and on average the buying power of those involved in the buyout scheme more than halved between 2018 and 2021. In some instances, owners lost up to 88% of their property value.

In addition, the extent to which property owners invested in post-flood property remediation was also flagged as another factor affecting potential compensation. This is particularly relevant in instances where homeowners are receiving post-flood FMV as

compensation. This was also considered through an equity lens, with those with greater initial resources are able to afford more significant remediation. This in turn could impact the level of compensation they're eligible for, depending on the effective date of the buyout program. DFA was also flagged as a potential source for remediation, with issues of 'double dipping' noted by some i.e., people receiving funds to remediate their properties and then also receiving a buyout. This was viewed as a small issue, affecting relatively few people, but still considered an imprudent use of provincial resources.

Finally, some raised questions as to whether all buyout recipients should receive the same level of compensation, or whether it should be adjusted for need. It was posited that those with higher levels of wealth, and greater initial resources, are better placed to recover from flooding and a subsequent buyout. Therefore, provincial resources should be focused on those in greater need, with lower levels of wealth or resources. Some highlighted challenges around this, which included the problem of finding measurable ways to understand individuals' wealth, particularly in a traumatic post-flood environment; issues associated with meeting the requirements of the Expropriation Act; and perceptions of fairness, particularly as provincial taxes are applicable to all.

Chapter 6.

Policy Options

As detailed in the literature and interviews, a breadth of different activities facilitated by a range of different circumstances can be referred to as managed retreat. In order to develop relevant compensation model policy options and undertake meaningful analysis, the scope of the policy analysis needs to be precisely defined. Through the analysis of the literature and interviews, it is clear that three interdependent variables are impactful for shaping compensation model policy options:

- Buyout Program Timing: proactive (before flooding occurs) vs. reactive (after flooding has occurred)
- Policy Actor: assuming a spectrum of governance models, from state (provincial/ local government) initiated at one end to initiated by individuals at the other
- Degree of Coerciveness: where 100% compliance is required vs. where it is not required

The literature highlights that in Canada flooding provides both a policy and a funding window to explore managed retreat by increasing public acceptance of property buyouts and providing access to post-disaster recovery funding. The majority of property buyouts have occurred reactively, and it stands to reason that they will continue to do so given the policy window flooding creates. While some compensation models developed for reactive retreats will likely have relevance in a proactive retreat, it is important to note that proactive managed retreat buyout programs do not need to consider the impact of flooding on property value (and therefore do not have a pre-flood/ post-flood dichotomy). This impact is a key consideration for reactive programs. Resultingly, to ensure the options presented are relevant and focused, and to generate improvements among more commonly executed buyouts, the scope of the policy options is compensation models in reactive buyout programs. Additional research is required to understand appropriate buyout program compensation models in proactive programs.

While the current funding landscape has limited provision for managed retreat, it does centre the role of provincial and local governments as the originators of buyout programs (through centering their role as the developers of flood recovery and resiliency plans). To reflect the reality of the current landscape, the policy options therefore focus on buyout program compensation models designed and executed from a local government level, rather than individual- or community-led models. This is not to suggest that extensive community engagement would not occur within a local government-led model, but rather that individuals would be identified for the buyout by local governments rather than individuals opting in to a buyout.

The only flood-specific property buyout implemented to date in BC required 100% compliance. Buyouts that do not need 100% compliance need to consider factors that could affect, but are not directly within the scope of, homeowner compensation. This could include buyout program timelines (over what period can individuals participate in a buyout and how timelines interplay with property prices and local government budgets for program cost) and actions to disincentivize continued risky behaviour (the extent to which governments will apply pressure to participate e.g., by limiting access to DFA or mandating costly mitigative works). Programs that do not require 100% compliance also do not need to consider the Expropriation Act as the legal backstop for compensation. Given the nature of buyout programs so far in BC and based on the current provincial policy focus (as indicated by the interviewees), the scope of the policy options is time-bound offers within mandatory buyouts, the alternative to which is expropriation.

Consequently, based on the literature reviewed and interviews conducted, the following policy options presented align with the scope of mandatory buyouts, designed and enforced by local governments in a reactive environment. Alternative approaches (e.g., that would be feasible in non-mandatory buyouts or proactive environments) have not been considered for analysis. Additional research is required to explore these options.

As previously outlined, the legal statutory minimum for homeowner compensation in mandatory buyouts (per the Expropriation Act) is post-flood fair market value. As this option currently exists in legislation, post-flood FMV will not be evaluated and the following policy options present alternative approaches that theoretically improve upon this compensation model. It’s important to note that compensation for additional

damages is also available under the Expropriation Act (disturbance damages); alternative disturbance damage compensation models will not be evaluated as part of this policy analysis. Additional research and policy analysis is required in order to achieve this.

6.1. Pre-Flood Fair Market Value

Pre-flood Fair Market Value anchors the value of the property to the condition of it and its contents at a point prior to the flood. In this way, the detrimental impact of a flood is not taken into consideration when determining the value of the property and therefore the level of compensation available to homeowners. This approach has precedent in Canada. Eligible residents in High River, Alberta were offered compensation equal to their most recent (pre-flood) municipal tax assessment following flooding in 2013 as part of a wider buyout program (Postmedia News, 2013).

6.2. Market Adjusted Pre-Flood Fair Market Value

This option, as with the previous one, anchors the value of the property to a point prior to the flood. Once this value is established, a ‘market adjusted’ value would be calculated. This estimates what the value of the property would be at the time of the buyout had the flood not occurred. In effect, this option establishes what the value of pre-flood condition of the property would be taking into account movement of the real estate market between the flood and the buyout effective date. This option would also attempt to include adjustments for inflation in the affected community’s real estate market that are caused by the buyout program itself. In other words, it would attempt to adjust for impacts within the community’s real estate market caused specifically by the buyout program, that would not have otherwise occurred (i.e., are beyond the natural and expected market movements). This could be calculated in different ways, which will be explored within the policy analysis. This would be reflected in the property value and hence homeowner compensation.

6.3. The Greater of Market Adjusted or Current Condition

This option builds on the principles of the Market Adjusted Pre-Flood Fair Market Value approach with an additional variable. As outlined, some owners remediate their

properties post-flood, either using Disaster Financial Assistance funding, insurance or their own means. This action improves their property's post-flood value. To reflect this, this option provides homeowners with the value of compensation equal to either their Market Adjusted Pre-Flood Fair Market Value or their property's current FMV depending on which one is greater.

6.4. Capped Market Adjusted Pre-Flood Fair Market Value

This option uses the same principles as the Market Adjusted Pre-Flood Fair Market Value approach but introduces a cap on total compensation a homeowner can receive. In this way, irrespective of the value of the property, there would be a ceiling on the compensation a homeowner could receive. This could be implemented as a flat-rate (i.e., all properties everywhere in the province as subject to the same maximum compensation amount), or the compensation ceiling could be implemented flexibly. A more nuanced approach would be to set caps by property types (e.g., single family dwelling, condominium etc.), given the differences in value that exist between them. Another nuance could be to take a regionally specific approach, with different caps per property type depending on where in the province the property is located. For the purposes of this analysis, this option assumes regionally and property specific caps on compensation.

Chapter 7.

Criteria and Measures

In order to assess an appropriate compensation model within a provincially funded buyout program, the options presented were evaluated against the following criteria. These criteria were developed based on the findings from the literature review and the analysis of the interviews. Table 1 provides a summary of the criteria. To assess the strengths and weaknesses of each, the options will be scored on a scale from high to low which will be visually represented in a heat map.

Table 1. Summary of Criteria and Measures

Criteria	Measure
Equivalency	The extent to which the policy facilitates equivalent reinstatement
Cost	The relative cost of the policy
Implementation Ease	The extent to which the policy is easy to implement

Table 2. Heat Map Legend

Measure	Colour
High	
Medium - High	
Medium	
Medium - Low	
Low	

7.1. Criteria and Measures

7.1.1. Equivalency

Definition: Extent to which the policy facilitates equivalent reinstatement.

The literature and the interviews clearly demonstrate that property buyout programs have the potential to create, perpetuate or exacerbate inequities by materially disadvantaging equity deserving groups, and traumatizing (or re-traumatizing) those that have experienced a challenging flood event. In addition, property buyout programs have the ability to negatively impact local governments financially, by potentially reducing a community's tax base. They can also have more intangible impacts, damaging perceptions of community cohesion and creating negative political ramifications for local governments attempting to execute them.

Many of these outcomes are downstream implications of the same issue, the extent to which individuals can replicate their quality of life within their community following a buyout. Buyouts wherein individuals are unable to replicate their quality of life and/ or are unable to stay within their community can exacerbate existing inequities. Similarly, as property taxes are the primary funding source for local governments (Freudenberg et al., 2016), buyout wherein individuals are unable to stay within the community will reduce the size of the local government's tax base (Siders, 2019b). As outlined in the interviews, buyouts which are perceived to be unfair have the potential to be detrimental to community cohesion, with concepts of fairness linked to perceptions of 'fair' compensation.

As such, to avoid double-counting the impact of this key variable by examining the multiple outcomes it produces, and in the absence of other data related to the relationship between compensation levels and the wellbeing of program participation and communities, this criterion will measure the extent to which the policy ensures homeowners equivalency. This means, the extent to which homeowners can purchase a similar utility, similar size, similar condition and similarly located home (equivalent reinstatement). As outlined through the literature and interviews, implementation mechanisms e.g., case workers, enhanced psychosocial supports, community engagement can provide complementary methods to limit equity challenges and foster stronger support for buyouts. However, as these are implementation mechanisms, they are not considered within the scope of this criteria. Policies that facilitate equivalent reinstatement will receive a high rating, while those that do not, or do so to a lesser degree, will receive a low rating.

7.1.2. Cost

Definition: The relative cost of the policy.

As outlined in the literature and through the interviews, policy buyouts are expensive to execute. Homeowner compensation is the most significant cost component of a property buyout scheme. With competing provincial priorities, policy cost is therefore a key objective to ensure the long-term viability of a provincial funding stream to support property buyout programs. While the exact dollar value of each policy cannot be calculated within the scope of this research, the relative cost of the different homeowner compensation models can be weighed against each. Assuming that policies that are less expensive are favoured, those that are lower cost will receive a high rating while policies that are higher cost will receive a low rating.

7.1.3. Implementation Ease

Definition: The extent to which the policy is easy to implement.

This assesses the extent to which the option is easy or complex to implement. This incorporates a range of variables, including how challenging it is to accurately calculate the value of compensation owed, how challenging the approach is to communicate to homeowners and how challenging the approach is to accommodate within the typical fixed budget approach to government spending. Assuming that policies with greater ease of implementation are favoured, those that are considered easier to implement will receive a high rating while those that are considered complex or challenging to implement will receive a low rating.

7.2. Criteria Weighting

To reflect the multiple downstream implications of the Equivalency criterion, more consideration will be given to the score of this metric in the overall analysis than the other two criteria.

Chapter 8.

Policy Analysis

This Chapter details the analysis of the compensation model policy options by the criteria outlined in Chapter 6. Given the options are evaluated in relation to each other, the analysis is conducted by criteria rather than by policy option. The respective strengths and weaknesses of each policy are therefore assessed thematically. A summary table of the analysis is presented at the end of this section.

8.1. Equivalency

Equivalency relates to the ability of homeowners to purchase a similar utility, similar size, similar condition home in a similar location. In order to do that, homeowners purchasing power has to reflect current market conditions. Evidence suggests that property prices in flood-affected communities typically decrease in the short-term but increase in the longer-term. Short-term community-wide decreases occur due to stigma associated with the flooding (Bakos et al., 2022). However, evidence from the interviews suggests that the impact of market stigma dissipates over time, with announcements about or approval of flood mitigation plans in particular helping to dissipate market stigma. In recent years, property prices across BC, even in flood affected communities, have increased significantly. Table 3 highlights assessed property values for single family homes between 2019 and 2023 for Princeton and Merritt. Both communities were subject to catastrophic flooding in 2021, and despite this property prices have continued to rise.

Table 3. Assessed Property Value for Single Family Homes in Princeton and Merritt

	2019 (As of July 1, 2018)	**2020** (As of July 1, 2019)	**2021** (As of July 1, 2020)	**2022** (As of July 1, 2021)	**2023** (As of July 1, 2022)
Princeton	$197,000	$215,000	$252,000	$339,000	$389,000
Merritt	$266,000	$289,000	$323,000	$418,000	$475,000

Note. Data for 2019 and 2020 from *Thompson Okanagan 2020 Property Assessments in the Mail*, by BC Assessment, 2020, (https://info.bcassessment.ca/news/Pages/Thompson-Okanagan-2020-Property-Assessments-in-the-Mail.aspx). Data for 2021 and 2022 from *Merritt home values rise 29% in 2021*, by J. Courtepatte, 2022 (https://www.merrittherald.com/merritt-home-values-rise-29-in-2021/). Data for 2023 from *Merritt home values slide in*

new assessment, by J. Courtepatte, 2024 (https://www.merrittherald.com/merritt-home-values-slide-in-new-assessment/).

With this in mind, and recognizing that buyouts are highly context specific, **Pre-Flood Fair Market Value** should be considered relatively ineffective at delivering equivalency. This option anchors homeowners' compensation to the value of the property prior to the flood. As such, the time taken to implement the buyout becomes important. If a buyout is implemented while the market is still affected by market stigma, providing Pre-Flood Value may 'overpay' homeowners relative to the market. This would allow homeowners greater purchasing power relative to the market, and would not deliver equivalency. However, given that buyouts are likely to result from a flood mitigation plan, it's unlikely that a buyout program would be executed prior to at least some dissipation of the market stigma. Additionally, evidence suggests that buyout can take a significant amount of time to execute. As previously discussed, nearly half of buyouts administered by FEMA in the past 30 years have taken five years or more to complete (Thistlethwaite et al., 2020). In BC, two years elapsed between the flooding in Grand Forks and properties being purchased, while flooding occurred in 2021 in Merritt and no properties have yet been purchased as part of their proposed buyout program. The delay in Grand Forks clearly illustrates the impact market movements have on homeowners' ability to achieve equivalency. While property buyout program participants in Grand Forks were offered post-flood fair market value, the City topped up compensation packages to be very close to pre-flood fair market value (Le Geyt, 2022). Despite this, changes in the market meant that on average the buying power of those involved in the buyout scheme more than halved between 2018 and 2021. Similarly, in High Rivers, AB, homeowners were offered pre-flood fair market value as part of a flood-specific property buyout. Only about 40% of homeowners participated in the voluntary scheme owing to concerns about losing equivalent purchasing power (Thistlethwaite et al., 2023; Postmedia News, 2013).

By contrast, **Market Adjusted Pre-Flood Fair Market Value** and **The Greater of Market Adjusted or Current Condition** are much more likely to deliver equivalency for homeowners. By estimating the impact of market movements, including the impact of localized inflation caused by the buyout program, both are much more likely to deliver compensation that better aligns with market conditions at the point at which homeowners are attempting to purchase new property. While similar, the Greater of Market Adjusted

or Current Conditions better reflects equivalency as it also reflects the value of any post-flood remediation activity undertaken by the homeowner.

By its design, **Capped Market Adjusted Pre-Flood Fair Market Value** delivers equivalency for some but not for all: those with lower value homes (below the cap) would receive compensation that allows for equivalent reinstatement, while those with higher value homes (that exceed the cap) would not. An example to illustrate this point is as follows. Two properties are being purchased within a buyout program, the pre-flood value for the first is $300,000 and $450,000 for the second. The buyout program has taken two years to be delivered and, in that time, the market value for both (had they not been affected by the flood and accounting for market movements) is calculated at $400,000 and $600,000 respectively. However, within this program, the compensation cap is $500,000. In this way, the first homeowner would receive $450,000 while the second would receive $500,000 as their market adjusted pre-flood fair market value exceeds the compensation cap. As outlined within the policy options (Chapter 6), this option assumes regionally and property specific caps on compensation, which would lend itself better to delivering equivalency for homeowners than a less flexible mechanism for establishing a compensation cap. Resultingly, this option is only partially able to deliver equivalency.

Summary

Table 4. Summary of Equivalency Analysis

	Pre-Flood Fair Market Value	Market Adjusted Pre-Flood Fair Market Value	Greater of Market Adjusted or Current Condition	Capped Market Adjusted Pre-Flood Fair Market Value
Equivalency	Low	Medium - High	High	Medium

8.2. Cost

As outlined through the literature and in the interviews, property buyouts are expensive. Concerns about the scalability and affordability of program costs were clearly articulated by the interviewees, with the long-term viability of a potential funding stream

that supports property buyout programs a key consideration. As homeowner compensation is one of the main considerations in buyout program costs, this criterion uses this as a proxy for program costs.

As before, buyout programs are highly context specific and dependent on the value of property within a community, the level of damage incurred and the movement of the real estate market between the flood and the buyout program. Assuming property prices continue to increase year-on-year, as they have done recently, **Pre-Flood Fair Market Value** is likely the least expensive option (relative to the others) as it doesn't consider post-flood market movements. **Market Adjusted Pre-Flood Fair Market Value** and **The Greater of Market Adjusted or Current Condition** and both more costly options as they deliver higher levels of compensation to homeowners, with the latter being more expensive as it offers the homeowners whichever compensation value is higher.

The relative cost of **Capped Market Adjusted Pre-Flood Fair Market Value** is challenging to estimate as it depends on the value of the compensation cap. However, given it is premised on the same starting point as **Market Adjusted Pre-Flood Fair Market Value** it is likely a more expensive option than **Pre-Flood Fair Market Value**

Summary

Table 5. Summary of Cost Analysis

	Pre-Flood Fair Market Value	Market Adjusted Pre-Flood Fair Market Value	Greater of Market Adjusted or Current Condition	Capped Market Adjusted Pre-Flood Fair Market Value
Cost	High	Medium - Low	Low	Medium

8.3. Implementation Ease

This criterion assesses the extent to which the options are easy or complex to implement. **Pre-Flood Fair Market Value** likely offers the least challenging option to implement. This option has precedence in other jurisdictions and does not require adjustments for caps or variables that have not yet occurred. In this way, it is relatively simple to calculate and easy to communicate. **Market Adjusted Pre-Flood Fair Market**

Value, the **Greater of Market Adjusted or Current Condition** and **Capped Market Adjusted Pre-Flood Fair Market Value** present much more complex options.

Most government funding programs (disaster specific or otherwise) operate a fixed budget approach, requiring those applying for funding to calculate total project costs at the start of the project. In this way, the government can disseminate the required funding to the body (e.g., local government) applying for it. Compensation models that use **Market Adjusted Pre-Flood Fair Market Value** or the **Greater of Market Adjusted or Current Condition** therefore require local governments to anticipate and consider changes in the community's real estate market, both general market trends and buyout-induced localized inflation, before they've happened. The interview data suggests that general market trends are relatively easy to estimate prior to a buyout. However, forecasting for the impact of localized inflation caused by the buyout was felt by those interviewed to be much more challenging. Two methodologies for this were proposed: 1) attempting to estimate the impact of the buyout in advance, before any properties are purchased, and providing a fixed additional sum to homeowners or 2) monitoring the impact of the buyout on the real estate market as the buyout proceeds and topping up the compensation amount as required for those that have not yet completed their buyout. The former was felt to be challenging to do and likely inaccurate. The latter was felt to be more accurate but challenging to do within a fixed budget approach. As such, both **Market Adjusted Pre-Flood Fair Market Value** or the **Greater of Market Adjusted or Current Condition** have inherent complexity that reduces the ease of implementation. Additionally, the **Greater of Market Adjusted or Current Condition** presents further complexity through the inclusion of an additional variable ('or current condition'). It is easy to determine current property condition, however including this variable likely makes this option more challenging to communicate to homeowners and/ or more challenging for them to understand. It also likely makes the potential program costs more difficult to estimate from the outset as in addition to future market movements, program costs are also dependent on potential future remediation activities on the part of the homeowners.

Capped Market Adjusted Pre-Flood Fair Market Value is the most challenging to implement. In addition to the same challenges **Market Adjusted Pre-Flood Fair Market Value,** designing a methodology to create a compensation cap was considered by many of the interviewees as an implementation barrier. The main challenge centered

on where to set the cap. It would be incredibly difficult to set a cap that was meaningful and applicable in every circumstance. As previously discussed, current FMV i.e., post-flood value is the minimum amount homeowners are entitled to within a mandatory buyout (per the Expropriation Act). Consequently, any cap on compensation needs to be higher than current FMV/ post-flood value. This might be challenging for high-value homes. Using a hypothetical example, a property scheduled for a buyout has a pre-flood value of $3 million dollars. Despite damage, its current FMV/ post-flood value is still $1.8 million. This is because high-value homes are typically higher quality and therefore don't deteriorate as rapidly when subjected to flood damage, and because real estate markets, particularly in coastal areas, aren't as responsive to risk as they theoretically should be. Between the flood and the buyout program, its market adjusted pre-flood fair market value becomes $3.5 million. In this scenario, in a mandatory buyout, the minimum the homeowner is legally entitled to $1.8 million as this is the current FMV for the property and therefore any cap needs to $1.8 million or higher. This calls into question how meaningful such a high cap would be when considering the broader buyout. Many of the interviewees felt that the decision of where to set the compensation cap would ultimately be a political one. Hood and Heald (2006) argue that subjective criteria reduce accountability in governance which raises concerns about fairness. As a result, this policy approach is the most challenging to implement.

Summary

Table 6. Summary of Implementation Ease Analysis

	Pre-Flood Fair Market Value	Market Adjusted Pre-Flood Fair Market Value	Greater of Market Adjusted or Current Condition	Capped Market Adjusted Pre-Flood Fair Market Value
Implementation Ease	High	Medium	Medium - Low	Low

8.4. Analysis Summary

The below table presents a summary of the analysis, using the heat map legend. As previously outlined, more consideration is given to the Equivalency criterion score, given its multiple downstream implications. As such, while Pre-Flood Fair Market Value scores high on Cost and Implementation Ease, it scores low for Equivalency meaning it

is not the most appropriate solution. Similarly, as Capped Market Adjusted Pre-Flood Fair Market Value scores medium for Equivalency and medium to low across the other two criteria, it is also not the most appropriate solution. Both Market Adjusted Pre-Flood Fair Market Value or the Greater of Market Adjusted or Current Condition score well on Equivalency. While the Greater of Market Adjusted or Current Condition scores slightly better on Equivalency than Market Adjusted Pre-Flood Fair Market, it is weaker on Cost and Implementation Ease. When considering the two holistically, the analysis suggests that either **Market Adjusted Pre-Flood Fair Market Value** or **Greater of Market Adjusted or Current Condition** could deliver an equitable and effective solution.

Table 7. Summary of Policy Analysis

	Pre-Flood Fair Market Value	Market Adjusted Pre-Flood Fair Market Value	Greater of Market Adjusted or Current Condition	Capped Market Adjusted Pre-Flood Fair Market Value
Equivalency	Low	Medium - High	High	Medium
Cost	High	Medium - Low	Low	Medium
Implementation Ease	High	Medium	Medium - Low	Low

Chapter 9.

Recommendations and Implementation

Throughout the analysis, it is clear that there is tension between program cost and equity. It is challenging to reconcile these elements as the effects of them are felt at different levels by different groups of people. While program wide effectiveness is a provincial level challenge, that requires balancing competing provincial priorities with costs assumed by all provincial taxpayers, the outcomes of inequitable treatment are felt on an individual person and community level. One area of analysis that this study was unable to meaningfully explore was the total system costs of these policy options. Focusing on program cost only fails to account for the cost of downstream consequences and potential subsequent strains on resources for other areas of government or different levels of government. Inequitable policies will have downstream consequences, creating greater need for housing or social supports. Therefore, while policies that increase inequity, through not delivering equivalency, may be cost effective when viewed narrowly, they are costly when viewed more broadly. As such, this study recommends that any compensation model as part of a provincial funding program for flood-specific property buyouts should ensure homeowners receive either market adjusted pre-flood fair market value or the greater of market adjusted and current value. However, it is very important to note that equitable treatment within compensation is unlikely to be sufficient to ensure equitable outcomes. Local governments should be encouraged to consider, and funded to support, programmatic elements that could improve overall program effectiveness.

Reducing Market Pressures

As outlined through the study, the movement of the real estate market has a significant impact on individuals' ability to achieve equitable outcomes after a buyout. This is exacerbated by the pressure buyouts put on the housing stock. Consequently, actions that alleviate this pressure are critical to increase equitable outcomes and reduce program costs. Within a buyout program, this could include mechanisms that allow homeowners increased time to purchase properties. This could include allowing homeowners to stay in their properties for a set period of time (e.g., a year) after the

property has been purchased and compensation has been disbursed. Stretching out the time homeowners have to buy properties should reduce the number of homeowners entering the market at the same time, reducing the inflationary pressures of the buyout program.

Alongside these actions should be complementary actions to increase the housing stock within the community. The timelines for large scale housing development may be longer than the time taken to execute a buyout, so this should not be seen as a 'house for a house' approach. Additionally, it can be challenging for communities to replicate the lost housing stock e.g., there may only be the physical space for densified housing within a community, while the housing that was lost was single family homes. However, reducing the overall pressure on housing stock in a community is critical to support longer-term equitable outcomes.

Enhanced Supports and Monitoring

One clear success of the Grand Forks buyout was the use of a case management approach to provide individualized outreach and engagement for those involved in the buyout. This allowed for a more responsive and personalized mechanism to understand individuals' needs as they transitioned through the buyout process, particularly among populations that may not have sought out support on their own (Hoogeveen & Klein, 2021). Insufficient funding meant this approach was unable to continue past the immediate buyout program, and opportunities for ongoing monitoring of buyout participant wellbeing in a consistent and structured manner was lost. As outlined previously, buyout policy suffers from a lack of robust and holistic evaluation that assesses program effectiveness by a range of outcomes, including participant wellbeing (Baker et al., 2018; Greer & Binder, 2016b; Siders 2019a). Therefore, in order to engage in meaningful policy improvement to ensure long term cost-effective and equitable outcomes, greater resources are required to understand policy evaluation in the short-, medium-, and long-term.

Proactive Preparations

The scope of this study's policy analysis was reactive buyout programs, however greater equity could be achieved if more proactive consideration was given to buyout policy in non-disaster contexts. By proactively engaging community organizations in the development of local climate adaptation and flood resiliency plans prior to flooding events, local governments could strengthen the social acceptability of buyout programs and encourage improved cooperation during program implementation in disaster situations (Thistlethwaite et al., 2023).

Chapter 10.

Conclusion

BC's climate continues to change increasing the risk of more severe and more frequent floods. As managed retreat is increasingly used as a flood risk reduction tool, there is a clear need for more thoughtful property buyout policy, backed by sustainable senior government funding. Property buyout programs pose financial, social, political, and legal issues, with program cost often traded off against equitable outcomes. Moreover, BC's specific governance and legislative environment has put increased financial and resource pressures on local governments while focusing a reliance on an expropriation approach that's inappropriate in post-flood contexts.

In response, this study has sought to provide alternative compensation models, highlighting more appropriate models that could be deployed as part of a provincial funding stream to support managed retreat. While community and context specific, this study has sought to highlight the main considerations within the design of property buyout program compensation models, with a focus on reactive buyouts that require 100% compliance. In this way, this study has shown that two models could equitably compensate homeowners as part of an effective flood-specific property buyout: Market Adjust Pre-Flood Fair Market Value and the Greater of Market Adjusted or Current Condition. Given the scope of this research, more work is required to understand the most effective and equitable solutions in different buyout contexts, including proactive buyouts and voluntary schemes.

As made clear in the study, equity is not only achieved through compensation. The broader provincial housing affordability challenges need to be addressed to ensure greater equity for buyout program participants, as well as more effective and consistent monitoring of program participants to ensure effective policy improvement.

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