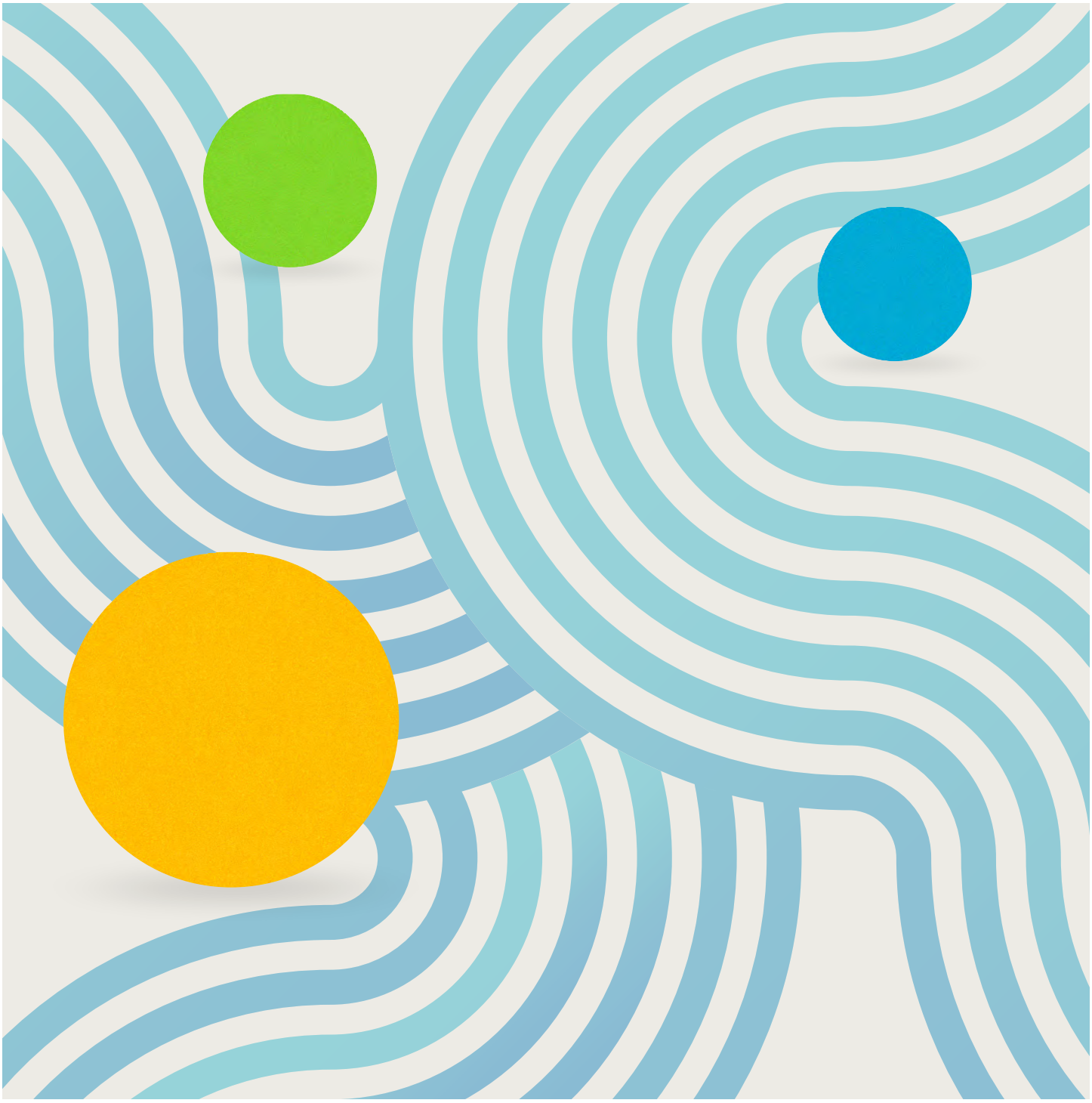
Buying Out the Floodplain

Recommendations for Strategic Relocation Programs in Canada

PARTNERS FOR ACTION

APRIL 2023



Max Bell Foundation

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PARTNERS FOR ACTION

About Partners for Action

P4A is a research initiative at the University of Waterloo that seeks to empower Canadians to become flood resilient by promoting awareness and preparedness actions that are inclusive and evidence-based. Partnership is central to our approach: strategic collaborations allow us to focus on changing the flood response landscape at the ground level and with policy makers. As a thought leader and steward of Flood Smart Canada, P4A moves conversation and multi-level action forward by localizing community-engaged flood risk awareness and preparedness, partnering for adaptation, and developing flood resilience planning and foresight. These priorities will enable communities to access effective resources and innovative research, and ultimately, embrace inclusive resilience.

Learn more about us at www.uwaterloo.ca/partners-for-action.

Max Bell Foundation

About Max Bell Foundation

Max Bell Foundation reflects the spirit and intent of its founder to improve Canadian society. We encourage the development of innovative ideas that impact public policies and practices with an emphasis on health and wellness, education, and the environment. We seek to support work that helps Canadians adapt to social, economic, and technological change while positively impacting the quality of life in our communities. Our current strategic priority is to support projects which educate Canadians about public policy and practice alternatives.

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Executive Summary

Property buyout programs—which involve the relocation of high-risk neighbourhoods via the government acquisition of property—are considered among the most effective forms of risk management since they directly reduce exposure to flooding. But for local governments, buying out property is expensive and takes away a source of tax revenue while for citizens, home buyouts can be traumatic. And yet, the pervasive problem of flooding—in coastal communities, riverside towns, and urban neighbourhoods—means that the public is increasingly interested in strategic relocation as a necessary tool. There is, however, a lack of understanding about the planning, implementation, and long-term effects of these property buyout programs. This report seeks to address that lack of knowledge.

We have identified three main challenges to the implementation of a buyout program and have noted various best-practices and proposals to mitigate those difficulties: 1) cost efficiency (cost-benefit); 2) social acceptability (transparency, public engagement and equity); and 3) political feasibility (support among elected officials and influential stakeholders).

We also studied and evaluated the design of three buyout programs in Canada after major flood disasters: Gatineau, Quebec in 2017 and 2019, High River, Alberta in 2013, and Grand Forks, British Columbia in 2018. We found that these strategic relocation case studies were, ultimately, cost effective based on strong evidence that the benefits of flood risk reduction exceed the costs associated with the property buyouts and program administration. While these three programs struggled in terms of social acceptability given the disruption and difficulty involved in convincing property owners to abandon their homes, they were all largely considered politically feasible. This local support is explained by the trauma caused by the disaster and the recognition in the community that rebuilding completely was not an appropriate strategy.

Based on our literature review, case study analysis, and feedback from both our national stakeholder workshop and survey, we made the following eight recommendations for designing and administering a buyout program in Canada that is cost-efficient, socially acceptable and politically feasible:

1. Develop a buyout program that is ready for implementation before a disaster;
2. Engage early and often;
3. Provide on-the-ground support and dedicated resources;
4. Increase compensation caps to reflect regional pre-flood market values of homes;
5. Create pathways for consensus and support among community partners;
6. Establish a federal buyout program with funding to support provincial or municipal relocation programs;
7. Improve intergovernmental coordination and dialogue;
8. Align buyout program design with existing disaster assistance, adaptation, and risk reduction policy.

Ultimately, our goal is to generate and disseminate practical knowledge that will enable communities across Canada to reduce the risks and costs associated with flooding and strengthen their own community's resilience in the face of climate change.

Introduction

On September 24, 2022 the post-tropical storm Fiona slammed into the east coast of Canada with a destructive storm surge and violent rain and winds in excess of 100 kilometres an hour. It washed away homes, caused significant flooding, and knocked out power across two Canadian provinces. According to an initial estimate, Fiona caused $660 million in insured damages alone, making it by far the most expensive extreme weather event in Atlantic Canada.[1] Only ten months earlier and on the opposite side of the country, an atmospheric river brought "an unprecedented amount of rain" to British Columbia and cut off numerous highway and railway routes throughout the province.[2] While temporary repairs have re-opened many areas, the damage, according to the provincial government, "is extensive and will take years to fully recover." Indisputably, managing flood risk across Canada is an increasingly important social, political, and economic task for every tier of government and the communities they represent.

Indeed, flooding is Canada's most frequent and most costly natural disaster. In 2018 alone, damage from extreme weather cost $1.9 billion in insured damages, and Canadians now pay $3 out-of-pocket for every $1 in damage covered by insurance.[3] Worse yet, due to climate change, flood risk is growing in coastal communities, riverside towns, and urban neighbourhoods. Residential and commercial districts face increasingly frequent and intense floods,[4] whether from sea-level rise along the coasts,[5] heavy precipitation and rapid snowmelt that overflow riverways,[6] and more frequent and severe storms that overwhelm urban drainage infrastructure.[7] And these risks are all perpetuated by decades of development in floodplains.

To reduce flood risk, Canada's various tiers of government can improve development regulations, building codes, and warning systems. Yet Canada continues to rely heavily on structural defences like levees and berms to contain water.[8] While these defences can be effective in protecting some people and property, levees and berms are expensive to install and costly to maintain. They are also environmentally unsound and prone to periodic failure.

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Occasionally also called "managed retreat" or "strategic retreat":

This report follows the naming convention of Canada's Task Force on Flood Insurance and Relocation.

Canada's approach to flood risk management is facing increasing demands for change. An alternative policy option that is still underdeveloped in Canada is **strategic relocation**, which intentionally withdraws people away from hazardous, flood-prone areas and either relocates or demolishes buildings and infrastructure.[9] This purposeful relocation is achieved primarily through the public acquisition of exposed lots and homes.[10] Governments around the world, including Australia and the United States, have begun implementing strategic relocation programs as an effective policy instrument for strengthening local climate resilience.[11, 12]

The design and implementation of these programs, however, is crucial. Well-planned buyout programs can effectively eliminate flood risk to people and property, restore natural flood protection along shorelines, and open up land for public recreation.[13] Poorly formulated buyout programs often lack transparency, exacerbate social inequities, and engender resistance from property-owners, all of which erodes trust in the process.[14]

Thus far in Canada, property buyout programs have been rare and limited in scope. Rather than being planned in advance via prudent policy design, these programs have only been implemented in the aftermath of disastrous flood events. As a result, governmental attempts to relocate people from flood-prone areas have largely been improvised and haphazard.

And yet, support for government-initiated buyout programs appears to be gaining political momentum. While granting the challenging, time-consuming, and expensive nature of such programs, the August 2022 report by Canada's Task Force on Flood Insurance and Relocation

states emphatically that strategic relocation "effectively eliminates the element of exposure, and can be an extremely impactful tool for managing flood risk."[15] Buyouts have also received widespread coverage in national and international media, including in-depth analyses in The Globe and Mail and the New York Times.[16] The idea has also gained traction among the broader policy community, including the Insurance Bureau of Canada.[17]

Against this backdrop, there is an urgent need for evidence-based policy advice about how to optimally design and implement effective property buyout programs. This report aims to do exactly that within the Canadian context. **In keeping with current scholarship on flood risk management, we focused principally on ensuring that Canadian buyout programs are:**

1. Cost efficient
(i.e., prudent use of scarce resources; minimal overlap and duplication),

2. Socially acceptable
(i.e., accountable; transparent; participatory), and

3. Politically feasible
(i.e., supported by elected officials and influential stakeholders).[18]

We began this research with a systematic review of academic literature, organizational reports, and government documents. We endeavoured to summarize current debates around strategic relocation, broadly, and property buyouts, specifically. We also sought to identify recent major advances in the field and uncover significant gaps in the research. In the process, we built a database of buyout programs in Canada and other countries, which details relevant information on policy design, allowing for easier comparison (e.g., were the buyouts voluntary or mandatory? were the offers aligned with pre-flood or post-flood property values?). We wanted to illuminate variations in program design, assess the geographic scope of previous buyout efforts, and gauge whether such programs are, in fact, becoming more prevalent.

We also wanted to look more closely at several buyout programs in Canada, so we analyzed three recent programs in High River, Alberta, Grand Forks, British Columbia, and Gatineau, Quebec and produced case studies that evaluate their effectiveness based on the three criteria noted above: cost efficiency, social acceptability, and political viability.

Throughout our review of the literature, our database construction, and our Canadian case study comparisons, we asked the following questions regarding key program design considerations:

Timing: should buyouts be pursued only after significant floods, or before flood damage occurs (potential trade-off between efficiency and effectiveness)?

Coerciveness: should buyouts be voluntary or mandatory (potential trade-off between social acceptability and effectiveness)?

Compensation: should property-owners be offered pre-flood market value, or should compensation be capped (potential trade-off between efficiency and social acceptability)?

Governance: what should be the respective roles of the federal, provincial and local governments in buyout programs?

Since strategic relocation is complex, expensive, and politically fraught, an important consideration for the design of this project was to embed meaningful engagement with neighbourhood groups and elected officials who represent those who are likely to be affected by property buyout programs, those who have relevant knowledge and experience in designing these programs, and those who have been involved in past implementations. To help guide these efforts, we assembled a project Advisory Committee composed of representatives from provincial ministries, municipalities, non-governmental organizations, and think tanks. We also drew on P4A's active stakeholder network of professionals from across Canada through an online survey, and we held a national workshop with policymakers and practitioners on December 13, 2022.

Ultimately, our goal is to generate and disseminate practical knowledge that will enable communities across Canada to reduce the risks and costs associated with flooding and strengthen their own community's resilience in the face of climate change.

Background

Despite the growing public interest in strategic relocation, there is a lack of understanding about the planning, implementation, and long-term effects of these property buyout programs. This report seeks to address that lack of knowledge. We synthesized and compared existing research and reports on buyout programs in Canada and other high-income countries with similar policy contexts, including the US, New Zealand, Australia, and select jurisdictions in Europe. In the process, we identified program considerations for policy makers and noted future directions for research that would contribute to successful property buyouts programs in Canada.

Our review of key messages and themes confirms the fact that policymakers face considerable uncertainty in planning and carrying out either proactive or reactive buyout programs. Based on the key themes that emerged, we have identified three main challenges to the implementation of a buyout program and have noted various best-practices and proposals to mitigate those difficulties: 1) cost efficiency (cost-benefit), 2) social acceptability (transparency, public engagement and equity), and 3) political feasibility (support among elected officials and influential stakeholders).

Cost Efficiency

It is essential that public policy planners clearly demonstrate that the economic benefits of a large buyout project exceed its significant costs. In the case of strategic relocation, the benefits of relocation must exceed the costs of remaining in place.[19] These benefits include the savings generated by no longer needing to maintain costly structural defences[20] or fund rebuilding in the aftermath of a disaster.[21] The bulk cost of a buyout usually involves the financial cost of purchasing property and is often shouldered by a national government; however, many studies noted that the programs can result in significant on-going costs for lower levels of government[22] due to the loss of established or potential tax-revenue[23] as well as increased maintenance costs, especially where limited acceptance of a buyout offer causes a “checkerboard” of vacant lots.[24]

Nevertheless, there are ways to mitigate some of these municipal costs. Certain programs, for example, have included a financial incentive for relocating within the community, county, or city.[25] Where vacant lots cannot be joined up as continuous space, municipalities have reduced costs by planting native species[26] or repurposed the space for small-scale recreation.[27] They can also increase surrounding land values through community enhancements, such as by building parks,

community gardens and recreational spaces.[28] Finally, municipalities might consider arranging external land management partnerships with conservation groups, park organizations, or land trusts to defray costs and share responsibility.[29]

Another barrier to efficiency involves fragmentation and redundancy in the administration of the program.[30] Often a program's administration can be spread across multiple levels of government, leading to confusion among participants when guidance is unclear or if there are multiple, concurrently running buyout programs. For example, participants might apply for eligibility for a buyout program funded by an upper tier government but also need zoning approval from the municipal government.

Poor policy alignment is also distinctly inefficient as it increases the costs of administration. Residents are less likely to participate in a buyout if other disaster assistance is funding rebuilding programs at the same time. Similarly, buyout programs need to be aligned with local land-use policies. If the land reclaimed through a buyout program remains zoned for residential or commercial use, residents are unlikely to participate or offer their support since future construction could still occur.

Inconsistent eligibility requirements make these programs challenging to administer and communicate to the public. Moreover, high turnover rates of staff can lead to inefficient delays associated with new hires and training. Finally, the programs' voluntary buyout structures can create a patchwork of compliance in some neighbourhoods, producing a redundancy whereby local governments have to both protect those property owners who remain while also beginning to maintain newly vacated lots.

Social Acceptability

Social acceptability refers to the level of support among residents and other influential stakeholders involved in the buyout program. Without widespread approval among local constituencies, buyout programs struggle to achieve the levels of participation needed to reduce risk. Existing research highlights three particular challenges in cultivating program acceptance:

1. Most people have a strong attachment to their place and community, including physical and emotional connections to their birthplace or long-time home or job. However, one of the most influential factors in taking a buyout offer was if a homeowner's family or neighbours were also considering moving.[31]
2. Low levels of risk perception and awareness can act as a barrier to accepting a buyout program.[48] Individuals often discount the likelihood of recurrent flooding, especially after the risk has subsided and life has returned to "normal."[52]
3. Relocation can have a disproportionate impact on those who are socially vulnerable. Analysis in the US and Canada has found that levels of socio-economic vulnerability are often higher in flood zones.[32] Buyout programs can therefore increase levels of inequity by unfairly targeting the relocation of marginalized populations. Broadly speaking, those who are wealthier are also likely to enjoy better outcomes from participation in a buyout program since they are able to navigate administrative processes and afford desirable property in other locations.[33]

Existing research on buyout programs has identified how program design can reduce these challenges, namely through robust engagement and public consultation, which foster trust and much-needed transparency over decision making on program eligibility, compensation, and timelines.[34]

First, engagement provides an opportunity to inform residents about risk and begin managing expectations about their attachment to a specific, high-risk location. For example, through a door-to-door campaign in Waitakere City, New Zealand, a buyout program was able to increase participation by offering to move neighbours together and involve them in the re-naturalization of their former properties.[35]

Secondly, consultation provides an opportunity for decision makers to acknowledge that different households and communities will have varying barriers to relocation. More specifically, residents can help inform policy planners about what incentives or program details might encourage their acceptance of a buyout.[36] In the case of socio-economic vulnerability, for example, program administrators can address deficits in resources by enhancing compensation or offering additional services. Notably, this consultation should also include communities adjacent to high-risk buyout zones since they often see many of the same negative effects of a flood without the support of buyout compensation.[37] Partnering with local organizations and community leaders, who likely have previous relationships and shared priorities with residents, can help facilitate trustworthy consultation.[38]

Political Feasibility

The effectiveness of property buyout programs depends, in part, on the support they receive from elected decision makers and influential interests.[39] For instance, property buyout programs might be opposed by elected officials who eye them as contrary to their strategic political interests or the wishes of their constituents. Since elected officials are accountable for the well-being of those constituents, buyout programs can generate a significant backlash that may limit elected officials' chances of re-election.

Support must also be broad among influential stakeholders, whether internal (e.g., finance, city staff, planners and engineers) or external (e.g., community associations). Support among financial staff, for example, is critical if the city requires additional room in the budget to fund a portion of, or all of, the buyouts. Community associations often serve to collect neighbourhood feedback on local policy and are instrumental in communicating a buyout program's objectives and design.

Lastly, buyout programs must also align with existing policies for land-use, flood risk reduction and climate change adaptation. If property is relocated and the site is subsequently used for commercial development rather than flood mitigation, like new floodway parkland, a credibility gap is likely to emerge as residents question the original intent of the decision makers implementing the buyout program. Similarly, in communities facing housing shortages, other options besides buyouts (e.g., structural defences) might be necessary if the trade-off between higher levels of flood exposure is deemed worth it in exchange for housing stock retention.

Evaluating Effective Buyout Program Design

In the process of reviewing the literature on various buyout program designs, we identified the following key features that could be used to address the three main challenges of cost efficiency, social acceptability and political feasibility:

Compensation

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Higher levels of compensation have been shown to improve social acceptability since property owners are more likely to participate; however, increased compensation can be expensive for local governments to fund and can decrease the program's political viability if tax increases are required.

- Determining adequate compensation for property owners is a complex and context-specific task. Compensation is a powerful tool for addressing buyout program weaknesses, but it can involve trade-offs between social acceptability and political viability and costs.
- Most buyout programs use pre-disaster property values as a baseline to calculate compensation, sometimes using third-party appraisals. While such offers are more appealing for residents and encourage program acceptance, they also result in high program costs.[40] However, the consensus in the research is that financial offers need to be high enough that they make homeowners feel like they are getting appropriate value for their property and allow them to recreate their same quality of life elsewhere—including maintaining their social ties.[41]
- Buyout programs vary considerably, offering baseline valuations for land and property that range from as little as 80% (Eferding Basin, Austria) to 110% (Ames, Iowa). Offers may also include allocations for moving expenses and/or demolition costs. Even in cases where 100% of the pre-flood property value was paid, homeowners reported challenges in finding comparable housing for the same price outside of the flood-zone.[42] They also faced additional expenses such as moving costs, interim housing, legal fees, service connections, and in some cases, building demolition[43]—all of which can represent a considerable burden to homeowners who accept a buyout.[44]

Coerciveness

- Programs can be designed to coerce participation (e.g., mandatory buyouts) by using the threat that, if residents choose to remain, government will expropriate land exposed to flood risk. These programs, however, are rare since they face considerable social and political opposition. As such, most buyout programs are explicitly voluntary by design even though legal mechanisms exist in some jurisdictions for authorities to acquire property for the sake of public safety. While voluntary programs are likely to be more acceptable to residents and elected officials since they offer flexibility for individuals to determine whether or not they want to participate, voluntary programs can also be less efficient as property that is left behind remains exposed to flooding in the community. Furthermore, when buyouts are voluntary, there is a risk of sporadic acceptance, resulting in a mixture of isolated houses and vacant lots that create costs for municipalities that must protect and maintain both.[45]
- Given the challenges involved in coercing residents to leave their property, most funding structures require that buyout programs be voluntary.[46] Even so, the literature reveals that many homeowners still felt compelled to relocate despite the "voluntary" structure.[47] They cite pressure from officials, limited income to rebuild after a flood, the removal of infrastructure, and barriers from the municipality in obtaining rebuilding permits.[48] Such actions not only

undermine trust in government, they can also influence acceptance of a buyout offer. One study found that people were more likely to accept a buyout offer if they did not feel pressured and had trust in officials.[49]

To encourage uptake of a buyout program while also respecting residents, governments should strengthen guidelines to ensure that their programs do not pressure property owners inadvertently or explicitly and that the compensation is generous.[50] Furthermore, governments need to guarantee that affected communities are consulted from the early stage of program conception all the way through to completion.

Timing

- Most property buyouts occur in the immediate aftermath of a flood event rather than through advance engagement and study, involving the identification of high flood-risk neighbourhoods, broad community consultations to educate and assess buyout interest and, pre-emptive financial offers to buy out properties most at risk of flooding. Such advanced efforts have been identified as critical pre-cursors to effective buyout programs since they improve social acceptability, cultivate political support and reduce the administrative costs of programs hastily implemented in the aftermath of severe flooding.
- Prior to a flood disaster, there is often a lack of will to pursue retreat options pre-emptively. Politicians understandably worry about public opinion, the local tax base, economic investment, and long-term development goals.[51] For the most part, elected officials often postpone large-scale responses—such as retreat—until it is absolutely necessary.[52] But a major flood crisis brings stark attention to an inundated community's water risks, opening a post-disaster window of opportunity to initiate new policies and norms that involve significant life changes and financial cost.[53] The more a city or municipality is prepared for a flood disaster, the better it is positioned to respond efficiently.

While very few buyout programs have been designed in advance of a major flood event, a number of studies have noted actions and details that can, at the very least, be pre-planned:

- Mapping buyout zones;
- Determining appropriate financial compensation;
- Undertaking early public consultation in order to aid community members in understanding the need for retreat; and
- Noting which property owners may be willing to participate.[54]

- These pre-emptive actions should be components within a broader, integrated flood management strategy that encompasses new infrastructure in urbanized areas and allocates funding for pre-crisis adaptation and mitigation actions.[55] Planning buyout zones in advance is an important strategy for holistic and orderly flood management that efficiently meets a community's needs and goals and retains public support.

One case study offers relevant lessons: following the 2008 Midwest floods, the City of Cedar Rapids, Iowa began a successful property buyout program comprising three zones, each of which had different goals: a greenway (high flood risk, intended for recreational use and green space), a construction/study area (medium flood risk, intended for some hard flood protection, relocation of some roads and utilities, and recreational use), and a community development area (lower flood risk, intended for affordable housing and flood-resilient buildings). The whole program and individual zone details were decided through deliberate and collaborative consultation with the public, resulting in very positive public perception of the program.[56]

Governance

- Most programs are implemented at local levels by governments that lack sufficient resources for implementation. But well-run, efficient buyout programs require significant human and financial resources and capacity—from consulting with the public and administering the program to processing funding applications and managing land use planning.[57] As a result, national and sub-national governments are often involved in buyout programs as sources of financial and administrative capacity.
- This multi-level approach involves some trade-offs in terms of program effectiveness. Local governments often have the most knowledge about the needs of residents and locations where buyouts are justified, but they often sacrifice control over the implementation if upper-tier governments expect to influence program design in exchange for more resources. For example, an upper-tier government might identify different neighbourhoods for relocation than those expected by local governments and residents, leading to confusion and limiting the program's social and political acceptability. At the same time, local governments often require financial and administrative support from upper-tier governments in order to defray costs that residents would likely oppose if passed down in the form of property tax increases.
- Local governments should leverage the reach and capacity of community and neighbourhood associations, which can influence the effectiveness of buyout programs. These organizations act as knowledge brokers and communicators between governments and residents, helping to gather feedback on program design while also explaining critical administrative information to those seeking to relocate. In Staten Island following Hurricane Sandy, for example, community groups were essential in both getting a buyout program as well as liaising with

residents about program details.[58] Some government agencies have also contracted work out to private firms, as in the Australian buyout program in Grantham, Queensland, where a land swap lottery was run by a private firm to ensure impartiality.[59]

The case of Christchurch, New Zealand following the 2010 and 2011 earthquakes highlights one attempt at increasing capacity; the federal government created the Canterbury Earthquake Recovery Authority—a new central government agency dedicated to running the recovery efforts, including the property buyouts.[60] The skill sets, resources, and relationships necessary to undertake an effective buyout program can often be found in community organizations and actors, and governments can take advantage of this by involving a broader range of community organizations and encouraging local leadership.[61]

The literature review determined that while property buyout programs have been planned and carried out in varying ways, they share key challenges of funding, equity, timing, and capacity. The existing research also highlights common approaches for program success, namely public participation, homeowner supports and financial compensation, a planned approach, and organizational capacity.

Buyout Programs in Canada

Based on the findings from the literature review, we explored and evaluated the design of the following three existing buyout programs in Canada.

CASE STUDY

Gatineau, Quebec

Figure 1: A property in Gatineau, QC opposite the Ottawa River undergoes structural renovations after the 2019 floods.

Figure 2: A demolition flyer is advertised on a vacant lot in Gatineau marking where a property buyout has occurred.

Figure 3: A 16-unit condominium in Gatineau is condemned and slated for demolition after the spring 2019 floods.

In the spring of 2017, the City of Gatineau experienced torrential rainfall, rapid snowmelt, and soil saturation. This record-breaking flood forced more than 4,000 people to evacuate from the Ottawa River shoreline and damaged over 1,800 properties.[62] Disaster assistance was quickly made available for eligible owners who had sustained damages to their primary residences, but provincial legislation prohibited the rebuilding of the 1,428 flood-damaged properties located in the 1:20 flood zone. Through the province's General Indemnity and Financial Assistance Program for Actual or Imminent Disasters, these houses were targeted for a buyout with capped value of $200,000 and an additional $50,000 for the value of the land.[63] The City of Gatineau also aided recovery efforts by deferring property tax deadlines, waiving application fees, and expediting construction/ demolition permits.[64]

Two years later, the Gatineau region was again struck by widespread flooding. One hundred and eleven homes had to be evacuated, and 923 houses were ultimately damaged.[65] Faced with more damaged properties and rising recovery costs, the Government of Quebec amended the disaster financial compensation program, lowering the limit on eligible damages for repair or rebuilding from $159,000 after the 2017 floods to a $100,000 lifetime limit.[66] If the damage to a home exceeded 50% of its value or exceeded $100,000 in damages, property owners situated on floodplains were eligible for a buyout up to a maximum payment of $200,000 based on municipal tax valuations, with an additional $50,000 for the land.[67] Those who accepted the buyout offer transferred ownership to the municipality for the symbolic sum of $1, after which the City assumed responsibility for the property's care and maintenance.[68]

Figure 4: A family bungalow in Gatineau is put up for sale in 2019 following the spring floods.

Because of the successive rounds of flooding, uptake for the buyout program was higher in 2019 than in 2017. As of 2019, more than 250 single detached houses had been demolished and 148 of the lots had been officially transferred to the City of Gatineau (Figure 2).[69] The Government of Quebec has paid out approximately $50 million to buy back properties in Gatineau, and this figure is expected to increase as more claims are paid out. As of 2022, the government of Quebec has increased compensation caps to $325,000.[70]

Following the demolition of condemned properties, the City of Gatineau allotted $1.4 million of its budget for beautification projects on vacant lots.[71] Local organizers and non-profits collaborated to create economical urban civic gardens, pedestrian walkways, and commemorative spaces to document the disaster and community experiences.[72] ■

Photo credits: Cottar, 2019

CASE STUDY

High River, Alberta

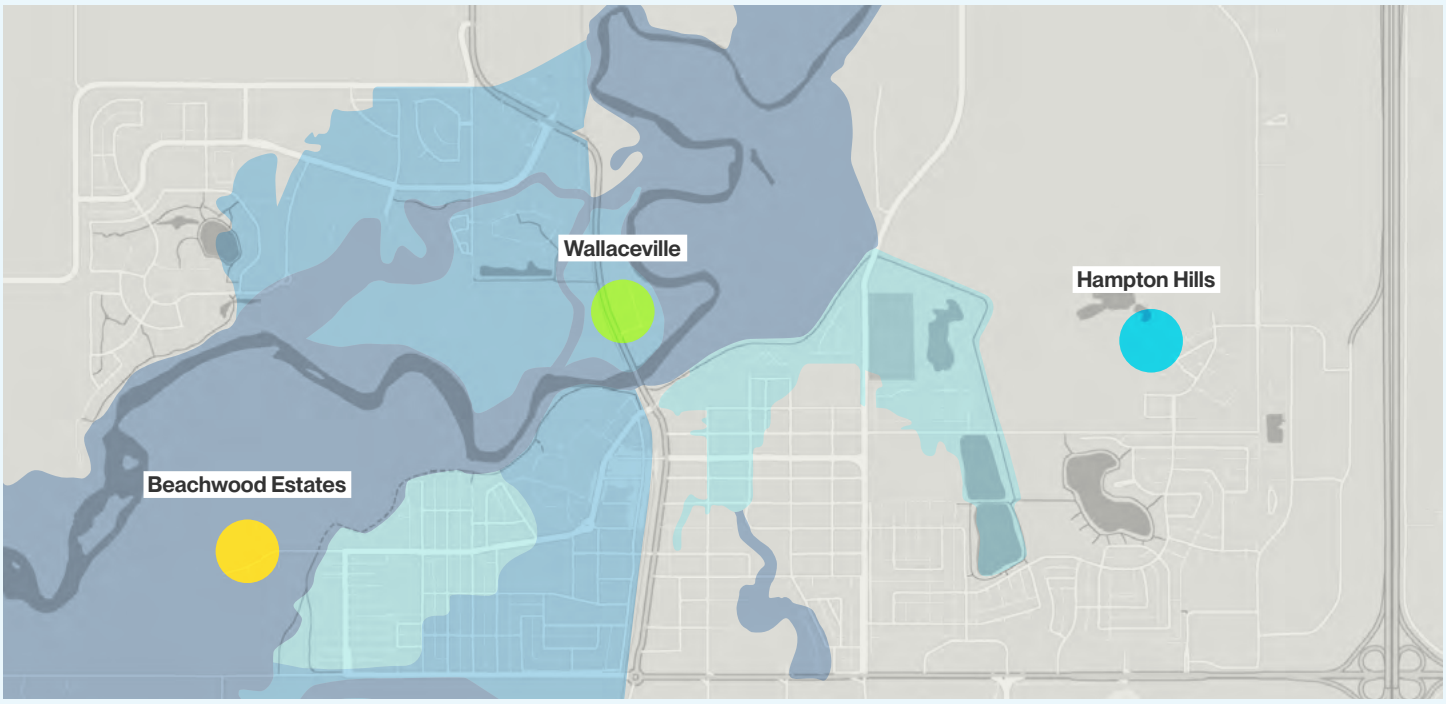


Figure 5: Overlay of the flood hazard mapping in High River; neighbourhood locations added by author.

Credit: Government of Alberta, n.d.

In June 2013, torrential rainfall, combined with above-average mountain snowpack, a very wet spring, and early snowmelt, triggered unprecedented flooding across southern Alberta.[73] More than 100,000 residents were displaced from their homes, and 30 municipalities had to declare a state of local emergency.[74] It proved to be the costliest natural disaster in Canada up to that point: flood-related damages across the province cost about $6 billion, of which only $1.74 billion was insured.[75]

The Town of High River, located 70 kilometres south of Calgary, was hit particularly hard. The floods impacted nearly 60% of the residents and 70% of the buildings, and the town issued a mandatory evacuation order for all 13,000 residents.[76]

Two months after the flood, the Government of Alberta announced a Floodway Relocation Program (FRP) with an allocated budget of $137 million. The program aimed to encourage certain homeowners in Calgary, High River, Medicine Hat, Bragg Creek, Black Diamond, and Turner Valley to voluntarily relocate out of floodways.[77] Residential owners within designated floodway zones were eligible to receive compensation equal to their most recent municipal tax assessment value in exchange for vacating their homes. Only primary residences were eligible for the program, and the government did not intend to allow any rebuilding on vacated lots. Those who declined the buyout and opted instead to receive financial disaster assistance forfeited eligibility to receive additional assistance in the event of a future flood.[78]

Criticisms were directed at the provincial government's FRP for relying on outdated flood hazard maps that did not consistently reflect areas where actual damage had occurred.[79] Notably, heavily damaged areas within the Town of High River, including the neighbourhoods of Wallaceville and Hampton Hills, had not been mapped as designated floodways and were therefore ineligible

Figure 6: Properties included in the Beachwood Estates acquisition program.

Photo credit: Town of High River, 2019

Figure 7: Properties included in the Wallaceville acquisition program.

Photo credit: Gateway Gazette, 2015

for the province's relocation program.[80] By contrast, areas such as the neighbourhood of Beachwood Estates and other nearby streets were designated within the floodway and included in the FRP although residents reported little or no damage during the flood.[81]

In November 2013, High River's town council approved a motion to petition the province to include the entire neighbourhood of Wallaceville in the FRP, with the objective of returning the area to its natural state.[82] The Alberta government agreed to extend the buyout offer to the entire Wallaceville neighbourhood. Meanwhile, low uptake across Alberta's FRP (about 40% of the 254 eligible homeowners) prompted the province to extend the program, giving residents until August 30, 2014 to enter a buyout program.

By September 2015, all the property owners in Wallaceville had accepted buyout offers, and the demolition of homes was completed that December.[83] For Beachwood Estates, which experienced limited flood damage but was positioned entirely in the floodway and between dike projects, the town ultimately committed to restoring the neighbourhood to its natural state, urged full buyout acceptance, and, rather uniquely, auctioned off 26 of the houses under the condition that they would be dismantled and removed.[84] By 2018 all remaining buildings and infrastructure were removed and vegetation and seeding in the area was completed the following summer.[85] In Hampton Hills, where temporary berms in the town's core reportedly diverted floodwaters into the neighbourhood, mitigation projects have since been built. As such, Hampton Hills has remained developed and many of the houses have since been rebuilt.

Several additional buyouts were required where land was needed to construct dikes or bank amendments as part of the town's flood protection program. Beginning immediately after the flood, the municipality embarked on an extensive upgrade of its infrastructure network, including installing the Centre Street Flood Gate, constructing 15 dikes, and realigning various roadways.[86] ■

CASE STUDY

Grand Forks, British Columbia

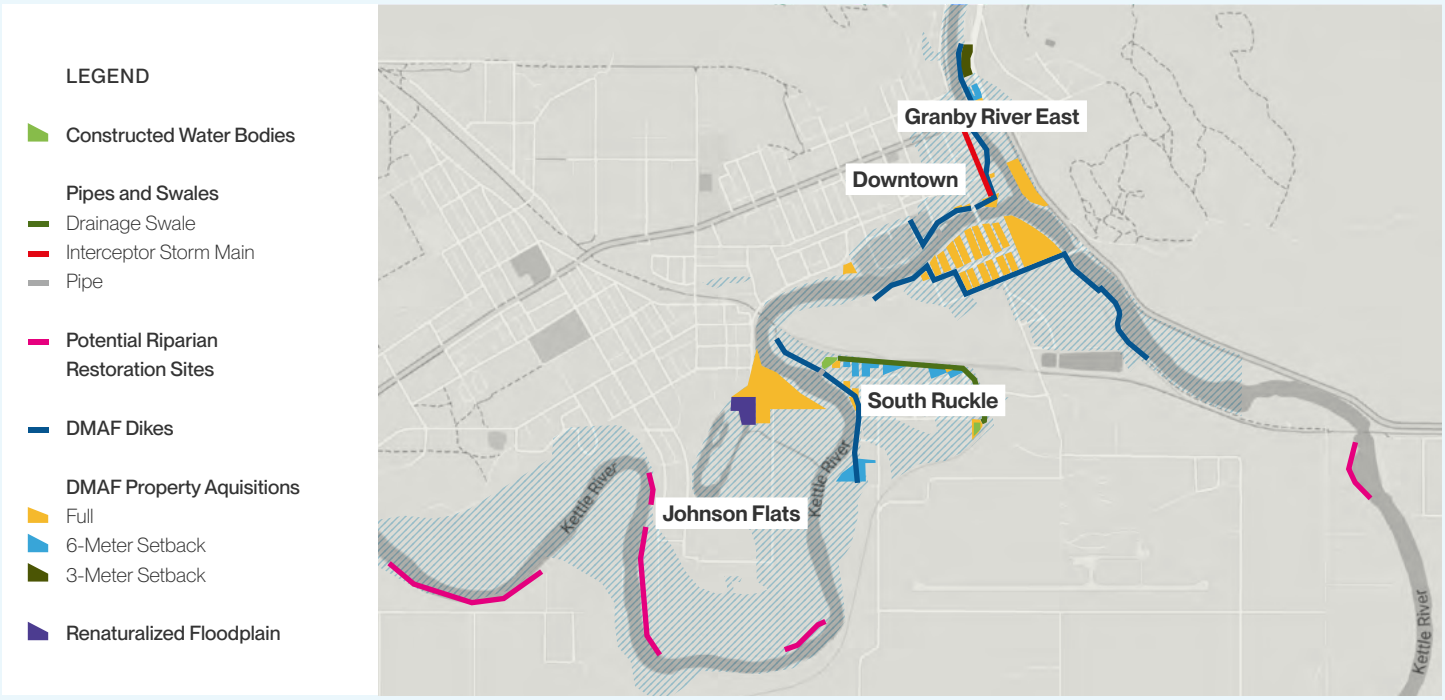


Figure 8: Grand Forks 2018 flood impact areas and proposed disaster mitigation and adaptation projects.

Credit: City of Grand Forks, 2021

The City of Grand Forks is located in interior British Columbia, at the confluence of the Granby and Kettle Rivers. In the spring when the mountain snowpack melts into the watershed, the area experiences frequent seasonal flooding. In May 2018, however, a perfect storm of high snowpack (238% of normal in the Boundary Basin), warm weather and heavy spring rain resulted in a 1-in-200-year flood in the city and surrounding area.[87] Over two days, the rivers surpassed previous water level records and resulted in widespread overland flooding.[88] Just four days prior, the City had met with consultants to begin updating local floodplain maps.

In total, 1,471 households were ordered to evacuate, about 400 homes experienced moderate to major damage and more than 50 homes were damaged beyond repair.[89] The flood cost Grand Forks nearly $50 million, which included significant damage to dikes, community infrastructure, residential homes, and commercial property.[90] Most of the flooding was concentrated downtown and in the neighbourhoods of Johnson Flats, South Ruckle, and North Ruckle, the latter of which was the lowest-income community in the city.

The provincial government approved Disaster Financial Assistance for the flood event, enabling eligible uninsured residents to access compensation for disaster-related losses.[91] In June 2018, the Regional District of Kootenay Boundary (RDKB) began developing a community-based recovery process and formed a Boundary Flood Recovery (BFR) Team.[92] Over the next few months, the Team worked closely with residents, community organizations, and governments as well as the Canadian Red Cross, Mennonite Disaster Service, Samaritan's Purse, Emergency Management British Columbia (EMBC) and the Ministry of Forests, Lands, Natural Resource Operations and Rural Development.[93]

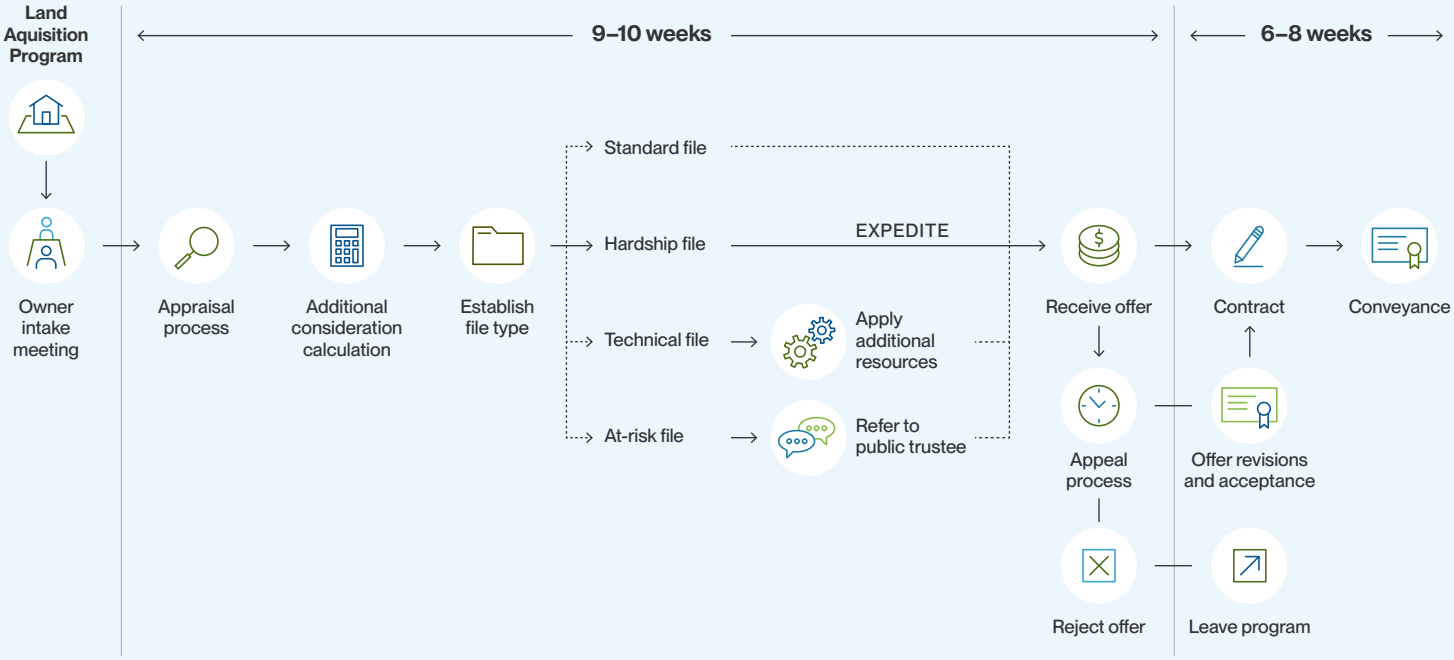


Figure 9:
Land Acquisition Program Implementation Schedule.

Credit: Keystone Consulting and Appraisals, 2021

Given that annual freshet flooding had become more frequent and damaging, there was strong public support for increasing flood resiliency and preventing a repeat of the 2018 flood.[94] As such, the city hired an engineering firm to provide an overview of flood impacts, identify areas of permanent flood risk, and suggest long-term risk reduction options for the area.[95] That fall, Grand Forks City Council voted in favour of the recommended flood protection. These included:

- Property buyouts in four areas of the city: the entirety of North Ruckle, floodplain areas in South Ruckle and Johnson Flats, and some downtown properties;
- Improving grey infrastructure with three new dikes and raising high-priority arterial roads;
- Augmenting natural infrastructure by strategically restoring certain riparian areas and floodplains.

To design and administer the first property buyout program in British Columbia, Grand Forks hired a consulting company and approved its Land Acquisition Program in early 2020. Over the ensuing year, personnel met with homeowners individually, conducted property inspections, and extended offers to those owners who had accepted the buyout.[96] Controversially, City Council converted some of the newly acquired homes into temporary rental properties as a means of both adding housing stock and using revenues to offset costs of the buyout program.[97] At the same time, property owners were offered the option to retain title and stay in their homes temporarily, even after their offer was settled and funds dispersed; this design feature proved an important factor in encouraging property owners to accept a buyout. By June 2021, the owners of 63 out of 73 targeted properties had accepted an offer, and as of 2022, City Council had expropriated three properties as part of the neighbourhood-wide buyouts. Properties being purchased as part of the next phase flood mitigation works are currently in the offer stage. ■

Buyout Program Design

Our analysis of these three existing buyout programs in Canada revealed several areas of consistency in terms of design but some notable differences in execution.

Compensation

- **Compensation approaches varied between the three cases:**

  Compensation in the Grand Forks buyout program was based on post-flood fair market value with an additional compensation sum based on property sale costs and disturbance factors exceeding *Expropriation Act* compensation factors. In High River, however, property values were assessed based on the pre-flood property tax assessment. In contrast to both, the city of Gatineau capped property values based on a damage threshold of $200,000 for structures plus $50,000 for land.

Coerciveness

- **Coerciveness was largely voluntary "on paper" but each program included conditions that limited the benefits for those who chose not to participate in the buyout program:**

  In High River's Wallaceville and Beachwood neighbourhoods, participation was ostensibly voluntary, but homeowners still faced the threat of expropriation by the municipality if they refused to take the buy-out. The provincial government also encouraged buyout acceptance by limiting access to future disaster assistance for those that chose to remain in the flood zone. Similarly, the Grand Forks program was voluntary even as the municipality reserved the right to expropriate homes if property owners chose to stay. In addition, the funding provided by the Disaster Mitigation and Adaptation Fund (DMAF) required that any acquired property be returned to its natural state. In Gatineau, coerciveness was presented on a gradient based on a given property's damage and location within the floodplain: mandatory buyout for damaged properties within the 1:20 zone and voluntary buyouts for damaged properties outside the 1:20 zone while those who didn't accept the buyout faced a limited lifetime disaster recovery allowance of $100,000.

Timing

- **All three case study programs were established reactively to a major flood event, but the buyout program timeline varied from one to several years:**

  In High River, the government of Alberta announced the Floodway Relocation Program (FRP) two months following the flood and initially gave residents three months to decide although this was extended to one year. With the Wallaceville neighbourhood added to the program four months later (six months post-flood), homeowners were given eight months to make a decision. The Grand Forks program was also reactive but considerably more drawn-out. The provincial government applied to the federal DMAF program two months after the spring 2018 flood, and Grand Forks City Council approved the buyout program with funding approved by DMAF just over one year later. In the fall of 2019, Grand Forks hired a consultant

to administer the buyout, and land acquisitions occurred over 2020 and 2021. In Gatineau, the buyout program was approved by the province approximately one month after the flooding in May 2017 and was expanded in response to more flooding in spring 2019. At the time of each disaster, none of the three programs were in a good position to make decisions about long-term flood risk reduction due to a lack of up-to-date flood maps and hazard risk assessments as well as a lack of coordinated land use planning and management.

Governance

- **Governance and oversight of the three buyout programs varied between local and provincial control and with or without assistance from consulting firms and outside experts:**

  Widespread flooding in other locations in Southern Alberta, beyond just the town of High River, justified a provincial rather than municipal approach. As a result, buyout programs were developed by the province of Alberta and implemented by a number of municipalities. The program in Grand Forks was developed and implemented by a consulting firm hired by the city and financed by the federal DMAF program. Even so, the municipality maintained control over the program, including the scope of land acquisition and land-use decision. The buyouts in Gatineau were coordinated and administered entirely by the Quebec government. The program was institutionalized through Quebec's General Indemnity and Financial Assistance Program, which created a permanent mechanism for buyouts yet still allows the provincial government to expand and refine the criteria over time. At the local level, the City of Gatineau attempted to support homeowners in other ways via deferred deadlines, waived fees, and expedited permits, etc. Unlike the Alberta or Quebec floods, the flood disaster in Grand Forks was more concentrated, which allowed the city, rather than the province, to manage the implementation of the buyout program. Grand Forks was also unique in their efforts to conduct one-on-one intake meetings with eligible homeowners, but this outreach was only done after the buyout option had been decided.

Buyout Program Evaluation

We evaluated the three Canadian buyout programs using a set of criteria grounded in existing literature on flood risk management and program design. These are broken down into the three categories introduced earlier: program efficiency, social acceptability, and political feasibility. See also the Summary Table.

Cost Efficiency

Property buyouts to reduce flood risk are funded with public money, and they involve a significant immediate cost for longer-term benefits. We evaluated the efficiency of each program based on the extent to which it:

- Encouraged prudent use of scarce resources (i.e., achieved results at a reasonable cost);
- Coordinated efforts and minimized overlap and duplication;
- Promoted medium- and long-term financial planning for flood risk reduction.

High River, AB (medium)

Limited uptake of the provincial buyout program was identified as evidence of inefficiency. From the beginning, poor policy alignment at the provincial and municipal levels resulted in multiple, concurrently running buyout programs. Inconsistent eligibility requirements made these various programs challenging to administer and communicate to the public. Exacerbating these problems, high turnover rates of staff led to inefficient delays due to new hiring and training. Finally, the program's voluntary buyout structure created a patchwork of compliance in some neighbourhoods; this created a redundancy whereby local governments had to both maintain newly vacated lots and still protect those property owners who remained.

Grand Forks, BC (medium-high)

We noted several efficiency strengths in the Grand Forks property buyout program due to the use of financial resources, human resources, timeliness, and risk reduction. An initial cost-benefit analysis (CBA) determined that the benefits of the program were higher than the costs based on a return on investment (ROI) of 3.4:1, which exceeded the threshold required by the Disaster Mitigation and Adaptation Fund (DMAF) to qualify for funding.[98] But this assessment likely underestimates the economic benefits since it does not account for non-monetary gains such as limiting loss of life, lessening ecological damage, preventing additional disruptions to local business activity and reducing damage to infrastructure. There remains, however, some uncertainty in final cost estimates, especially if the city is required to pay for legal costs associated with expropriating additional properties.

As with the other case studies, the buyout planning was reactive to the flood event, so it involved significant time and resources from city staff. There was also uncertainty over the financial costs of the buyouts and the funding available from upper levels of government as well as negative public opinion that made the program politically challenging. As a result of delays in the finalized program details, many people lived with a great deal of uncertainty, unsure if they should repair their homes, move out, or even protect their property.[99] That said, once buyouts were underway, negotiations and compensation with property owners proceeded in a timely manner. Further evidence of the degree of efficiency the city gained through policy alignment was their implementation of a Flood Mitigation Program,[100] which embedded the buyouts as one risk reduction strategy among others, like limiting any further development in the floodplain.

Gatineau, QC (medium)

In Gatineau, the Quebec government approached the cost efficiency challenge by capping its homeowner compensation at $200,000 per buyout although there was no ceiling on total program spending. Caps on compensation *can* lead to more limited uptake in voluntary buyouts, but our analysis suggests that the program did in fact reduce flood risk exposure in the municipality. Moreover, many residents decided to relocate within the municipality, which limited some lost revenue from property taxes.

According to some homeowners, however, the coordination and implementation of the program was somewhat inefficient. Gatineau's buyout program was led by the Government of Quebec with the Ministry of Public Security and Ministry of Municipal Affairs and Housing responsible for program delivery. This multi-office approach led to some confusion and redundancy. Homeowners often had to consult these ministries in addition to the municipality in order to participate in the program. For example, once a buyout was approved by the province, property owners then had to seek a demolition permit from the municipality.

Despite some of the coordination challenges, the buyouts were aligned with a broader set of long-term risk reduction strategies and policies: investments in structural defences, such as raising roads, improvements to the stormwater and runoff management systems in the Wabassee Creek watershed, and the rehabilitation of natural assets. This policy alignment ensured that the benefits of risk reduction exceeded the costs.

Social Acceptability

People often react strongly and emotionally to property buyout programs in their neighbourhood because people underestimate risk, exhibit strong place attachment, and vary in their capacity to relocate.[101] Based on the evidence from other complex policy initiatives, we evaluated the social acceptability of each property buyout programs based on the extent to which it:

- Allowed stakeholders to hold decision makers to account and obligated planners to report, explain, and be answerable for their decisions;
- Promoted transparency in decision making transparency;
- Encouraged meaningful engagement with a range of stakeholders;
- Fairly and equitably distributed benefits and burdens.

High River, AB (low-medium)

Low levels of accountability, transparency and engagement limited the social acceptability of the High River buyout program. A study of public engagement efforts in High River following the 2013 flood found that opportunities to participate and shape the flood recovery plan were limited.[102] Early town hall meetings were emotionally charged, with many residents using the opportunity to express their anger and frustration. Later sessions were then structured as open houses used to disseminate information. Neither of which provided opportunities for meaningful collaboration.

Limited transparency over the program design also led to confusion. Initially, property owners in the Wallaceville neighbourhood were excluded from eligibility for the buyout program. Many started to rebuild their properties after seeking support from provincial disaster assistance programs. Several months later, however, the province announced that property owners in Wallaceville would in fact be eligible for buyouts but would not be compensated for any investments they had made in restoring or cleaning their property. Additionally, municipal officials announced that property owners who refused a buyout could still face expropriation with a lower compensation level.[103] This messaging deviated significantly from the provincial FRP, which stipulated that the buyout program was entirely voluntary and included no threat of expropriation.

Grand Forks, BC (medium)

The buyout program in Grand Forks employed public engagement and communication strategies, like one-on-one meetings with property owners, several public meetings, and surveys of property owners to improve the social acceptability of the program. Still, residents expressed concerns about inconsistent messaging and a lack of early outreach. However, assigning Boundary Family Services case workers to residents in the early stages was identified as helpful for enabling meaningful engagement; the case workers provided a neutral sounding board and supportive resource for residents. In turn, they communicated residents' needs back to the BFR Team.[104] Interviewees noted, however, that public engagement could have started earlier and been more consistent, which would have resulted in more meaningful and comprehensive feedback from the public.[105] Early engagement would also have potentially neutralized vocal opposition from some residents towards certain program elements, especially the long period of initial uncertainty and the compensation offers at post-flood value.[106]

To support transparency, Grand Forks regularly updated residents via public and closed meetings, mailings, social media, and a program website. But this messaging was sometimes inconsistent with other public communications by city officials, which led to confusion among residents—particularly whether compensation would reflect pre- or post-flood property values.[107] Residents also objected to public communication that characterized the buyouts as "voluntary" since many assumed they would have to accept a buyout or face municipal expropriation. Despite the ambiguity, Grand Forks worked to improve transparency through a centralized website and strategy managed by a communications firm and hired a consulting firm to negotiate with property owners over property appraisals and acquisitions.

Notably, the neighbourhoods that suffered the most flood damage were also the city's lowest-income communities, an impact that reflects an inequity observed in other instances of flooding.[108] The neighbourhoods most affected included many retirees, renters, and precariously-housed populations, who reported less financial and housing security than those in other

areas of the city.[109] For some of these residents, accepting the buyout would have increased their financial hardship. Grand Forks attempted to identify and engage with these residents and facilitated access to additional support, like independent legal representation and social services—an effort that demonstrates a credible concern for fairness and equity in their buyout program.

Gatineau, QC (low-medium)

As with High River and Grand Forks, Gatineau's buyout program required a quick implementation that limited opportunities for strong engagement and transparency. The City of Gatineau appointed a dedicated team to process permits and help homeowners navigate bylaw regulations to speed up recovery efforts. Many residents expressed support for the buyout program but remained confused on the details and eligibility. In response, the province and municipality offered information sessions and administrative assistance to residents during the application process.

In terms of fairness, Quebec's program capped funding to appease concerns that taxpayer resources were being used to subsidize the purchase of properties from higher income earners. By capping compensation, residents living in more expensive homes could decide to maintain the property without further disaster assistance or another buyout option. This design builds off evidence that residents with financial resources and economic flexibility can recover more quickly than those who are less-well off. Implementing a cap on coverage, however, can discourage uptake of the program even among those who are socially and economically vulnerable if their properties are worth more than the compensation offer.

Political Feasibility

The effectiveness of a property buyout program depends partly on the support it receives from elected decision makers and influential interests.[110] For instance, property buyout programs might be opposed by certain elected officials if they perceive them to be contrary to their strategic political interests or the wishes of their constituents.

We evaluated the political viability of each case study program by examining the extent to which it:

- Attracted support among local and provincial decision makers;
- Was endorsed by influential stakeholders in the targeted community and province;
- Aligned with other policies for flood risk reduction and climate change adaptation.

High River, AB (medium)

In the aftermath of the 2013 floods, provincial decision makers in Alberta were quick to design and implement a buyout program, which suggests a high level of political support. The implementation, however, became a source of criticism among participants, media, and local governments. Due to the low uptake by eligible homeowners, much of the criticism concerned the ineffectiveness of the program, which appeared to not improve the region's overall flood resilience.[111] Media framing of the FRP, including anecdotes of buyouts being offered to homeowners who did not experience much flood damage, influenced public perceptions that the program was a waste of money.[112]

Local governments were also frustrated with the implementation of the provincial program. In High River, the mayor had to lobby the province to include neighbourhoods that had endured significant damage but that were initially excluded even as other neighbourhoods with less damage were eligible for buyouts. In a noteworthy response, provincial officials expanded eligibility and extended deadlines for residents seeking a buyout.[113] But the initial policy misalignments were largely the result of the quick, reactive deployment of flood mitigation strategies without sufficient consultations, flood risk assessments at the local level, or up-to-date floodplain maps. Although the provincial program faced considerable criticism, support among the local leadership in High River demonstrates political feasibility for the buyouts.

Grand Forks, BC (high)

The Grand Forks program enjoyed support among many key stakeholders including the provincial and local governments, public and private sector community leaders, a fifty-person stakeholder group, and property owners through outreach efforts.[114] This support was contingent, however, on adequate compensation. In particular, the North Ruckle neighbourhood voiced strong support for the buyouts, with 75-80% of respondents expressing interest in receiving a fair offer for their property.[115] That said, the buyout was still contentious among some citizens who were frustrated with compensation figures and the administrative process. Nevertheless, political support for the buyouts was durable after the 2018 election, allowing Grand Forks to implement the program.

The federal government also supported the program by approving funding through DMAF. Along with City Council's approval of a long-term strategy combining buyouts, a planned dyke in the surrounding area and strategic use of green space, there was a strong political commitment among multiple levels of government for risk reduction in Grand Forks.[116]

Gatineau, QC (high)

Successive flood events in Gatineau attracted significant political attention and the support of provincial and local leadership. Although 2017 was the first time that buyouts were offered by the Quebec government, elected officials at both levels expressed their support in favour of the program due to the obvious long-term cost-benefits. Provincial funding for the buyout program helped generate political support at the local level, where the costs of implementation are most pronounced. After a buyout was complete, the province transferred ownership to the municipality for a nominal fee of a $1, whereupon the municipalities were responsible for lot maintenance.

Provincial funding, combined with long-term investment in flood protection, helped ensure the political feasibility of the buyouts. For example, in addition to several structural mitigation projects in the Wabassee Creek watershed, the provincial government also prohibited rebuilding or future redevelopment in the 1:20 floodplain. By coupling land use planning tools with relocation policies, the Government of Quebec generated credibility by signalling a longer-term commitment to flood risk management in the community. For local governments and citizens, this long-term commitment is important for political feasibility since it communicates that the sacrifice made by those relocating is part of a broader effort to reduce risk that benefits the community.

Summary Table

Evaluation Criteria	**High River, AB** 2013 Flood	**Gatineau, QC** 2017/2019 Floods	**Grand Forks, BC** 2018 Flood
Cost Efficiency			
Encouraged prudent use of scarce resources	●	▲	▲
Coordinated efforts to minimize overlap and duplication	▼	●	▲
Promoted media and long-term financial planning for flood risk reduction	●	▲	▲
Social Acceptability			
Allowed stakeholders to hold decision makers to account	●	▼	▼
Promoted transparency in decision making	▼	●	●
Encouraged meaningful engagement with a range of stakeholders	▼	▼	●
Fairly distributed benefits and burdens	●	●	●
Political Feasibility			
Attracted support among local and provincial decision makers	●	▲	▲
Endorsed by influential stakeholders in the targeted community and province	▼	●	●
Aligned with other policies for flood risk reduction and climate change adaptation	●	▲	▲

Legend: ▲ High ● Medium ▼ Low

Main Findings

Cost Efficiency

Most strategic relocation programs are, ultimately, cost effective based on strong evidence that the benefits of flood risk reduction exceed the costs associated with the property buyouts and program administration. This is an important finding given that buyouts are perceived as expensive in the short-term. In each of the three case studies, however, the communities recognized that reducing exposure to future risk was worth the investment. Each community also tried to align the buyouts within a longer-term strategy for risk reduction, which further enhanced the program's benefits. Inefficiencies were most noticeable in the actual program administration and implementation. In both the High River and Gatineau cases, provinces and municipalities took on responsibilities that required time to coordinate in ways that delayed access to information and funding for residents and led to some confusion. Nonetheless, it is important to note that this coordination inefficiency is in part related to the speed and urgency required to design and develop a program in the immediate aftermath of a significant natural disaster. Such bottlenecks could be mitigated, at least in part, by advance planning and preparation.

Social Acceptability

The buyout programs performed the poorest in terms of social acceptability. This outcome is not surprising given the disruption and difficulty involved in convincing property owners to abandon their homes. Moreover, following the flood event, many property owners experienced significant delays in confirming whether they should begin rebuilding or were eligible for a buyout. A critical factor in improving social acceptability is early and frequent community engagement that is transparent about decision making via public and one-on-one meetings and information websites. Sufficient compensation at pre-flood market rates was also identified as an important factor influencing social acceptability.

Political Feasibility

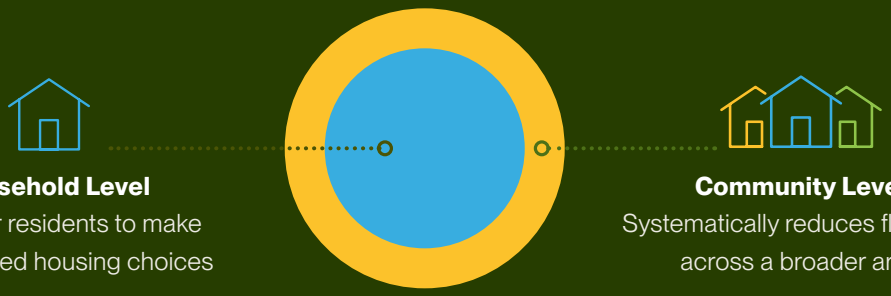
According to our evaluations, the buyout programs were all largely considered politically feasible. This outcome is especially important since existing research often identifies local political opposition as a major barrier to this policy option. A part of this political support is explained by the trauma caused by the disaster and the recognition in the community that rebuilding completely is not an appropriate strategy. Commitments by governments to embed the buyouts within a longer-term risk reduction strategy was also identified as an important factor that influenced a program's feasibility. Buyout participants and taxpayers funding the program need to know that their sacrifices will lead to permanent benefits for the community.

Fig. 1

Strategic Relocation Policy in Canada

Maximizing the success of buyouts for those facing unsustainable flood risk

Policy Targets:



Household Level
Empower residents to make risk-informed housing choices

Community Level
Systematically reduces flood risk across a broader area

What contributes to success?

Compensation

- Sufficient to encourage property owners to realize the total benefits of relocation
- Strongly tied to valuations in the local housing market

Equity

- The process is fair and equitable for all participants—acknowledging participant's differing needs and supporting them accordingly
- No participant is made worse off

Program Administration

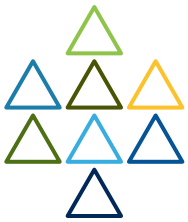
- Resources and staff are conveniently accessible to program participants
- Provides appropriate training to ensure all staff are culturally and disaster sensitive
- The degree of choice is appropriate to the level of risk

Efficiency

- Ensure the risk-reduction benefits of the buyout program exceed the financial and social costs
- Clarify the roles and responsibilities between administrations to avoid duplication of services

Public Engagement

- Engagement happens early (before flooding occurs), and often in high-risk areas
- Foster relationships with high-risk communities to build trust over time



Eight Recommendations

The following eight recommendations are based on findings from the literature review, the analysis of three existing buyout programs in Canada, and input received from stakeholders across Canada and the United States.

1. **Develop a buyout program that is ready for implementation before a disaster:**

   Property buyout programs should be developed in advance of a disaster and be made available for proactive or reactive implementation. Proactive buyout programs can be more cost-efficient, engage a wider set of stakeholders, and facilitate a more systematized rollout. Critically, residents living in high-risk areas should be engaged well in advance of a flood or other hazardous event and made aware that a buyout option is available to protect their well-being and property investment. Some residents are likely to take up the offer in advance, while others could afford time to engage with their neighbours, community associations and the municipality to inform their own decision. Even so, it is important that the buyout program continue to be offered after a disaster event when impacted residents are experiencing significant stress and anxiety.

2. **Engage early and often:**

   Delays in outreach limit the social acceptability of the program by leading to higher levels of mistrust among residents. In some cases, information is released through the media or public officials that is contradictory or unclear, leading to confusion about eligibility or compensation levels. A communications strategy that maintains a single source of constantly available information can improve program uptake along with the social acceptability and political feasibility of the program. For external communications between stakeholders and the public, the use of a standard messaging template can help to streamline key information and maintain consistency and clarity between jurisdictions.

"A solid communications strategy is valuable, but must be tailored to meet the needs of the least easy-to-reach, least accessible, and often most vulnerable members of a community... Communication isn't unidirectional. It needs to happen in relationship." —Survey Participant 12, 2022

3. **Provide on-the ground support and dedicated resources:**

   Adequate engagement requires human and administrative resources at the local level. Disaster victims require significant support and assistance to understand the program's requirements and to navigate the buyout application process. Practically speaking, local/provincial staff or consultants could be deployed into the community by setting up an office in a community centre during the recovery phase. The provision of on-the-ground support and resources can help to humanize the application process, improve processing times, and ensure residents have access to the necessary resources required for successful program implementation at the local level. As such, administrative operations should be itemized into the buyout program budget.

4. **Increase compensation caps to reflect regional pre-flood market value of homes:**

   By increasing the ceiling of compensation, homeowners are incentivized to participate and are granted greater financial flexibility to relocate, hopefully by purchasing a home nearby or in a comparable market. Because market values differ based on location, regional compensation caps should be set so that homeowners are provided enough funds to cover existing mortgages. By providing reasonable compensation, the benefits and burdens are fairly distributed, which in turn increases the social acceptability of the buyout program and limits the social disruption involved in relocation. Additional financial incentives to compensate residents for relocation expenses (i.e., moving costs, temporary housing, counselling, legal costs) can also be used to increase program uptake.

"The benefit (to relocation) of living with reduced risk elsewhere, higher security and avoided future trauma and damages must also be recognized in the negotiation, on the other side of the cost/benefit equation."

—Survey Participant 2, 2022

5. **Create pathways for consensus and support among community partners:**

   Municipal governments should engage local community organizations in the development of local climate and land use plans that incorporate a relocation/buyout component. Community-driven participation helps to foster social cohesion, but adaptation plans rarely engage in local discussion on buyout program design. This is a missed opportunity for identifying potential exposed neighbourhoods and generating feedback on the design of a potential buyout program. The use of interjurisdiction roundtables or engagement forums can be used as mediums to strengthen relationships among communities and facilitate role assignment during program implementation and/or crisis response. Encouraging meaningful engagement with a range of stakeholders can strengthen the social acceptability of a buyout program, especially if communities are driving the development of a proactive plan before a flood event. Similarly, stakeholder engagement can strengthen relationships between the community and higher levels of government, which can encourage improved cooperation amongst key actors during program implementation and/or crisis response.

6. **Establish a federal buyout program with funding to support provincial or municipal relocation programs:**

   The local jurisdictions in each case study experienced limited access to financial and human resources, which was a barrier to more effective planning and implementation. The availability of federal funding on a rolling basis should enable provinces or municipalities sufficient time to engage residents in communities where buyouts might be necessary. Federal funding should include support for local capacity-building and expertise. Early local engagement, along with access to federal and provincial resources, can attract the support of communities, leaders, and elected representatives in the development of a proactively efficient, socially acceptable, and politically feasible flood risk reduction plan.

"Without adequate financial backstop these programs will not be adequately received nor effective. It will be important to have local leadership, but it will be impossible to deliver such buyouts with an acceptable effect. I believe this approach requires national leadership and communication for credibility and consistency."

—Survey Participant 4, 2022

7. **Improve intergovernmental coordination and dialogue:**

   Generating greater clarity on roles, responsibilities and expectations from both local and provincial levels of government is an important avenue for fostering accountability and transparency. Having a clear division of responsibilities allows governments to coordinate efforts while minimizing overlap and duplication. To better streamline program implementation, increase political feasibility and guide home and business owners, dedicated teams at both levels of government are recommended. Further, by proactively engaging in scenario-based planning and training, governments can anticipate problems before they occur, which can also increase the efficiency of the buyout program.

8. **Align buyout program design with existing disaster assistance, adaptation, and risk reduction policy:**

   Coordinating a buyout program within existing flood risk reduction policy improves the effectiveness of the plan by ensuring that the burdens and benefits are fairly distributed throughout the community. Local buyout programs should link to existing provincial or federal Disaster Financial Assistance Arrangements (DFAA) to avoid cross-purposes and duplication. Those who are making the sacrifice of relocation should know that their effort contributes to meaningful reduction of risk. Those who refuse to accept a buyout should not be eligible for future disaster assistance—a policy point that can encourage relocation while also ensuring that no more taxpayer funds are spent rebuilding in a flood-prone area from which the community has decided to retreat. Eligibility for property insurance could also be limited for those who refuse to participate in the program. Similarly, as a means of long-term risk reduction and fairness to those who have relocated, no further development

should be re-permitted in areas where buyouts have occurred. Finally, buyout programs should identify other communities or neighbourhoods nearby (i.e., preferably within the same municipality) that have the infrastructure, housing, and economic stability necessary to fully welcome the relocation of other community members, ideally in ways that involve minimal disruption to their jobs or social networks.

"As the buyout program is created, developed, and as it evolves, review existing frameworks to ask whether anything could be improved."

—Survey Participant 8, 2022

Engagement Summary and Conclusion—What We Heard

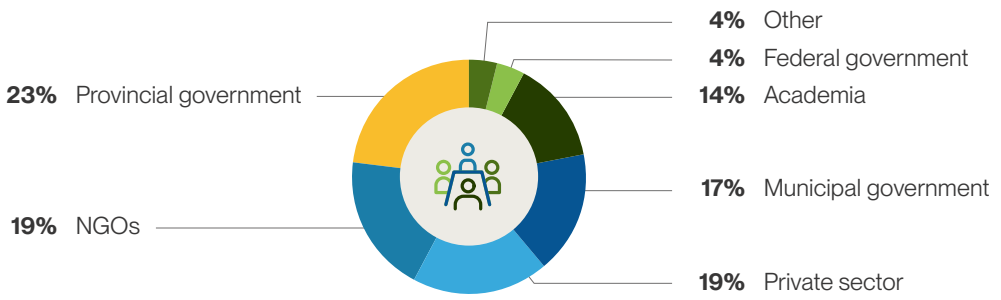
When the eight recommendations were initially drafted, we organized a national online workshop and survey. Our objective was to engage stakeholders in a discussion on these recommendations for the design and implementation of property buyout programs in Canada, as well as to provide an opportunity for policymakers, subject matter experts, community groups, and NGOs to hear each other's perspectives and collaborate on solutions.

52
Online workshop participants

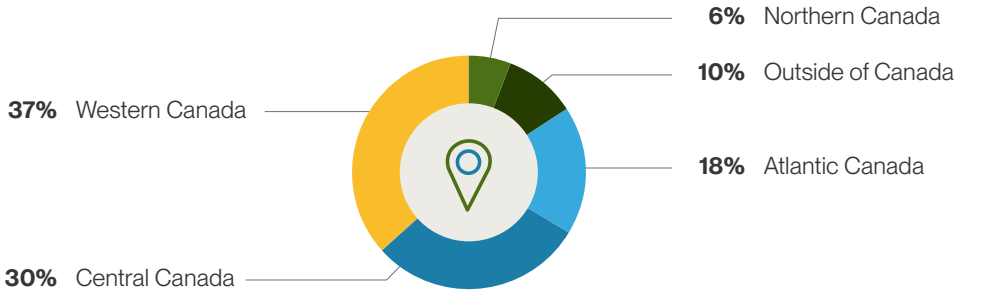
21
Online survey participants

73
Stakeholders engaged

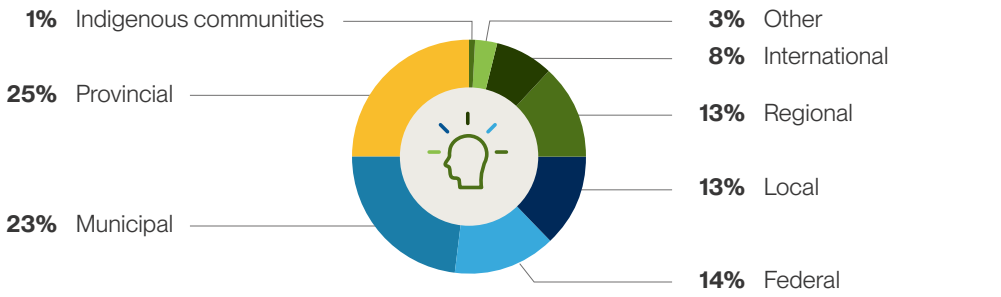
Profession:



Location:



Perspective:



The overwhelming consensus heard amongst workshop and survey participants indicates a need—and growing demand for—the use of buyout programs in areas at highest risk of recurrent flooding. Creating pathways for consensus and support between government actors and community partners will encourage community participation in adaptation planning. Participants noted that communities should be meaningfully engaged in discussion on the suite of mitigation and adaptation options available to them, which can build understanding and informed participation at the local level. In addition to consultation, participants advised that cost-benefit analysis be used as a crucial tool to help guide decision making with federal guidance. Intergovernmental coordination and dialogue between different levels of government is critical to foster accountability, transparency, and efficiency in buyout programs.

Input received through our engagement process is consistent with the findings from Gatineau, High River and Grand Forks: the development and implementation of property buyout programs is highly dependent on the governments' ability to secure funding to support these programs. Lower tier governments often lack capacity and resources. As such, the establishment of a federal buyout program with sufficient funding to support provincial- or municipal-led relocation would allow local governments to begin engaging with the highest risk neighbourhoods and to proceed with their own program design.

In addition to secure funding, better alignment between existing flood risk reduction policies, disaster assistance, and buyout programming is needed in order to eliminate redundancies and improve the overall effectiveness of these buyout programs. Participants expressed caution about increasing the ceiling of compensation given the politics associated with spending public resources to *remove* housing stock when there is a clear shortage that is driving up existing prices. Further discussions on program design are required to clarify how this buyout tool can be used in practice across different jurisdictions in Canada and especially in Indigenous and Northern communities.

Future research should be carried out on expanding the eligibility of the buyout program to include renters and business owners who are currently excluded from receiving disaster financial assistance (DFA) as well as those with secondary homes (e.g., seasonal cottages). Participants from government stressed the necessity of designing a buyout program that can be linked to existing provincial DFA or federal Disaster Financial Assistance Arrangements (DFAA) to avoid cross-purposes and duplication. Moreover, participants noted the role and responsibility that insurers have in developing insurance products that are suitably designed for climate adaptation and that better align with existing flood risk policies while still supporting their business model. Finally, many participants noted the use of buyouts as a potential tool that can be applied to other natural hazards like landslides, shoreline erosion, and earthquakes further justifying expanding its use in hazard management.

"Not only does proactive planning help foster relationships in the community and among levels of government, but it builds trust, ensures local people have full access to necessary information, and are ready to make well-informed decisions when the time comes." —Survey Participant 12, 2022

In short, strategic relocation is a flexible—and increasingly essential tool—for every tier of Canadian government to consider using in the face of augmented flood risks. While the cost of property buyouts seems high, those costs are often far outweighed by the benefits of reducing physical, financial, and social exposure to flood risk. This report offered a full synthesis of existing literature on strategic relocation and an in-depth analysis of three case studies in Canada. We proposed evidence-based policy advice about how to optimally design and implement effective property buyout programs in the Canadian context.

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