



BACKGROUND

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Preventing the Next Alberta Flood Disaster

Meredith Lilly

Executive Summary

“**Though the flooding was unprecedented in scale, it was not unexpected.**”

- The response to the 2013 southern Alberta floods was effective. Volunteers and governments organized quickly to provide aid and information to the affected communities.
- Though the flooding was unprecedented in scale, it was not unexpected. The possibility of an extreme weather event was well known, and the measures needed to mitigate damage from such an event were already under consideration.
- Unfortunately, the affected municipalities had difficulty spurring the province to act. A 2006 mitigation report was left unpublished for six years and its recommendations ignored. Only now, in the aftermath of the 2013 flood, is the province beginning to implement the suggested land-use regulations and structural flood mitigation measures.
- Co-ordinating governments, individuals and communities is the main challenge of disaster mitigation. Overland flood insurance, currently unavailable to Canadian homeowners, could solve a number of these co-ordination problems if it were priced according to risk and bundled with home insurance in order to distribute costs over a large population.

Alberta flood by the numbers

In June 2013, southern Alberta experienced significant flooding. From June 20 to 21, up to 200 millimetres of rain fell on already saturated, sometimes frozen ground, leading 28 communities to declare a state of emergency and forcing more than 100,000 people from their homes.^{1/2} The Bow and Elbow rivers overflowed, damaging 14,500 homes, and downtown Calgary was immobilized.³ In High River, a town with a population just shy of 13,000, three people died, and nearly 1,000 people had to be airlifted or rescued by boat.⁴

Premier Alison Redford estimates the flood will cost \$5-billion, five times the 2007 Probable Maximum Loss Estimate for a one-in-500-years flood.⁵ Insurance will cover approximately \$1.7-billion of this cost.⁶ This means that the 2013 Alberta floods are the most expensive in Canada's history and likely the most expensive insured loss in the history of Canada's insurance industry, even though overland flood insurance was not provided.^{7/8} To put the \$5-billion into perspective, the 1997 Red River flood in Manitoba, dubbed the "Flood of the Century," cost a mere \$500-million.⁹

A full recovery will take years, but the initial response was quick and effective. As of September 4, the province of Alberta issued \$70-million through pre-loaded debit cards or cheques to nearly 40,000 people, processed 8,200 applications for aid, arranged long-term temporary housing for 1,350 people and set up temporary classrooms for 950 students.^{10/11} By October 28, the province distributed a total of \$170-million of disaster assistance to 14 municipalities and two First Nations.¹²

The volunteer response was strong. On June 24 when the City of Calgary requested 600 volunteers, 2,500 people showed up within two hours. On Twitter, individuals used hashtags to co-ordinate volunteer efforts, a system of organization that grew to nearly 7,000 registered members on yychelps.ca by June 22.¹³ On August 21, High River issued a news release stating that as much as they appreciated the help, they had run out of room to store physical donations and could not accept any more.¹⁴

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Mitigation: benefits to preparedness

Though Canadians and their governments are adept at disaster response, mitigation has long been neglected. Unlike generous aid packages for distressed citizens, preparedness is rarely politically popular. Land-use regulation does not give the same bump in the polls as rescue missions do, but it does pay to be prepared. According to Canada's National Disaster Mitigation Strategy, a document intended to start an intergovernmental dialogue,

[b]enefit-cost ratios for flood prevention measures in Australia, the United States and the United Kingdom are 3:1, 4:1 and 5:1, respectively. In Canada, \$63.2 million invested in the Manitoba Red River Floodway in 1960 has saved an estimated \$8 billion in potential damage and recovery costs.¹⁵

Floods cause more damage and loss in Canada than any other natural disaster does, but the federal government is involved almost exclusively with rebuilding. Though there are exceptions, such as the recently created one-time flood mitigation fund, which promises to cover up to 50 per cent of the cost of implementing mitigation measures in partnership with the provinces, for the most part, mitigation is left to the provinces and cities, with mixed results.¹⁶

Mitigation measures ought to be a priority for the federal government because it is responsible for a large portion of the cost of rebuilding. Under Canada's Disaster Financial Assistance Arrangements, the percentage of damages the federal government must pay is calculated on a sliding scale based on the cost of damage per capita. Because of the expense of the 2013 floods, Alberta will receive the maximum amount of aid, which amounts to 90 per cent of expenses once the province shares the first \$18-million in recovery costs.¹⁷ Mitigation is therefore a worthy investment, one that Canada is well situated to make. Most levels of government already have some sort of disaster preparedness plan; they simply need to be better coordinated and then brought to fruition.

TABLE 1

Disaster Financial Assistance Arrangements per capita sharing formula¹⁸

Eligible Provincial/Territorial Expenditures	Government of Canada Share
First \$1 per capita	Nil
Next \$2 per capita	50 per cent
Next \$2 per capita	75 per cent
Remainder	90 per cent

Previous mitigation failures

Alberta is an example of what Howard Kunreuther calls “natural disaster syndrome.” Before the flood, governments and communities did not voluntarily prepare for the worst-case scenario. They were therefore particularly vulnerable. When the flooding occurred, and the damage was extensive, the government responded by promising liberal relief to those affected. The “combination of underinvestment in protection prior to the event and liberal use of taxpayers’ funds after a disaster” skew incentives toward high-risk behaviour.¹⁹ The challenge for Albertans now is to help their communities recover without falling into a pattern of inadequate preparedness and expensive recovery. In the end, mitigation will help reduce both monetary and human costs.

With this goal in mind, the province has already introduced some new mitigation measures. Many of the ideas discussed were on the table before the flood, but it took an extreme weather event to make them politically palatable. Further flood-risk mapping, improved public access to historic flood information, issuing proper notice of flood risk to property buyers and prohibiting disaster-recovery payments to property owners who knowingly build in high-risk areas were all recommended in a 2006 study that was left unpublished for six years.²⁰ At the time, MLA and leader of the Wild Rose Party, Danielle Smith, speculated that the government had delayed releasing the report because of the expense of implementing the recommended mitigation measures in Alberta’s 60 flood-prone municipalities. Better the report go unreleased than risk having to act on it.

Former High River MLA George Groeneveld led the provincial committee in preparing the 2006 flood report. Its most important recommendation, according to Groeneveld, was to stop selling Crown land in flood-risk areas.²¹ This sort of land-use regulation can be the difference between a natural disaster and an inconvenience. For example, in 1986, a major rainstorm hit the Michigan-Ontario border. “Property damage in the United States was 1,000 times greater than that in Canada,” a difference attributed almost entirely to Canada’s “more aggressive” flood hazard area development restrictions.²² The cost of the mitigation measures recommended in the report was estimated to be about \$300-million, to be implemented in increments over the course of several years. The committee recommended that the federal government share this cost, given that the government would be partially responsible for the cost of rebuilding should another flood occur.

In 2012, Groeneveld told the *Calgary Herald* that High River had prohibited development on floodways but needed provincial backing to enforce the ban.²³ Without the authority of the province, developers could challenge the municipal moratorium and Groeneveld thought the municipality would lose the appeal.

The 2006 flood mitigation report was not the first project to experience delays. An unreleased 2002 study was the basis for the report. Further, in 1989, Alberta collaborated with the federal government to create flood-risk maps, but the project was never completed. As of 2006, 36 communities remained uncharted.²⁴

Current mitigation measures

Following the 2013 floods, Alberta introduced a number of flood mitigation measures, many of which were recommendations from the 2006 report. The province banned building in floodways and legislated that buildings in flood fringe areas must meet the requirements detailed in the freshly drafted Flood Mitigation Building Code Standards.²⁵ The province promised to cover 15 per cent of the costs associated with meeting the new criteria, which included building with weather-resistant materials, better sealing of openings in basements and protecting plumbing and electrical outlets.²⁶ Additionally, the province added a notice to land titles to alert buyers of potential flood risks. If a property is deemed at risk and the owner does not instigate the appropriate mitigation measures, he or she will not be eligible for recovery funding should another flood occur.²⁷

Several structural mitigation measures are planned, including a new spillway for Chain Lakes²⁸ and more-substantial berms in High River.²⁹ The province also began a river scraping project to prevent overflow—a measure that was recommended in 2012 by High River town councilors, but was delayed as they did not have the authority or funds needed to begin at that time. A press release from the province said that the volume of debris culled from this procedure would be enough to fill 26 Olympic-sized swimming pools.³⁰

Where structural mitigation measures were deemed insufficient, the province of Alberta chose to give owners of high-risk properties (approximately 250 homes) the option to relocate, offering a full buyout based on their property tax assessment. As of October 28, 67 homeowners had expressed interest in relocating. The province has so far approved the purchase of 22 at-risk homes at a cost of \$13.8-million.³¹ The homeowners who declined compensation for their relocation will still receive funding to repair the damage to their property, but it will be a one-time payment. After they recover from the 2013 flood, they incur full financial responsibility for future damage.³²

Buyouts can be unpopular because of the cost of acquiring homes where large-scale flooding has occurred and the reluctance of residents to move. However, similar programs have been successful in the United States, where mitigation funds from the Federal Emergency Management Agency (FEMA) were used to relocate more than 30,000 at-risk structures since 1993.³³ Though not ideal, relocation is an important option to consider. Too often, by trying to make dangerous areas safer, the government encourages development in areas that are best avoided.³⁴

Incentives through insurance

Individuals rarely implement flood mitigation measures voluntarily. Writes Kunreuther:

A 1974 survey of more than 1,000 California homeowners in earthquake-prone areas revealed that only 12 percent of the respondents had adopted any protective measures (Kunreuther et al., 1978). Fifteen years later, there was little change despite the increased public awareness of the earthquake hazard. In a 1989 survey of 3,500 homeowners in four California counties at risk from earthquakes, only 5 to 9 percent of the respondents in these areas reported adopting any loss reduction measures.³⁵

This dissonance between risk awareness and preparedness is typical. In a 2005 report, GPC Public Affairs found that 61 per cent of Canadians believe an emergency kit is an important part of safety, but only 30 per cent of Canadians have one. Lest one think Canadians are dependent people, 78 per cent report that they do not think the government will take care of them in an emergency.³⁶ Canadians are mostly aware of the potential risks to their safety, and they do not expect much outside help. They also have a good idea of how they might prepare for such an eventuality, but most do nothing.

This inaction affects other mitigation measures as well. For example, there is little financial incentive for homebuilders to construct safer homes, as the majority of potential buyers are unwilling to pay the additional expense because they do not think they are at risk, nor do they like to be reminded of the possibility of disaster.³⁷ However, insurance could create the necessary incentives to prepare.

Paying risk-based premiums and deductibles is one of the best ways to involve property owners in flood mitigation and recovery. Though there are a number of ways that communities and governments can encourage preparedness, private insurers tend to price risk most accurately and in this way communicate important information to homeowners.³⁸

Insurance can help people both prepare for and recover from extreme weather events: The cost of insurance creates incentives for homeowners to mitigate risks so that they pay lower premiums. After a flood, insurance provides the funds needed to restore the home to its previous condition while government flood aid promises only to “reduce hardship.”³⁹

Unfortunately, overland flood insurance is currently unavailable to Canadian homeowners. Insurance distributes the cost of emergencies over a number of people. Because so few Canadians live in flood hazard areas, the cost of overland flood insurance has proved prohibitive for those who do. Flood insurance was available in Manitoba for a short time, but the premiums were too high to generate much interest.⁴⁰ The feasibility of flood insurance was studied in Ontario in 1976 and 1983 and was similarly found to be exorbitant.⁴¹

There may be a way around this problem. There are three main ideas for introducing flood insurance to Alberta and the rest of Canada that involve various levels of government involvement.

The first, proposed by the Alberta Liberals, is to create a provincial or national flood insurance program similar to crop insurance. While the details have yet to be revealed, it is worth noting that Alberta's 2006 Provincial Flood Mitigation Report rejected the idea of a formal public emergency insurance program partially because of redundancies with Alberta's Disaster Recovery Program (DRP), which already provides compensation from the public purse to those who claim damages following a disaster.⁴² The report states, "An American-style government insurance program would be a cumbersome, expensive and inefficient duplication of this program."⁴³

The Canadian Taxpayers Federation proposed a public-private partnership. It suggested that Alberta legislate mandatory private overland flood insurance for at-risk properties with unregulated premiums and deductibles and need-based vouchers for low-income households. Additionally, it recommends the establishment of a "federal natural disaster insurance mandate" to extend the program nationwide.⁴⁴ What is unclear in this case is if mandating insurance for at-risk homes would create a large enough market to solve the problem of exorbitant premiums. Additionally, if the program were extended to the rest of Canada, determining which homes are at risk would require further study, as mapping is inconsistent and the report suggests that the government mandate insurance for property owners who have made claims under the DRP.

Finally, a 2010 discussion paper prepared by Swiss Re suggests that Canada consider the U.K. model. In the United Kingdom, flood insurance is bundled with home insurance, which though not technically mandatory is generally required as a condition of a mortgage. Canadian properties with a high risk of flooding would pay higher prices, but all would carry some amount of insurance against flooding (which could result nearly anywhere depending on rainfall) regardless of whether they are situated within a flood hazard area.⁴⁵ The government would retain its role in flood mitigation and respond in exceptional circumstances, but insurance would cover rebuilding. The cost would be distributed over nearly all home-owning Canadians, which would keep prices reasonable.⁴⁶

These ideas are in their beginning stages. Once it is determined whether the insurance industry is willing to provide overland flood insurance, affected governments would have to re-evaluate their current programs to avoid contradictions and redundancy and work together to develop thorough and consistent flood-risk mapping to determine costs. Even if Canada were to adopt a system similar to the United Kingdom's, the government would still play an important role in determining and mitigating risk.⁴⁷ Co-operation between levels of government, private industry and individuals is crucial.

Recommendations

1. Mitigation ought to be a higher priority for all levels of government as well as individuals and communities. Floods are Canada's most common natural disaster and much can be done to prevent damage. A 2007 study of FEMA's Hazard Mitigation Grants found that flood mitigation had a benefit-cost ratio of 5:1, the highest return of all forms of disaster mitigation funding.⁴⁸
2. Though Alberta's provincial government is on the right track with its new land-use regulations, additional flood-proofing guidelines and structural mitigation measures, it should also continue the flood-risk mapping it began in partnership with the federal government in 1989.⁴⁹
3. Adequate flood-risk mapping would pave the way for overland flood insurance. When implemented, overland flood insurance has the potential to help communicate information regarding risk, provide financial incentives for individuals to prepare for the worst and assist with rebuilding. Bundling flood insurance with home insurance is one option that might make insuring for floods in Canada accessible.

The response of Albertans to the 2013 floods was in many ways exemplary; and they, along with the rest of Canada, have the potential to lead the way in flood mitigation as well. If communities, government and private industry can keep the momentum needed to realize these complex but worthwhile measures, the next flood may not be a disaster but a mere inconvenience.

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