

# *Cost of flooding*

## *Focus on urban flooding in Canada*



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## Canada's leading disaster research institute

- ✓ working to promote resilience to flood, earthquakes and climate-related risks
- ✓ International Centre of Excellence / Global Alliance of Disaster Research Institutes
- ✓ funded by governments and 120 member insurers
- ✓ established in 1997 / based at the University of Western Ontario



ICLR Office at Western

A large amount of water covers an area that is usually dry

- ✓ rivers and lakes overflow resulting in riverine flooding
- ✓ storm surge and tsunami resulting in coastal flooding
- ✓ intense rainfall overwhelms urban storm and sanitary systems
  
- ✓ the vast majority of the damage in Canada results from urban flooding

- ✓ map and model flood hazard and risk
- ✓ avoid risk – prohibit building in the flood plain / remove existing buildings
- ✓ prevent damage – protective infrastructure / including green infrastructure
- ✓ focus on watershed management and make room for the water



- ✓ municipal stormwater management masterplan
- ✓ municipal sanitary waste management systems
  - ✓ ageing systems, need installation standards, lack maintenance standards
- ✓ homeowners responsible for lot level action
  - ✓ install backflow protection, sump pumps, lot grading, replace laterals



- ✓ little riverine damage to homes between 1960 and 2010
- ✓ moderate damage since 2010 / large losses are possible
- ✓ significant urban flood damage to homes, losses rising
- ✓ 85% of homeowners buy insurance for urban flooding
- ✓ urban flood damage not covered by gov't assistance
- ✓ river flood insurance introduced in 2015
- ✓ poor homeowner awareness of flood risk



- ✓ extensive damage to public infrastructure
- ✓ most involves municipal infrastructure
- ✓ generous provincial / federal financial support
- ✓ governments choose not to buy insurance
- ✓ disincentives for risk reduction
- ✓ seeking to focus on the future climate



- ✓ only three major events damaged businesses over the past 50+ years
- ✓ Saguenay 1996, Calgary 2013, Fort McMurray 2020
- ✓ businesses motivated to manage and reduce flood risk
- ✓ denied access to financial support from government
- ✓ insurance is affordable and available
- ✓ strong incentives for risk reduction





- ✓ 1900 – 1970  
worst riverine flooding / absence of costing data  
absence of urban flooding
- ✓ 1970 – 2010  
little riverine and coastal flooding / good data  
emergence of urban flooding / good data
- ✓ 2010 – 2020  
river flooding in Alberta, Quebec and New Brunswick / good data  
urban flooding / good data

- ✓ BC requires replacement of all combined sewers across the province
- ✓ Edmonton requires backflow protection in new homes since 1980s
- ✓ several communities are subject to legal action
- ✓ asset management requirements for local governments
- ✓ emerging standards for new infrastructure
- ✓ increased focus on future climate
- ✓ insurance has repriced the risk and is designing incentives
- ✓ public awareness
- ✓ largest losses in Canada involve urban flooding

- ✓ the focus should be on supporting decisions about flood management
- ✓ needs differ for owners of homes, infrastructure and businesses
- ✓ focus on support to advance solutions
- ✓ needs differ by the nature of flooding
- ✓ urban flooding is a major issue in Canada

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