The ICLR Strategic Plan
2022 to 2026

Prepared by the Institute for Catastrophic Loss Reduction
Executive summary

The Institute for Catastrophic Loss Reduction (ICLR) looks to head in a bold new direction. Building on the Institute's foundation of science, knowledge and experience, ICLR will also aggressively work to encourage decision makers to implement actions to enhance disaster resilience. Four priorities for ICLR over the next five years are:

• Be Canada’s leading provider of disaster research and loss reduction advice.
• Advocate for construction resilient to damage from severe weather and climate change.
• Empower risk reduction by communities and building owners.
• Champion building back better following a major loss.

ICLR is recognized by the International Council for Science as an international centre of excellence and is Chair of the Global Alliance of Disaster Research Institutes. The Institute provides world class research on severe wind and basement flood damage reduction, and is a national leader in wildfire, earthquake and hail damage risk reduction. The Institute has created a remarkable network of hazard and loss prevention researchers. The Institute will continue to build and share its knowledge about practices to reduce the risk of loss from major hazards in Canada. The Institute will develop its understanding of decision science and behavioural economics to better influence decision makers.

Science can provide the foundation for decisions about where and how to build resilient buildings and public infrastructure. ICLR will press to include our understanding of the science in practices adopted by communities, homebuilders, the construction industry, governments and those responsible for building codes and standards. We will collaborate with home builders in pilot studies to test the real world application of ICLR's findings. We will advance our findings about how to prevent inflow and infiltration of stormwater into sanitary sewers, one of the leading factors contributing to basement flood damage. ICLR will help develop a national standard to reduce severe wind and tornado damage risk in new homes and implement the national guide for wildfire resistant homes construction.

The Institute will also press existing homeowners and businesses to retrofit their buildings and encourage governments to introduce regulations and incentives to strengthen resilience. ICLR will expand its Showcase Homes program and, in 2022, celebrate the first 25 years of insurance industry leadership through ICLR to advance disaster risk reduction by establishing a display centre to provide a hands-on experience demonstrating opportunities to reduce the risk of damage.
ICLR’s Insurers Rebuild Stronger Homes program will demonstrate insurance industry leadership to increase disaster resilience in recovery from a major disaster. Learning from the success to advance hail damage reduction in Calgary, ICLR’s Resilience in Recovery program will share our findings to support action by local governments seeking to build back better after a major loss. Pre-disaster recovery planning can be used to secure transformative improvement in resilience in recovery from a large loss. The Institute will press to build on industry leadership to establish a national commitment to build resilient buildings and public infrastructure in recovery.

An ambitious plan to advance implementation of disaster resilience.

Science can provide the foundation for decisions about where and how to build resilient buildings and public infrastructure.
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Institute for Catastrophic Loss Reduction

VISION
Disaster-resilient Canadians, confident in their capacity to cope with and recover from flooding, wildfire, earthquakes, severe wind, hail and other natural hazards due to the implementation of proven risk reduction actions.

PURPOSE
The purpose of ICLR is to develop scientific knowledge and champion implementation of solutions to make Canadians resilient to loss from natural hazards, with a focus on catastrophic events.

MISSION
Demonstrate objective and independent science thought leadership by providing science, research and evidence-based disaster risk management knowledge. Support Canadians to implement actionable solutions that reduce the risk of loss of life, injury and property damage caused by flooding, wildfire, earthquakes, severe wind and hail. Identify and support sustained actions by communities, homeowners, businesses, governments and others that improves society’s capacity to adapt to, anticipate, mitigate, withstand and recover from natural hazards.

PRIORITIES (ICLR supports the Sendai Framework for Disaster Risk Reduction)
- Understand disaster risk and develop effective solutions as the foundation for effective action to reduce the risk that hazards become disasters, including extreme events.
- Strengthen disaster risk governance through partnership, collaboration and clear delineation of responsibility essential for effective risk management.
- Investing in loss reduction is critical to reduce existing vulnerabilities and prevent risk creation.
- Transformative enhancement of disaster resilience is possible when rebuilding following a disaster.
PRINCIPLES

- Partnership and collaboration are the best approaches to resolve shared problems, particularly public safety concerns like disaster resilience.
- A culture of disaster preparedness is essential to promote individual and community actions to reduce the risk of loss and property damage.
- Land use decisions and the design, construction and operation of buildings and public infrastructure can prevent the creation of new risk.
- Preparedness for extreme or catastrophic hazards will significantly reduce most of the risk of loss and damage from more frequent, moderate events.
- Homes, buildings and public infrastructure should be designed and built to cope with the future climate and anticipated climate extremes.
- Development of sustainable solutions to effectively address complex disasters often requires objective, rigorous and multi-disciplinary analysis.
- Transdisciplinary research is essential to understand the risk of loss and determine effective solutions to build society’s resilience to disasters.

ICLR has established itself as a centre of excellence and a valued source of knowledge about best practices for risk reduction across all major perils.
Environmental scan

Canada’s insures pay $2 billion a year in catastrophe claims. Damage doubled every 5 to 10 years over the past forty years, adjusted for inflation. This is 3 times the rate of growth in the economy – an unsustainable trend. Losses will continue to rise without significant change in the behaviour of property owners and governments. Factors driving losses higher include more properties at risk, riskier behaviour by owners and increase in the frequency and severity of climate-related hazards.

Recently Canada experienced large losses from basement flooding, wildfire (2016), severe wind (2018), overland flooding (2019) and hail (2020). Industry catastrophic claims paid over the last five years were similar in value across these hazards. In contrast, prior to planning for our strategy five years ago, industry catastrophe damage claims were dominated by basement flood damage. Fortunately, ICLR’s research and loss prevention advice address all of the major hazards in Canada.

ICLR research finds that the knowledge exists to significantly reduce damage from most hazards. Unfortunately, good loss reduction practices identified by ICLR are not in place to protect most buildings and infrastructure in Canada. Most homes, for example, do not have sewer backflow prevention, fire resistant siding or an impact resistant roof. This includes most homes located in zones at high risk. Canadians must do more to implement proven risk reduction solutions.

ICLR has begun to apply decision science and behavioural economics to secure change in the behaviour of asset owners to encourage preparedness and protective action. This approach moves beyond awareness and financial incentives to develop comprehensive strategies to optimize efforts to influence behaviour.

Development is underway in zones identified at high risk of wildfire, earthquake and some other hazards. Preventing creation of new risk requires that quality hazard maps are effectively applied to better manage societal growth to stop expansion in high risk areas, like identified flood plains, or require additional resilience measures if new construction is allowed.

Impactful management of the risk of loss from severe weather, wildfire and earthquakes will continue to be critical issues for Canadian insurers and governments across the country over the next five years and beyond. ICLR has established itself as a centre of excellence and a valued source of knowledge about best practices for risk reduction across all major perils.

Research and outreach efforts by ICLR identify and directly address the underlying drivers that have been leading to increasing disaster damage in Canada. The Institute’s research and outreach plans are ambitious, but critical to provide a science foundation to actions to confront the risk of large losses.
ICLR is proud of the achievements completed over the course of the 2017-21 Strategic Plan period. Important progress was evident for each of the priority issues identified in 2016.

**Guide actions to reduce the risk of basement flooding**

ICLR’s comprehensive research program determined the major factors contributing to basement flood losses and identified solutions that should be implemented by property owners and local governments. Institute findings influenced insurance industry actions and government practice for individual and community-based solutions. ICLR operates the world’s only basement flood protection lab in partnership with the University of Guelph. ICLR will complete development this year of a basement flood protection display centre with support from TD Insurance. Scientific knowledge about basement flood damage reduction has advanced significantly, driven by ICLR.

**Champion the construction of disaster resilient homes**

Over the past five years, ICLR documented new home design and construction practices to reduce the risk of loss from basement flooding, wildfire, severe wind and hail. ICLR is now established as a credible partner with building code agencies, homebuilders and other stakeholders. One builder is applying ICLR wind damage features in 100 new homes. Some local governments co-fund with ICLR financial incentives for new home builders that install wind resilience features. Some ICLR proposals are now included in the residential building code and several others are under consideration.

**Support efforts to enhance the resilience of existing homes**

ICLR has developed a full range of brochures and other information that member insurers can share with policyholders providing state-of-the-science information on how to best protect their family and property from severe weather and earthquakes. The Institute also completed Showcase Homes retrofits across the country to demonstrate actions to reduce risk of loss from extreme events. In particular, ICLR is providing leadership to champion hail damage reduction efforts following the 2020 Calgary hailstorm, including launch of ICLR’s HailSmart™ program and support for Calgary’s impact resilient roof rebate program.
ICLR is now established as a credible partner with building code agencies, homebuilders and other stakeholders.

**Identify options to expand the role of private insurance**

Residential overland flood insurance was introduced in Canada in 2015. Coverage is now widely available across the country. Indeed, more than half of homes with low to medium risk of flooding now purchase flood insurance. The ICLR/Swiss Re report *Making flood insurable for Canadian homeowners* and other ICLR research helped to provide the foundation for action. ICLR is also supporting IBC’s earthquake solutions lobby, including development of policy options to address the earthquake insurance gap for homeowners.

**Financial health**

ICLR secured more than $6 million in project funding over the past five years from governments, member insurers and others to support expansion of our efforts beyond that supported by assessments.
Research leadership

ICLR’s research goals:
• Be Canada’s leading provider of knowledge about practices to prevent disaster loss.
• Understand how behavioural science research can be used to encourage implementation.

The need for ICLR to provide information and research on disaster risk reduction knowledge continues to grow. More resilient communities, for example, is one of the pillars of Canada’s new climate change strategy. The 2021 federal budget renewed the Standards to Support Resilience in Infrastructure Program, work to complete flood maps for higher-risk areas and funding to make communities resilient to wildfires through mapping and the Canadian Interagency Forest Fire Centre. ICLR science will also support homeowners, builders and local governments.

Canada’s leading source of disaster loss prevention science
The Institute is recognized by the International Council of Science as an international centre of excellence in disaster research. ICLR is a founder of the Global Alliance of Disaster Research Institutes. The Institute led or contributed significantly to most research projects concerning basement flooding, wind and wildfire resilient homes since release of the Pan-Canadian Framework on Clean Growth and Climate Change. ICLR established the expertise to advise insurers, municipalities and provinces on disaster risk reduction actions for homes and public infrastructure, and has guided new projects concerning disaster resilience for low-rise residential buildings for the federal government.

The need for ICLR to provide information and research on disaster risk reduction knowledge continues to grow.
ICLR will continue to work with researchers in Canada and internationally to grow its network of academics and scientists. This network will expand extensive research programs concerning high wind and basement flood. ICLR will also strengthen research concerning hail, wildfire, infrastructure and behavioural economics.

ICLR generates funding through special projects conducted for governments and member insurers. As an industry partner for projects with university-based researchers across Canada, ICLR and researchers secure additional government funding for Institute-directed disaster resilience research projects. ICLR will participate in projects aligned with Institute objectives and will continue to work with our academic research associates to leverage government funding for research projects.

**Making the case for implementation**

ICLR conducts innovative research into resilience benefits and costs to help make the case for change. Innovations in engineering economics and well-crafted communication will confirm ICLR’s leadership to support implementation. Significant gaps remain in effective strategies to implement disaster risk reduction measures. Rigorous analysis of benefits and costs, behavioural economics and decision science will be applied to overcome the barriers that restrict action by households, governments and decision makers.
Resilience in recovery

ICLR’s goals:

• Launch ICLR’s Insurers Rebuild Stronger Homes program to showcase industry leadership.

• Build a national program to build back better in recovery from major loss events.

There is scope to achieve transformational improvement in resilience during recovery from a major loss event. The Mayor of High River, Alberta, for example, describes his community as the most flood resilient in Canada because of action taken to build back better after the 2013 flood. ICLR encouraged Calgary to introduce a hail damage reduction awareness campaign, rebates for homeowners who install impact resilient roofs and request a change in Alberta’s building code during the recovery from the 2020 hail storm. ICLR’s Resilience in Recovery program will prepare to respond to future loss events to introduce resilience action.

Insurance industry leadership

The Institute’s Insurers Rebuild Stronger Homes program will showcase industry leadership in recovery. ICLR seeks to demonstrate the action of participating insurers to rebuild homes that experience large losses with the addition of two or three meaningful and visible damage reduction features that were not previously found in the home. These features significantly reduce the risk of damage and support industry efforts to encourage protective action by homeowners. The program will demonstrate the role of insurance to facilitate recovery and focus on the importance of action to build resilience.

ICLR will respond to future loss events to support science-based community action to build back better.
**Champion resilience in recovery**

Progress to advance hail damage reduction in Calgary demonstrates that ICLR’s *Resilience in Recovery* program can help secure meaningful change in resilience after a large loss. ICLR will respond to future loss events to support science-based community action to build back better. We will focus on increasing the awareness of actions property owners, local governments and other stakeholders should take to build resilience in recovery.

ICLR would like to establish a national resilience in recovery program learning from successful build back better programs from the United States and Japan. A critical element absent in Canada, but emerging in British Columbia and Alberta, is pre-disaster recovery planning. Alberta is the leading jurisdiction in Canada for recovery management and application of lessons learned, particularly for wildfire, which ICLR can help evolve into pre-disaster recovery planning. British Columbia looks to build recovery planning into the modernization of its disaster management program and has demonstrated its willingness to enhance resilience in recovery.

In 2008, the Disaster Financial Assistance Arrangements program was modified to allow the Canadian government to provide funding to the provinces to build back better in recovery. We understand, however, that no funds have been paid for post-disaster resilience. We believe that a foundation has been established to build a national program for building resilience in recovery. It is bold and very ambitious for ICLR to identify and address this file.
Empower risk reduction by communities and building owners

ICLR’s goals:
• Establish an ICLR display centre.
• Expand ICLR’s Showcase Homes program.

Canadian homes are generally well built and are of good quality, unfortunately few contain the good practices measures identified by ICLR to reduce the risk of damage from climate-related hazards. The Institute will work with member insurers, local governments and other partners to encourage homeowners to add these features during home renovations.

Display centre
ICLR will establish a hands-on demonstration centre to profile and explain a range of measures that can be incorporated into new construction and home renovations to protect against damage from severe weather. The first displays will temporarily be located in Edmonton, with a focus on basement flood damage reduction. Over the next five years, the centre may be located at the WindEEE Research Institute at Western University and will address basement flooding, severe wind, wildfire and hail.

Displays will showcase specific interventions to protect homes against climate-related risks. ICLR and member insurers will be encouraged to host events at the centre. The displays will be designed so they can move to temporary settings, like ICLR member company offices, conventions and home shows.

Showcase Homes
ICLR has conducted more than a dozen Showcase Home retrofits across the country to profile measures that can be taken to protect loved ones, homes and contents against a range of hazards. The Institute also retrofitted several daycare centres and one senior’s centre.

ICLR will expand its Showcase Homes program, working with member insurers, local governments and other partners to complete more building retrofits across the country. An immediate focus will be on a basement flood damage reduction initiative with TD Insurance. Projects will eventually address all major hazards.

These initiatives build on the Institute’s Designed for safer living® and Showcase Homes programs. ICLR has published seven titles under the Designed for safer living® program’s ‘Protect your home from’ publication series (Protect your home from snow & ice storms, severe wind, basement flooding, earthquakes, wildfire, hail and extreme heat) and four under the program’s ‘Focus on’ series (Focus on sump pump systems, backwater valves, emergency generators, flood mapping and types of flooding). All publications are available in English and French.
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