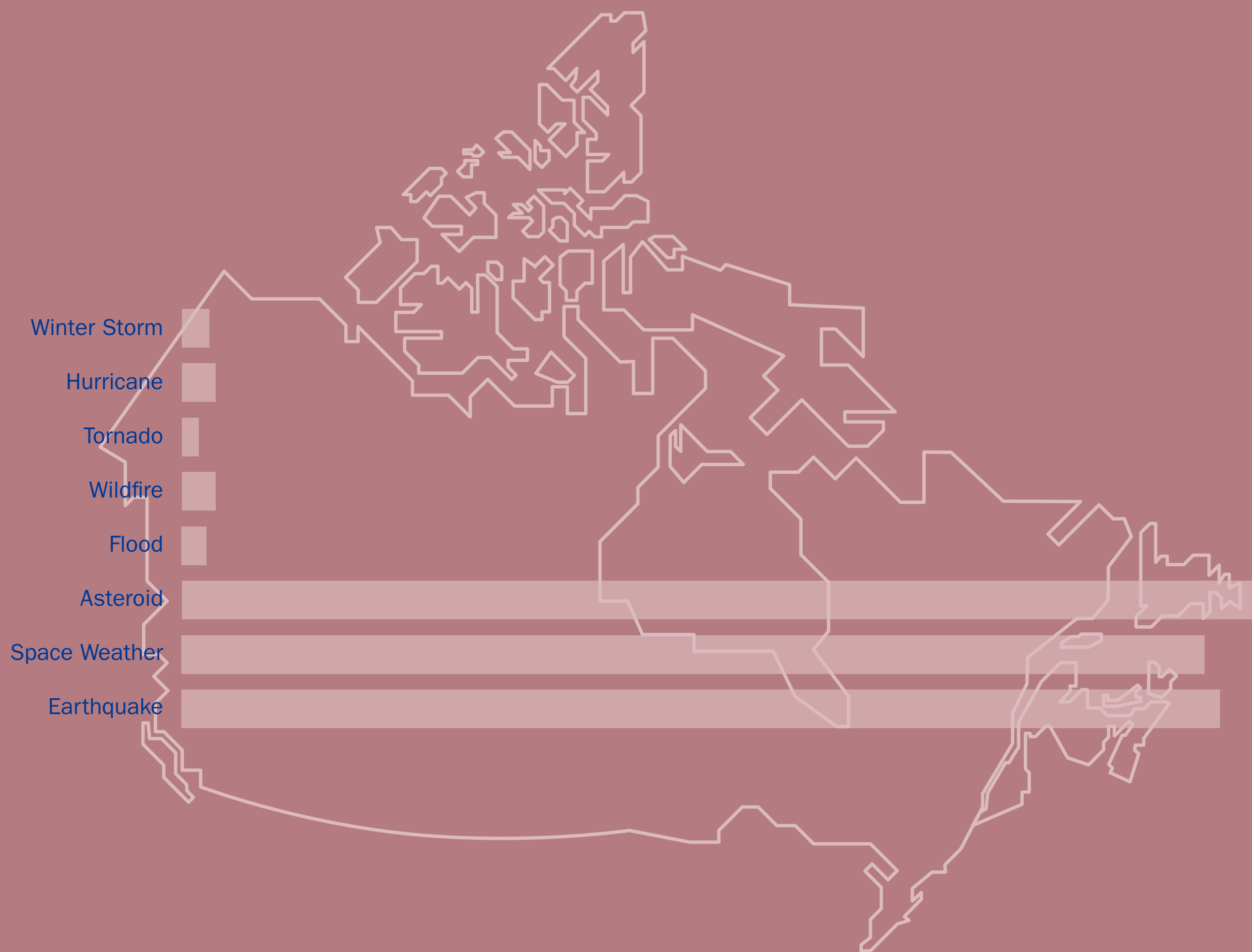
PACICC
Property and Casualty Insurance Compensation Corporation
Société d’indemnisation en matière d’assurances IARD

2016 UPDATE

Why insurers fail

Natural disasters and catastrophes



By
Grant Kelly

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Executive summary

In 2013, the Property and Casualty Insurance Compensation Corporation (PACICC) published an assessment detailing the potential financial impact that a catastrophic event, such as a major earthquake, would have on the solvency of Canada's property and casualty (P&C) insurance industry. The 2013 report was based on 2011 industry data available at the time. The purpose of this paper is to update of the earlier estimates using information about the state of the industry in 2016.

PACICC is a consumer protection agency whose mission is to assist Canadian policyholders in the unlikely event that their insurance company becomes insolvent and is closed by regulators. PACICC currently has no role in responding to natural disasters until an insurance company fails. Action can and should be taken now to prepare for a catastrophic earthquake, an event with the potential to overwhelm the insurance industry. This paper shows that despite strong regulation and the best efforts of private insurers to prepare for a very large earthquake, there are clear definable limits to the capacity of the private insurance system.

Key findings

Canada's P&C insurers are ready to respond (with no impact expected on the solvency of well-run, healthy insurance companies) to a large disaster resulting in insurance claims of up to $25 billion. This level of preparedness is five-times larger than any catastrophe ever experienced in Canada to date and likely higher than that in place in any country around the world.

The industry would also likely survive a larger event, resulting in insured losses between $25 billion and $30 billion. However, multiple insurers would become insolvent. PACICC has never been required to respond to multiple member insolvencies as a result of a single event. The majority of insurers are likely to experience significant financial impairment and claims settlement for some consumers may be delayed. At this level of disaster, Canada's insurance industry would experience significant problems.

A catastrophe resulting in insurance claims exceeding $35 billion would likely overwhelm the capacity of Canada's insurance industry. Multiple insurers would be distressed and could fail, including smaller regional insurers and large national insurers. These failures would cause contagion in the industry. PACICC was not designed to protect insurance consumers from this magnitude of risk. At this level of catastrophe, the Canadian economy could be permanently damaged.

Importantly, options exist to anticipate and manage the risk of loss from unlikely high-consequence events. In particular, a backstop program can be designed where the insurance industry is responsible for most extreme events, but the government sets out the role it would play to support the response at the margin of a major catastrophe.

Canada's preparedness for natural hazards

Environment Canada issues more than 10,000 severe weather warnings in Canada each year. Almost none of these extreme weather events have caused an insurer to fail over the past 60 years.

Many other industrialized nations, however, have experienced very large catastrophes, much worse than anything experienced in Canada. Some of these failures occurred in modern, well-functioning societies. Examples of these types of events include:

- In 1906, an earthquake struck San Francisco. About 3,000 people died, 80 percent of San Francisco was destroyed and 12 insurance companies were declared insolvent.[1]
- In 1992, Hurricane Andrew made landfall in Homestead, Florida as a Category 5 storm. More than 730,000 houses and buildings were damaged or destroyed and nine insurance companies were declared insolvent.
- In 2011, Christchurch, New Zealand experienced a powerful earthquake that killed 185 people, severely damaging the city and causing two insurance companies to become insolvent.

This paper explores the risk that insurance companies in Canada could fail as a result of a natural disaster. A particular focus is on large disasters and catastrophes. Throughout this paper, the term 'large disaster' is used to describe an event with insured losses greater than one percent of Gross Domestic Product (GDP), which is approximately $20 billion for Canada. A 'catastrophe' means a disaster with insured losses greater than 1.5 percent of GDP; for Canada this would be claims in excess of $30 billion.

Preparedness of Canada's P&C insurers

It is possible to measure the resources (in dollars) available to Canadian P&C insurers in responding to natural hazards.

Total resources available = Capital in excess of the regulatory minimum + reinsurance purchased.

[1] Winchester, Simon, *A Crack in the Edge of the World*, Harper Perennial, 2005, p.324.

Capital

The first pool of money available to protect Canadian P&C insurance consumers is the capital held by P&C insurance companies. Capital is the amount of money that would be left over if all the insurers in Canada sold all of their assets and paid all of their bills. In total, P&C insurers hold approximately $50 billion of capital to support their business. This is the pool of money that underpins all of the insurance underwritten in Canada – from auto insurance in Prince Edward Island to marine insurance in British Columbia. Over the long-run, Canadian insurers hold more capital relative to the size of the insurance market. In 1975, for example, insurers held 50 cents in capital for every dollar in P&C insurance premiums collected. Today this ratio is $1.05 in capital for every dollar in insurance. As a consequence, the capital base supporting the financial capacity of Canada's insurance industry to pay claims has never been stronger.

Canada's regulatory system, like all industrialized nations, seeks to maintain the solvency of P&C insurers by requiring that they hold a minimum level of capital. The most direct numeric example is the Canadian Council of Insurance Regulators' Minimum Capital Test (MCT).[2] The MCT is risk-based, meaning that it requires an insurer to assume its assets are worth less, and its liabilities are higher, than recorded on the insurer's balance sheet. This makes the MCT a tougher test for insurers.

In the Canadian regulatory system, insurance companies must maintain an MCT score in excess of 150%. This is the threshold level below which, in normal circumstances, regulators would intervene. Insurers typically report MCT scores much higher than 150%. An insurer with a MCT score below 100% is distressed and in need of additional capital. In 2016, for example, the average MCT reported by insurers in the industry was approximately 254%.

The difference between the 150% minimum MCT and the industry average of 254% is very important. This is the maximum amount of capital that insurers could gather to pay claims resulting from a catastrophe without impairing their solvency or their ability to provide all of the other insurance that supports the Canadian economy.

[2] There are two types of insurers incorporated in Canada. A Canadian incorporated insurer is required to complete the MCT. A branch insurer is required to complete the "Branch Adequacy of Assets Test". In this paper, the term MCT encompasses both tests. http://www.osfi-bsif.gc.ca/app/DocRepository/1/eng/guidelines/sound/guidelines/B3_e.pdf.

Reinsurance

Reinsurance is an important tool that Canadian insurers use to reduce their solvency risk. The global reinsurance industry is vital to Canada's ability to rebound from a major disaster because, following such an event, reinsurers will provide the majority of the funds that primary insurers will require to pay disaster claims of Canadians.

OSFI's Reinsurance Guideline requires every insurer to develop a Reinsurance Risk Management Plan and to perform a sufficient level of due diligence on its reinsurance counterparties to ensure that the insurer is aware of its counterparty risk and is able to assess and manage such risk. Simply speaking, insurers must make sure that their reinsurers will be able to pay claims in full and on time. The Guideline also states that insurers should not rely solely on rating agencies, reinsurance brokers or other reputable agents or intermediaries to undertake this analysis on behalf of the company.

Reinsurers have honoured their commitments following large disasters and catastrophes in other countries. PACICC assumes in this analysis that all reinsurers will honour their contracts and provide funds to Canadian primary insurers following a catastrophic event in Canada.

The challenge facing PACICC is that there is little public disclosure on the amount of reinsurance that Canadian insurers purchase. There is no source that discloses how much reinsurance could flow into Canada to each company. Canadian insurers that are publicly listed on a Canadian stock exchange now disclose, in the notes to their financial statements, the limits and the attachment point of their reinsurance programs. Where this information is available, it has been used in this paper.

PACICC estimates – based on information it has collected in confidence from reinsurance experts – that Canadian insurers currently purchase approximately $24 billion in reinsurance capacity. This includes reinsurance purchased from licensed and unlicensed reinsurers. Licensed reinsurers are regulated in Canada. Unlicensed reinsurers are regulated by other nations. In 2011, the same sources estimated the industry's reinsurance capacity at approximately $18 billion.

The increase in reinsurance in place over the past five years includes a one-time jump due to a regulatory change. In 2015, OSFI changed Guideline B-9 and required insurers to become better prepared for a larger earthquake. While it is likely that insurers purchase slightly more reinsurance each year, it is unlikely that the volume will climb by $6 billion every five years.

In summary, PACICC estimates that Canada's P&C insurance industry can generate tens of billions of dollars to assist Canadian policyholders in recovering from a catastrophic earthquake.

Experience shows, however, that the damage burden and the extent of financial preparedness will not be shared equally across insurance companies. Insurers have different risks. They individually decide on how much reinsurance to purchase. Solvency risk arises when the claims from a catastrophe are higher than the financial resources available to an individual insurance company.

The role of PACICC

PACICC presently has no role in responding to a natural disaster unless a member insurer fails and is closed by its regulator. PACICC's mission is to ensure that Canadian insurance policyholders do not experience undue financial hardship in the unlikely event that a member insurer fails. The cost of settling claims against a failed insurance company is paid by PACICC through assessments charged to member insurance companies. Insurance legislation requires companies operating in Canada to be PACICC members, unless they are members of a farm mutual guarantee organization or operate exclusively in providing specialty lines of insurance coverage not covered by PACICC, like mortgage, marine or aviation insurance. PACICC covers approximately 95% of all P&C insurance written in Canada.

If an insurer does fail as a result of a natural disaster, a court-appointed liquidator will manage the wind-up of the company. PACICC will support the liquidator as they settle the estate of the insolvent insurer, including the settling eligible policyholder claims and the refund of unearned premiums. Liquidators are also responsible for settling employment contracts and pension plans, exiting leases and other contracts. Settling the estate of an insurance company is a complicated and expensive process that can take 10 years or more to resolve.

PACICC's payments to policyholders of a failed insurer ensure the timely return of unearned premiums and the settlement of claims, within established limits. This process has been in place for more than 25 years and has successfully responded to the needs of policyholders of a dozen failed insurance companies, without imposing undue hardship on the insurance industry.

For the purposes of this paper, the total assessment levied on surviving insurers by PACICC for any insolvent insurer was estimated to be the total of:

- Unpaid claims on the insolvent insurer's balance sheet as of December 31, 2015;
- 70 percent of unearned premiums; and
- Net retention of claims arising from the catastrophe.

PACICC assumes that all reinsurance owing to the insolvent insurer is collected and that this reinsurance is available to pay claims. In this case, PACICC's obligation would be the net retention amount. This also assumes that the insolvency clauses required by OSFI's Guideline B-3 are credible. An insolvency clause is part of the reinsurance treaty that states how the contract will be treated if either the primary insurer or the reinsurer becomes insolvent. For the purposes of this analysis, PACICC assumes that reinsurers will pay their contractual obligations if the primary insurer becomes insolvent. However, experience demonstrates that reinsurance recovery for insolvent insurers can be contentious, and often requires more time to resolve than for other insurers.

The PACICC assessments are allocated to the surviving insurers that participated in the same markets as the failed insurer, based on market share, by line of business. For example, if the insolvent insurer only sold personal property insurance in B.C., then PACICC would assess the cost of the insolvency to the remaining companies that sold this product in B.C. If they also sold insurance in Alberta, PACICC would assess the costs to insurers in both Alberta and B.C., based on the relative share of premiums in each market.

The accounting impact of PACICC's assessment on insurers is governed by the guidance in International Accounting Standard 37, *Provisions, Contingent Liabilities and Contingent Assets*. This Standard outlines the accounting treatment for provisions (liabilities of uncertain timing or amount), together with contingent assets (possible assets) and contingent liabilities (possible obligations and present obligations that are not probable or not reliably measurable).

An obligating event is an event that creates a legal or constructive obligation and, therefore, results in an entity having no realistic alternative but to settle the obligation [IAS 37.10]. A PACICC assessment would meet these criteria. Insurers that survived the earthquake would therefore be required to recognize the full liability on their balance sheet when presented with a PACICC assessment. In summary, the accounting impact of the PACICC assessment means that it lowers the MCT of any member insurer receiving the assessment.

Modeling the solvency risk of a catastrophic event for insurers

PACICC seeks to estimate three levels of events on Canada's P&C insurance industry:

1) The size of an earthquake that could cause the first insurer to fail;

2) The size of an earthquake that could cause multiple insurers to fail; and

3) The size of an earthquake that could overwhelm Canada's insurance industry.

PACICC modeled losses resulting from hypothetical major earthquakes in B.C. and the resulting impact on Canada's insurers. The breakdown of total losses by line was estimated by RMS, a leading catastrophic-risk modeling company. RMS provided a total loss estimate for personal property, auto and commercial lines. PACICC further categorized commercial lines into commercial property and commercial liability. The following breakdown was used:

Table 1: Modeled catastrophic losses by line of business

	PP	Auto	CP	Liability
$20B	51.8%	0.4%	30.0%	17.8%
$25B	52.0%	0.4%	31.0%	16.6%
$30B	53.7%	0.5%	31.0%	14.8%
$35B	54.1%	0.6%	32.0%	13.3%
$40B	54.4%	0.6%	33.0%	12.0%
$45B	54.4%	0.6%	33.0%	12.0%
$50B	54.8%	0.7%	34.0%	10.5%

Earthquake claims were assigned to insurers operating in the province according to market share for each line of insurance.

Measuring the size of a natural disaster by dollar value of damage allows PACICC to overcome the uncertainty within earthquake models. For example, the models estimate the "average" earthquake that will occur in a given time period. As a guarantee fund, PACICC must be concerned about a worse-than-average earthquake. For example, large earthquakes can result in broken gas lines causing fires. Fire-following the earthquake has proven difficult to model. The models do not estimate business interruption claims or damage from tsunamis. By using a dollar figure, PACICC mitigates these uncertainties.

Impact on insurer solvency

PACICC's model estimates the financial resources that each insurer could use to pay claims resulting from an earthquake. This would not be a business-as-usual event for insurers or regulators.

The model assumes that regulators would exercise forbearance in their current minimum MCT score of 150% to allow insurers to operate during a transition period with a MCT score that must exceed 100%. There is not a hard rule within the Canadian regulatory system that regulators must act at a specific MCT score. A regulator is empowered to close an insurer when they lose confidence in the financial viability of the insurer. A MCT score below 100%, however, means that the insurer is distressed because its financial liabilities exceed its available assets and action is required. The PACICC model assumes that regulators maintain confidence and will work with insurers to recover where possible.

A distressed insurer may not necessarily be declared insolvent. Many insurers in Canada operate as part of an insurance group. This "family" of insurers operates in a holding company structure. It is conceivable that sufficient capital exists within the group to save the distressed insurer. Saving means transferring money and raising the MCT score for all insurers within the group above 100%.

There is an additional consideration for branch insurers. A branch insurer operates in Canada as a licensed company, but retains ties to a parent insurer in another country. When establishing a branch in Canada, the parent must pledge 10% of its total capital base to the Canadian operation. It is likely that a distressed branch would not fail if its foreign parent had enough capital.

PACICC's Assessments

The results of the PACICC model are shown in Table 2.

Table 2: PACICC modeling of potential failures due to catastrophes

Number of companies

	Distressed Insurers	Distressed insurers that become insolvent	Insurers failing due to group problems	Failing due to PACICC Assessment
$5B	0	0	0	0
$10B	0	0	0	0
$15B	0	0	0	0
$20B	2	0	0	0
$25B	6	1	0	0
$30B	26	9	2	0
$35B	28	18	7	Entire industry
$40B	30	29	22	Entire industry
$45B	34	31	Entire industry	Entire industry
$50B	42	35	Entire industry	Entire industry
$55B	47	46	Entire industry	Entire industry

For an event causing approximately $20 billion in insurance claims, two insurers are likely to be severely distressed, but are not declared insolvent. It is possible, but unlikely, that a single insurer could fail due to a smaller event if its mix of policies sold was concentrated in an area hit hard by the event. PACICC has experience in dealing with the insolvency of a single insurer and this should not cause problems for PACICC or for the industry as a whole.

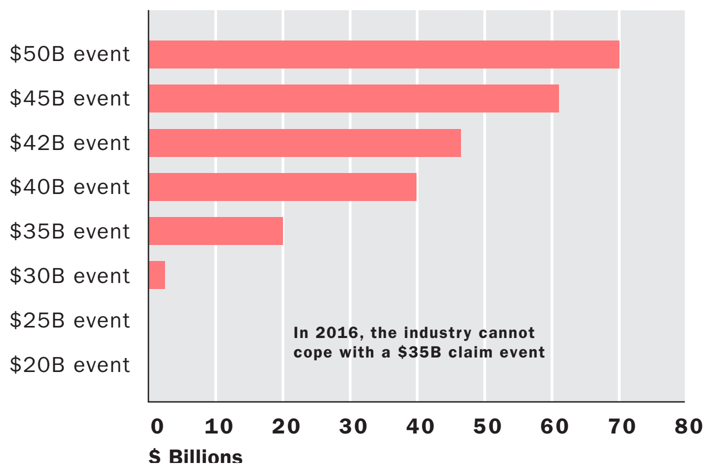
PACICC estimates that the first insurer is likely to fail once insurance claims reach $25 billion. Five other insurers are distressed, but are able to find additional capital from other members of their group or parent. It is at this point that PACICC would become involved. Despite the remarkable loss and damage experienced, the insolvency of a single insurer is a challenge that PACICC and the insurance industry has successfully addressed previously.

The assessments required by PACICC to protect policyholders reflect both the shortfall in the insolvent insurer's estate due to the catastrophe, plus all existing claims on the books of the insurer. In a normal liquidation, PACICC would seek to reduce the amount of the assessment by accessing funds within the failed insurer. However, when an insurance company enters into liquidation – whether it is an insolvent insurance company or a solvent subsidiary of a distressed foreign parent company – normally the assets of the estate are frozen by the Court until the liquidator has had an opportunity to assess the claims against the insurer's estate. Following a large disaster, it is unclear what will become of the bonds and stocks on the insurer's balance sheet. It is likely that some of these assets could be impaired.

PACICC will pay the eligible claims of policyholders with a failed insurer – this includes both normal claims and claims related to the disaster. It is PACICC's experience that almost all claims on the books of insurers will be below PACICC's policy limits. This means that the same resources set aside by an insurer to pay claims resulting from the catastrophic loss could be required to pay for the insolvency of a failed insurer.

PACICC assessments 2016

PACICC model, billions of dollars, projected 2016 industry results, $24B reinsurance



Once claims reach $30 billion, 26 insurers would be financially distressed. Of these companies, PACICC estimates that nine insurers fail and would be closed by regulators. An additional two insurers would fail because the losses of a member of the group exceed all of the capital and reinsurance available within the group. This would severely tax the industry's resources and require PACICC to assess member insurers to pay the outstanding claims of these nine insurers. The resulting assessment to PACICC members would be larger than any assessment that PACICC has ever imposed on its membership. Under this scenario, PACICC member insurers would still be able to fully meet their assessment obligations – although there is a risk that the payment of claims made by policyholders of insurance companies that fail may be delayed.

Once claims reach $35 billion, 28 insurers would be financially distressed. Of these companies, PACICC estimates that 18 insurers would fail and be closed by regulators. The resulting PACICC assessments would be large enough that they would cause contagion – leading to the failure of three additional national insurers (who survived the initial catastrophe). PACICC could assess the remaining insurers for these additional insolvencies. At this point, the system would be unable to raise sufficient funds to pay the claims of policyholders of insurers that fail. A systemic problem has arisen. A catastrophic event causing $35 billion in insurance claims simply exceeds the capacity of Canada's P&C insurance industry.

Summary of findings

The Canadian insurance industry is prepared for a large disaster. Canada's P&C insurers are ready to respond – with little or no threat to the solvency of well-run healthy insurance companies – to a disaster resulting in insurance claims of up to $25 billion. This level of preparedness is roughly five-times larger than any catastrophe ever faced in Canada and is likely the highest level of preparedness in the world.

The industry could likely survive a larger disaster, resulting in insured losses between $25 billion and $30 billion. However, multiple insurers would become insolvent. PACICC has never been required to respond to multiple member insolvencies. The majority of insurers are likely to experience significant financial impairment. Claims settlement would likely be delayed.

A catastrophe resulting in insurance claims exceeding $35 billion would overwhelm the existing capacity of Canada's insurance industry. This event would exceed PACICC's ability to address the needs of policyholders. Contagion would occur within Canada's P&C insurance industry. PACICC was not designed to protect insurance consumers from this level of catastrophic loss.

Canada's leading academics and other researchers agree that Canada will eventually suffer a catastrophic event similar in size to those impacting Japan, New Zealand, Chile, and the United States. There are low-probability, high-consequence catastrophes that have the potential to overwhelm the insurance system.

Risk of contagion in 2016

Billions ($) of insured losses

A catastrophic loss greater than $35 billion would exceed the capacity of Canada's Insurance Industry.

Between $25 billion and $30 billion, multiple PACICC members likely to fail. Some additional insurers fail due to PACICC assessments. PACICC could experience liquidity problems.

Canadian insurers can fully respond to a disaster shock up to $25 billion.

Source: PACICC

Recommendations

PACICC's mission is to assist Canadian policyholders in the unlikely event that the insurance company protecting their homes, cars or businesses fails. Our research finds that the P&C insurance companies that provide this coverage are prepared for a disaster several times larger than anything experienced in Canada to date. The private P&C insurance industry is financially prepared for a large disaster.

However, there are limits on the industry's capacity. It is PACICC's assessment that a catastrophic event causing insurance claims that exceed $30 billion could create a national problem for Canada. The P&C insurance industry would require support from the Government of Canada in order to fulfill its normal role in rebuilding the Canadian economy.

Canada can be better prepared for a catastrophic event such as an earthquake. A government backstop, contingent on a catastrophic earthquake, would ensure that Canadians will have access to funds to rebuild after an even larger disaster strikes. Other nations, including the United States, Japan, Spain, and France have developed solutions to a similar problem. Each of these nations developed a partnership between Government and insurers. Canada would greatly benefit from the development of such a partnership between our Government and the Canadian insurance industry. PACICC stands ready to participate in designing and providing such a backstop to protect Canadians.

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