

CATtales

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ICLR releases preliminary report into why some homes survived in Fort McMurray

According to a preliminary report released on August 22 by ICLR, homes that survived in Fort McMurray in otherwise decimated neighbourhoods were those more resistant to ignition by embers. This was largely due to actions and decisions taken by homeowners who had adopted FireSmart® mitigation measures to a greater degree than the owners of adjacent homes who did not take such actions. In *Why some homes survived: Learning from the Fort McMurray wildfire disaster*, researcher/author Alan Westhaver sought to answer the question: 'Why did some homes survive this wildland/urban interface fire with little or no damage, while others were vulnerable to ignition and

destroyed?'

The wildland/urban interface disaster that struck Fort McMurray, Alberta in May 2016 destroyed more than 2,400 structures. It is the largest ever insured loss in Canada. It will alter the way that governments, communities and industry prepare for, respond to, and recover from future wildfires.

ICLR recognized the unprecedented opportunity this event held for firsthand learning towards the ultimate goal of lowering wildfire losses. With that in mind, the Institute dispatched an investigator for the purpose of examining, describing, and interpreting circumstances regarding the survival or ►



destruction of Fort McMurray homes.

Obtaining the answer to the main research question, and others arising from it, is urgent. Two similar catastrophes of escalating magnitude have occurred since 2003, and there is rising probability of more frequent infernos in the future given present trends in climate change, forest fuel accumulations, and expansion of people and development into wildlands.

This unique study was carried out from May 19 to 28, 2016 in urban neighbourhoods at the forested 'interface' fringes of the city, and at forested acreages nearby.

After evaluating the fire environment and clearances between homes and the forest edge, Westhaver discounted direct contact from flames or radiant heat of the forest fire as being significant sources of home ignition at Fort McMurray. Instead, it was concluded that wind-driven embers were the most probable cause for the majority of early home ignitions in the zone where the fire made its transition from forest into urban neighbourhoods. Once established, the fire would have spread from structure to structure as an urban conflagration, accounting for the majority of home losses.

Says Westhaver: "In all neighbourhoods studied, homes whose owners had adopted FireSmart guidelines survived much more frequently than homes where they had not, despite the extraordinarily harsh conditions. FireSmart works, it is a very effective program to reduce the probability of home ignition and wildfire losses.

Home survival in these circumstances is not random, nor is it a function of luck," he says. "Whether a home is destroyed by an interface wildfire or not greatly depends on conditions immediately around the structure,



the area for which homeowners are responsible."

The author has concluded that the Fort McMurray wildfire fits a pattern widely recognized as the 'wildland/urban interface disaster sequence.' That sequence can be broken, and catastrophic home losses can be prevented; however this depends on widespread adoption of risk mitigations within the home ignition zone. Therefore, it is speculated that if homeowners became more aware of how homes ignite and better understood how and why simple FireSmart measures work, they may be better motivated to correct weaknesses in wildfire defences. **CT**



The preliminary report containing initial results and other conclusions can be downloaded for free in PDF format at www.iclr.org

A thousand cuts

By Glenn McGillivray, Managing Director, ICLR

One of the problems with large natural disasters like Fort McMurray is that much smaller ones can pile up with little notice and no fanfare.

This seems to be what's happening in Canada this year.

As all eyes have been fixated on the recovery in northern Alberta, an unprecedented nine other catastrophes have been declared by CatIQ (with a catastrophe defined as an event that causes a minimum \$25 million of insured damage scattered over a reasonable number of players in the market).

Aside from Fort McMurray, other declared events involved an ice storm in Southern Ontario (March 23 to 26), a storm in Southern Ontario (July 8) and a storm in Ontario and Quebec (July 27).

The six remaining events almost all involve convective storms in some combination of British Columbia, Alberta, Saskatchewan, Manitoba and Ontario.

Of the five provinces, Alberta – once again – seems to be particularly hardest hit, as six out of the ten events recorded so far this year have affected the province in one way or another. Okotoks, Edmonton, Calgary, Lethbridge, Medicine Hat, Grande Prairie, Fort McMurray and several other communities have been impacted in recent weeks, with heavy rains, high winds (including tornadoes) and hail on tap for most. Indeed, July 2016 goes down as the wettest in 89 years of record-keeping.

Saskatchewan and Manitoba have also been hard hit, where places like Arborfield and Yorkton, Saskatchewan experienced significant flooding after extensive heavy rainfall events. Wind and hail have also been plentiful. High humidity is one of the culprits, says Environment Canada climatologist Dave Phillips, noting

that while much of the moisture has been imported from “places over the ocean” crop sweat is also a factor.

Manitoba, too, has seen a good deal of extreme weather in recent weeks, with tornadoes, straight line winds, hail and heavy rain also commonplace. Many of the storms that have hit the province this year have been grand, sweeping events that originated in Alberta and moved east, with some going as far as Ontario.

Environment Canada meteorologist Andy Yun said this summer's weather is not unusual, but what is different is the dry winters and springs in recent years, which have meant that we've previously seen fewer storms. “If we look at an overall longer term average, we're probably just catching up to where we should be for this time of year,” Yun said.

Yun may be right, the number of storms experienced this year may not be that far out of the ordinary, but what is unusual is the number of communities affected and the number of catastrophes declared.

And while few, if any, of the storm losses appear to be large, this could raise a particular problem for many of the country's property and casualty insurers, namely that a good number of these events won't trigger catastrophe reinsurance and, thus, will be taken net on the balance sheet of many a carrier. And unlike just a few short years ago, very few insurers have catastrophe aggregation reinsurance.

According to Guy Carpenter Canada's Don Callaghan in a piece I wrote a few years back, “Aggregate covers can help in high frequency cat years. These contracts let the insurer choose how many ‘mini-cats’ it can tolerate. Once these cats reach a certain aggregation, the reinsurance kicks in, often on

a layered basis... The idea is to protect the client from aberrational cat frequency.”

But Callaghan warned: “I'm aware of about eight aggregate contracts in this market and I think every one of them got hit this year. These are obviously proving difficult to price and structure and they are going to be tough to renew. Reinsurers are on the fence as to whether 2011 is an exceptional year or just the new normal.”

With the answer now clearer that bad cat years are, indeed, now the new normal, only two carriers have aggregation covers in place according to one source, likely as claims experience and market conditions have made them unattractive for reinsurers.

Thus, 2016 may go down as one of those years where many Canadian p&c insurers will be forced to take a long, hard look at their reinsurance programs and possibly make some adjustments come renewal.

Items that will no doubt be looked at will include retentions, number of reinstatements purchased up front, the question of whether to buy higher layers, and the matter of all those pesky mini-cats.

Experiencing the largest natural disaster loss in Canadian history by far plus and a large number of smaller cats – all by early August – can cause such a reckoning.

The upcoming treaty renewal season could be one of the more interesting ones to come along in a while. **CT**

Preliminary sigma estimates for first-half 2016: Natural catastrophes drive global insured losses to USD 31b

Preliminary sigma estimates show total economic losses from natural catastrophes and man-made disasters reached USD 71 billion in the first half of 2016. The global insurance industry covered a total of USD 31 billion, or 44%, of the total losses.

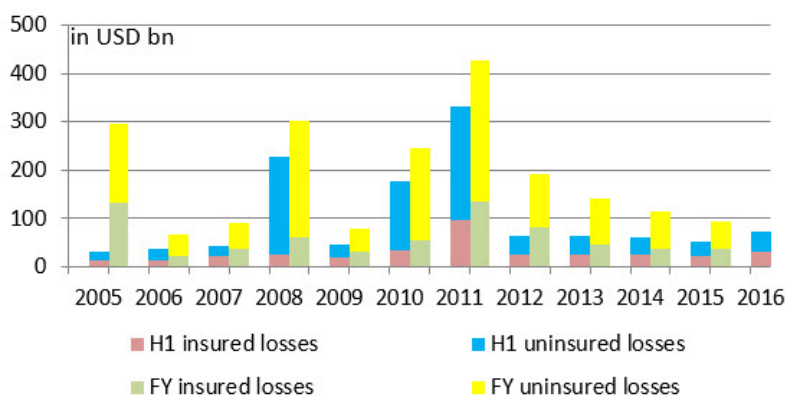
Thunderstorms in the U.S. and Europe were the costliest events for the insurance sector in the first half. Around 6,000 people lost their lives in natural catastrophes and man-made events in the first six months of the year, compared to 12,000 in the first half of 2015.

Of the total economic losses in the first half of the year, natural catastrophes made up USD 68 billion (compared with USD 46 billion in H1 2015), while the remaining USD 3 billion came from man-made disasters. Total global insured losses from natural catastrophes rose to USD 28 billion, driven by large losses from different perils, from thunderstorms to wildfires, across all regions. This is slightly above the annual average first-half loss of the previous 10 years. Insured losses from man-made disasters fell to USD 3 billion from USD 5 billion in the first half of 2015.

Thunderstorms in the U.S. generate highest insured losses

Three separate severe weather events in the U.S., including large hail, caused combined insured losses of over USD 7 billion. The most intense of these was a

Figure 1: Natural catastrophe and man-made related insurance losses (USD billion)



Note: H1 = first half; FY = full year
Source: Swiss Re Economic Research & Consulting and Cat Perils.

major convective storm in Texas in April 2016, resulting in insured losses of USD 3.1 billion, as large hailstones caused widespread property damage.

Europe was also subject to severe weather events. In late May and early June, the two slow-moving low-pressure systems Elvira and Friederike caused thunderstorms, flash floods, and river flooding, with France and Germany being worst hit. The total insured losses from these storms and floods were USD 2.8 billion.

Two major earthquakes strike on same day

A series of earthquakes struck the Kumamoto prefecture in Japan, including a 7.0-magnitude quake that struck during the early hours of 16 April 2016. The quakes resulted in extensive

amounted to USD 5.6 billion. There were 64 fatalities.

On the same day on the other side of the world, a 7.3-magnitude earthquake hit Ecuador. The worst-hit area was Manabi Province on the coast, where bridges and buildings collapsed. In total 668 people died in the earthquake, making it the deadliest single event in the first half of the year. Given the low insurance penetration, insured losses came to just USD 400 million.

Wildfires in Canada were another cause of large insurance losses in the first half of 2016. Dry conditions and strong winds led to the rapid spread of wildfires in Alberta, Canada. The town of Fort McMurray was evacuated, where many homes were completely destroyed. The area is the heart of Canada's oil sands production, and the overall insured losses totalled to USD 2.5 billion, making this one of the costliest wildfire events in insurance industry history.

structural damage, fires, and collapsed buildings. Insured losses from the series of shocks

The global insured loss total for the first half may be subject to revision. Any revision as well as the ongoing hurricane season in the North Atlantic could generate higher losses in the remainder of the year. **CT**

Month	Insured losses ¹	Total economic losses	Event	Country
April	5.6	22 to 48	Earthquakes ²	Japan
April	3.1	3.5	Thunderstorms, hailstorm ³	US
May/June	2.8	4.0	Storms and floods in Europe ²	Europe
April	2.7	3.5	Thunderstorms ³	US
May	2.5	3.6	Wildfires ²	Canada
March	1.5	2.0	Thunderstorms, large hail ³	US

Note: (1) Property and business interruption, excluding liability and life insurance losses.
Source: (2) Swiss Re preliminary estimates; (3) US natural catastrophe figures with the permission of Property Claims Services.

Surviving the coming storm

By Glenn McGillivray, Managing Director, ICLR

Since the time of the Industrial Revolution, the Earth has warmed by approximately .8 (point eight) to 1 degrees Celsius (NASA Earth Observatory). In line with scientific projections that Northern Hemisphere countries will feel the effects of climate change more than equatorial nations, the rate of warming in Canada is roughly twice the global figure and, in the Arctic, closer to three times.

A warmer (and consequently wetter) world essentially translates into more — and more complex — weather-related claims for property and casualty insurance companies. Witness the 2013 floods in Alberta and the recent Fort McMurray wildfire to name just two examples. While such events can't be pinned specifically on climate change, they are consistent with the science, which says that such extremes will become more and more common going forward.

So what are insurers doing right now to address this perceived bleak future of more and larger losses due to extreme weather?

When insurers are faced with certain challenges, like steady upward pressure on claims costs due to increasing severe weather events, they can make adjustments to their products using various “tools.” These may include increasing premiums; raising deductibles; imposing caps, limits and/or exclusions on coverages; assigning different deductible levels according to the hazard (like having a standard deductible for wind damage but a higher deductible for hail); and, amending replacement schedules for things like roofs (i.e. moving from covering the full cost of replacement to offering pro rata payment levels based on the age of the roof).



With a future that will see continued upward pressure on claims costs due to severe weather, it is expected that more and more insurers will turn to these tools to adjust how their products are structured. The challenge, however, is that in an ultracompetitive market like Canada, insurers must be careful not to lean on these tools too much or too often, or else they risk losing market share.

Though climate change means more threats to the insurance industry, it also means more opportunity, including the chance to develop and market new products to address current trends.

New product offerings by Canadian property and casualty insurers in recent months include:

- Home maintenance/repair coverage that gives clients access to home service programs;
- Water and sewer line coverage;
- Off-grid power to cover solar panels and wind turbines;
- Green insurance that would see damaged items replaced with greener options;

- Insurance that would see damaged items replaced with more weather-resilient options;
- Bylaw insurance coverage that indemnifies for additional costs associated with bylaw compliance.

Now, and very largely as a result of the massive flooding in Alberta and Toronto in 2013, several Canadian insurers have begun offering coverage for overland flood — a first for the country. However, with the lack of any kind of national flood insurance program or co-ordinating force, consumers will be faced with a dog's breakfast of flood insurance products, each with different coverage offerings, different exclusions, deductibles and pricing.

The two main actions most commonly described to address climate change are mitigation and adaptation. Mitigation in the climate change context refers to efforts to reduce the emission of greenhouse gases into the atmosphere. Adaptation is described as actions taken to help societies cope with a changing ►

climate, such as fostering resilience by improving building codes for new construction or informing homeowners of actions they can take to make existing homes more robust.

Insurers are not experts in mitigation, but certainly are in the area of adaptation which, when using insurance lingo, essentially equates to loss control.

Most (re)insurers have their own internal staff to develop new products to, among other things, insure previously uninsurable or uninsured risks. Many larger companies also have their own staff to do things like forecast weather, conduct research into severe weather and resiliency, and build/run analytical models that help them better understand and price risk.

Medium to small companies, however, usually do not have the resources to sustain such specialized areas within their companies.

Many companies of all sizes belong to such groups as the Institute for Business and Home Safety (IBHS) in the U.S. and the Institute for Catastrophic Loss Reduction (ICLR) in Canada. Both organizations were formed by the property and

casualty insurance industry to address trends of more and larger losses due to severe weather and earthquakes.

ICLR is a multi-disciplinary disaster prevention research and communication organization established by the industry almost 20 years ago and affiliated with Western University in London, Ontario. Institute staff and research associates conduct multidisciplinary research in wind and seismic engineering, atmospheric science, risk perception, hydrology, economics, geography, health sciences, public policy and a number of other disciplines.

At present, the institute is concentrating much of its focus on better understanding the problem of urban flooding to reduce the instance of basement flooding in Canadian homes; working to change building codes, land use planning regimes and local bylaws in order to build new homes that are more resilient to natural disasters; and addressing the need to make existing homes more resilient to severe weather.

Just as climate change has been described as “weather on steroids,” the impact of the phenomenon on insurers could

be described as “claims on steroids”: More claims, more complex claims, more challenges to coverages and, thus, more possible disputes for insurance company ombudsmen and the courts to settle.

As climate change leads to more uncertain weather, it will also lead to more uncertainty in the business of insurance.

So stay tuned, we ain't seen nothin' yet. **CT**

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Mission
To reduce the loss of life and property caused by severe weather and earthquakes through the identification and support of sustained actions that improve society's capacity to adapt to, anticipate, mitigate, withstand and recover from natural disasters.

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