Risk Management Property

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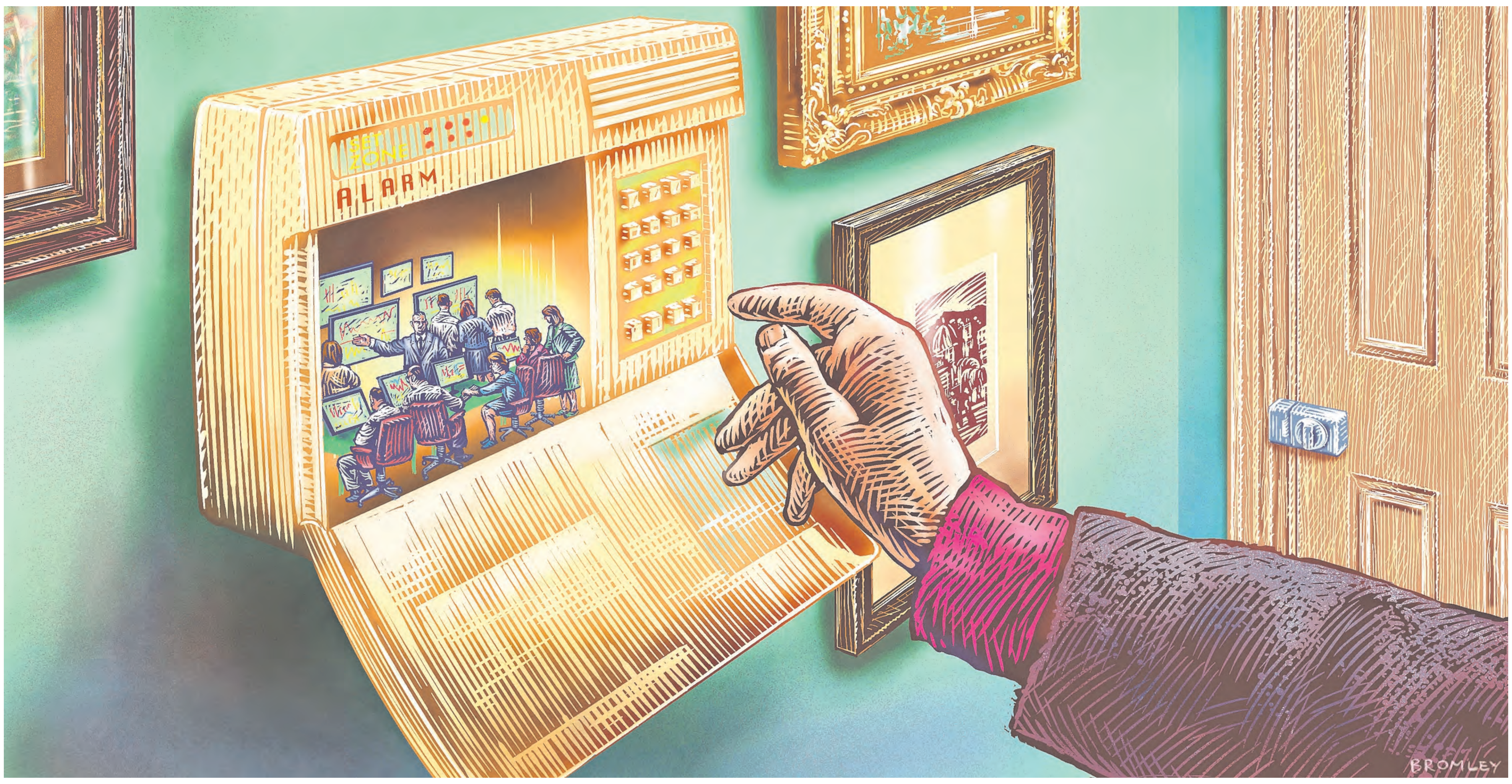


Inside

Insurers plug in to domestic tech

Underwriters are improving analysis of the data they collect from customers' homes, resulting in more accurate quotes. By *Oliver Ralph*

It is a common trick: leave the lights on when you go away and potential burglars will think you are still at home and look for easier opportunities elsewhere. Some people take additional precautions and put the lights on a timer, to switch on and off at preset moments. Simple timers, though, can be easy to predict.

What if your lighting system went a step further and learned to mimic your movements around the house? When rooms are empty, the lights would continue to turn on and off much as they would on any normal day. For homeowners, such a system might simply be a fun new gadget — something to boast about in front of the neighbours. For insurers, however, it is a route to fewer burglaries and lower claims costs.

Intelligent lighting systems are just one example of the new technology that could have a huge impact on property risk management and insurance. Although many in the insurance industry think that it is behind other sectors when it comes to technology, new systems are already beginning to have a big impact.

"Over the last five years technology has made the homeowner market a safer place to be," says Joanne Musselle, chief underwriting officer at insurer Hiscox. She cites advances from water shut-off systems to more widespread use of alarms for helping both to reduce the chance of a claim being made and limiting the size of a claim if something does go wrong.

"People are more alert to risk mitigation," she says, although she adds that there is room for improvement when it comes to making full use of the increased amount of data that household devices produce. "Eventually, you'll have one smart device that controls everything. It's really exciting. The ability to stay connected to homes from anywhere in the world will help with risk mitigation."

It is not just insurers who should benefit. "Discounting on premiums for people who have these systems is coming to market," says Ms Musselle. "It is already happening in the US."

Technology is also changing the way insurers look at commercial property risk. This is particularly true when assessing what could go wrong in new buildings, and what it would cost to fix the damage.

"I've been in the industry since 1980 and it has probably changed more in the last five years than in the [previous 30]," says John Roberts, head of the construction industry practice at insurance broker Willis Towers Watson.

"The insurance industry has to respond to changes in technology, and changes in how building is being done," he adds. "There is an increasing use of new materials such as self-healing concrete and photovoltaic glass."

The problem with these materials is partly that they are more expensive than traditional materials, so can add to the costs of insuring a building.

Other types of technology could have the opposite effect. "There is also a growing use of 3D printing to make parts of a building or even whole blocks. That will drastically reduce cost and wastage but all of a sudden the big risk factor might be the machine itself or the material going into the machine," says Mr Roberts. "Underwriters need to be aware of the technology that is being used and what the cause and effect might be in the case of a loss."

Understanding the cause and effect of loss is among the most significant ways in which technology is changing property insurance. While new gadgets and materials can help, industry insiders say that the most important new development is the use of better data analytics. This can help the insurers to price risk more accurately, which means lower costs for some customers, but higher costs for others.

Analytics has already had a big impact in commercial property insurance. "There has been an emergence of catastrophe rating tools from [risk modelling providers] RMS and AIR," says Simon Morgan, head of property at Hiscox in London.

> 'Brokers and clients know how to price business. Pricing is almost see-through'

"These models have levelled the playing field. It is harder for an underwriter to differentiate himself from people with no experience."

That has had a knock-on effect as everyone else involved, such as intermediaries and customers, develops a better understanding of the risks. "The brokers also know how to price the business, and so do the clients. Pricing is almost see-through," says Mr Morgan.


3D-printed house in Shanghai

The tools have led to big changes in the way insurance is funded. Traditionally property owners approached brokers, who in turn went to insurance companies to buy cover. But with better data analytics, outsiders have been able to offer insurance.

"The technology and tools have allowed brokers and fund managers to package up pools of insurance and make it look like any other financial product. It takes the air of mystery away from taking an insurance bet," says Mr Morgan of Hiscox.

The result has been the development of so-called insurance-linked securities, which allow big investors such as pension funds to put some of their capital to work backing insurance risks and, they hope, make a profit on it. Relatively straightforward policies, such as property catastrophe insurance, are fertile ground for ILS products because the risks are well known and well modelled.

New capital has helped push down prices, particularly for property insurance and reinsurance — the insurance that insurers themselves buy.

According to data from reinsurance broker Willis Re, like-for-like prices for some categories of property reinsurance in the US have fallen by a third since 2012. Since then they have continued to drop.

That, in turn, has led insurers to look for other ways to attract business, from changing the excess levels that they ask customers to cover before the insurance pays out, to changing the contract terms and conditions to make them more favourable to customers.

"Clients are looking for cover to be as broad as it can be," says Clarissa Franks, head of property placement at insurance broker Marsh. "They are looking for an extension of cover to include, for example, losses at client or supplier locations, or terror cover, which is beyond the traditional scope of policies."

For some insurers, the response to both falling prices and widely available, industry-standard analytics tools has been to try to get to know their end customers better.

AIG has resorted to the relatively traditional process of sending its own field engineers to clients' properties to assess risk. "We've gone from 150 to around 600 engineers worldwide," says Joe Trotti, head of property and speciality risk at AIG Europe. "The engagement is on-site with the client to identify perils and work with them on how to mitigate the risk."

The company's own data analytics also play a big role. "We've built an analytics centre in Bangalore with 250 engineers who gather data from the field. Through those insights we refine our underwriting and improve our own products and business. It allows [us] to be more precise," says Mr Trotti. "We'll look at our own data in comparison to the industry models. In some cases we'll have better insights."

That allows AIG to make more accurate decisions about its underwriting, he says. "The conversation [with the client] is about the risk and not about the market. That is really important as now you are in an insurance market that is very client-centric."

Even in an industry that is using technology more and more, it seems, there is still room for the personal touch.

Security Sporadic assaults and cyber attacks are becoming more common, writes *Ian Smith*

Insurers adapt coverage to meet evolving terrorist threat

When Islamist gunmen stormed the Westgate shopping mall in Nairobi in 2013 the ensuing gunfight with security forces eventually left 67 dead and many wounded. It also resulted in $78m of insured property losses.

"The military that went in to contain the situation went in very hard and created an awful lot of property damage," says Tim Davies, head of sabotage and terrorism at Lloyd's underwriter Sompo Canopius. This made Westgate one of the 20 costliest terrorist attacks from an insurance perspective and highlighted how terrorism is changing.

Inhabitants of the world's major cities have witnessed the rise of new types of terror strike, where an individual or small group, apparently loosely affiliated to global terror networks, attacks soft targets such as shopping centres and music venues, intent on killing as many civilians as possible.

These attacks contrast with the high-profile targets and central orchestration of the likes of the September 11 attacks in the US in 2001, which aimed for mass destruction.

As terrorists have changed their strategies, insurers have had to adapt their business models and review the coverage they offer. Behind the human cost of sporadic assaults by small groups of terrorists is the damage to property and interruption of trading.

More than 170 people were killed in last November's Paris attack and the follow-up assault in Brussels this March, including 10 perpetrators. The cost of the physical damage to property was exceeded by the widespread business interruption as authorities responded by shutting down parts of the cities.

"The size of the areas affected by cordons and police closures was almost unprecedented," says Julian Enoizi, chief executive of Pool Re, the mutual reinsurer set up by the UK government in 1993 in response to the IRA bombing campaign. Most of the UK's insurers are members of Pool Re, which provides a guarantee, backed by the UK Treasury, to cover any losses from terrorism.

Larger businesses often have insurance and disaster recovery plans to get back up and running quickly. But smaller companies typically do not. Pool Re has developed a discounted, bespoke version of terrorism insurance for small and medium businesses, but has work to do to encourage take-up. The reinsurer estimates less than 5 per cent of small businesses have terrorism insurance policies.

"Part of this is to ensure that business owners understand the true nature and scale of terrorist threats that face the UK," says Mr Enoizi.

The increased incidence of attacks by smaller groups of terrorists in western cities has been met with rising demand for insurance against event cancellation, denial of access losses — where an attack means that the business owners and customers cannot get into the building — and third-party liabilities.

The latter, called 'liability terrorism' by some in the industry, would protect an insured business against being pursued for liabilities after an attack. An example would be a hotel without adequate security measures or a public space where evacuation procedures failed.

In the US, "active shooter" policies insure universities and other institutions against costs arising from a lone shooter rampaging on their property. These are designed to protect them against legal liability if they are judged to have failed to prevent an attack.

But thinking solely in terms of small groups can understate how advanced terrorist attacks are becoming. "There is an increased sophistication now from five years ago," says Wendy Peters, terrorism practice leader at consultancy Willis Towers Watson, pointing to the plan by the recent Brussels bombers to target a nuclear power plant.

Another emerging threat to which insurers are having to adapt is the potential damage caused by attacks on digital infrastructure. Cyber hackers, which security experts believe may have been backed by the Islamic Republic of Iran, have made headlines with attacks targeting banks, oil companies and even dams.

But cyber insurance does not fall neatly into terrorism insurance, as it is often difficult to establish the perpetrators' identity. In one of the best-known examples that included property destruction, reports emerged in 2014 that hackers had compromised the computer systems of a German steel mill, causing huge damage to a blast furnace. There was a similar attack on a Turkish oil pipeline six years earlier.

"Was it a terrorist, nation state, disgruntled employee?" asks Mr Enoizi of these acts. The consensus among security analysts is that terrorists without state or insider support do not yet have the technical resources to conduct a cyber attack, but Pool Re is conducting a wide-ranging study on the nature of this threat, the capability of the terrorists and the size of the losses that could be incurred.

Insurers expect further cyber terror attacks to follow. "If and when terrorists have the capability to utilise a cyber capability as a weapon, then they will," says Mr Enoizi. "That threat may be one that only a mechanism such as Pool Re can deal with, given the potential scale of losses."

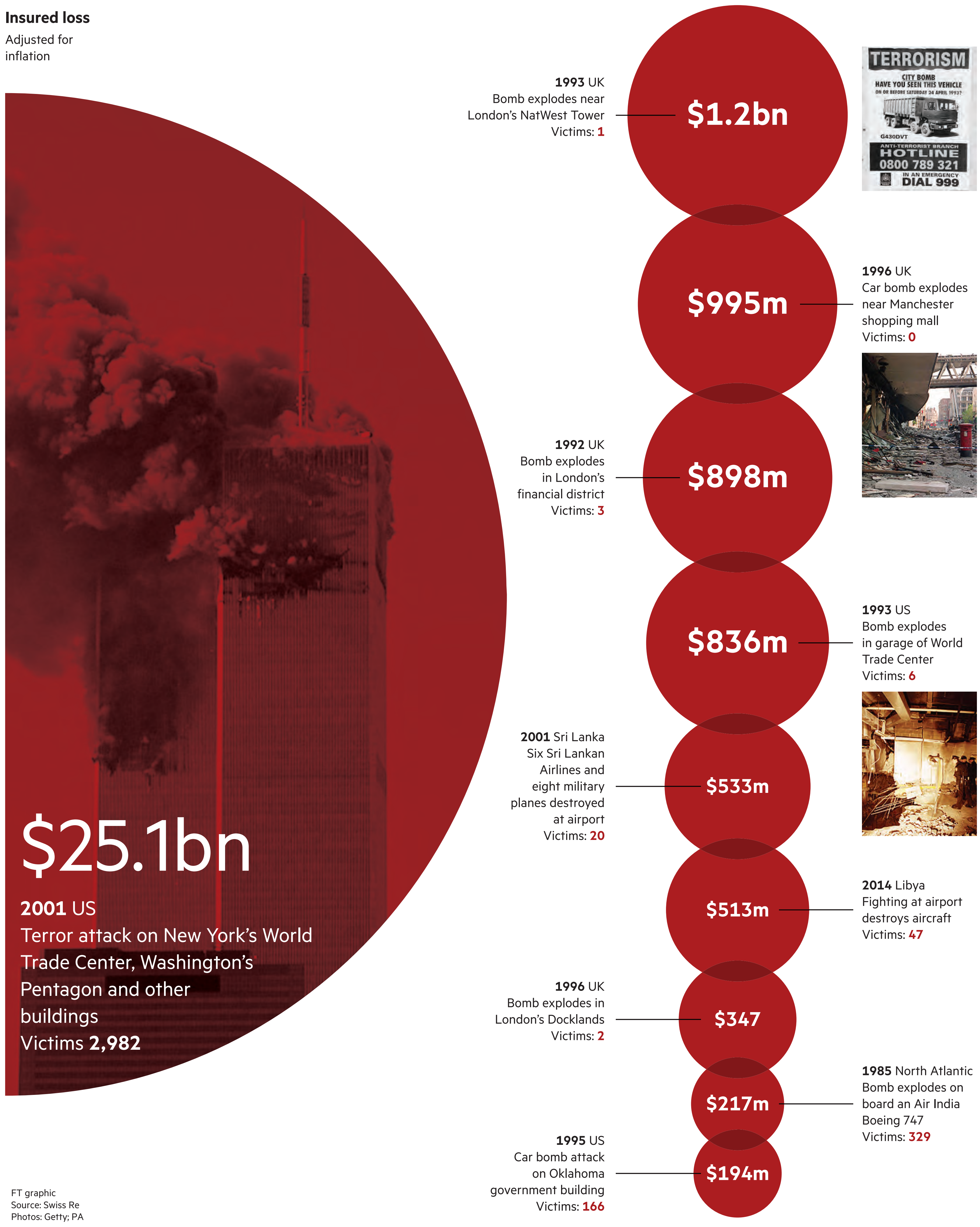
Lloyd's insurer Novae Group says it has seen a huge increase in inquiries and take-up for cyber insurance in the past few years, though it does not provide numbers. Novae says the policies are no longer primarily focused on data privacy.

Dan Trueman, head of Novae's cyber division, says: "We have moved beyond privacy towards policies that focus more on the first-party consequences, namely business interruption, reputational damage and system failure."

The work still to do is about quantifying the risk and developing services that can manage it. But property owners are increasingly expecting that they can be subject to cyber attacks, and be affected by attacks by small groups of terrorists, which they would not have even considered until just a few years ago.

> 'If and when terrorists have the capability to utilise a cyber capability as a weapon, then they will'

Largest terrorism insurance losses



FT graphic
Source: Swiss Re
Photos: Getty; PA

Big data analysis to transform 'hold out' industry

Underwriting

Insurers are encouraging customers to provide them with more information, writes *Eduardo Llull*

Big data analysis has revolutionised many areas of modern life — from healthcare, to politics, to sport — yet not so far the property insurance market. That looks set to change.

"The insurance industry has been a little of a hold out," says Lori Sherer, head of the advanced analytics practice at management consultancy Bain, but "is now on the brink of innovation".

More executives at property insurers — who worry about tight profit margins and growing competition — plan to take advantage of the potential benefits of the increasing amounts of captured data.

From weather patterns to social media, new sources of data could help them streamline costs, be more targeted with the risks they want to underwrite, identify new customers, predict fraud or identify which claims have the potential to become very expensive.

Property insurance executives have "fairly aggressive plans" for developing big data analysis over the next couple of years, says Klayton Southwood, director of risk consulting at Willis Towers Watson. He cites the results of a survey the consultancy conducted in the US last year.

If what the executives say in the survey holds true, the property insurance industry is soon to be significantly changed by its approach to big data.

For example, fewer than half of the property and casualty insurance executives who took part in the survey reported that big data and the analysis of it help them now with pricing, underwriting and risk selection. On the other hand, just over three-quarters of the survey respondents expect big data to help them in this area in two years' time.

The survey suggests more management teams expect to gather data from a greater number of sources. These include data generated through website use, email and phone calls — and social media.

One emerging area of increasing interest to property insurers for generating data and serving customers is the smart home. This refers to household devices and systems — from doorbells to air conditioning — that produce data and can be controlled from anywhere by computer or mobile device.

Two US-based providers, Liberty Mutual Insurance and American Family Insurance, have partnered with Nest Labs, the smart-home tech company that Google acquired in 2014, to offer its smoke alarm and carbon monoxide monitor, Nest Protect, to customers for free. As part of the deal, customers can receive a discount from the insurers on their premiums and the insurers in return receive data from the device.

The data shared with the insurer are limited and include the status of batteries, sensors and internet connection as well as the location of the house and the room in which the device is located.

Data produced by customers are already used in other areas of insurance, such as car coverage, where telematics that monitor driving style help cut premiums for safe drivers. They are also used in retail, where supermarkets issue loyalty cards and offer discounts in exchange for data on customers' shopping habits.

John Davies, managing director of risk finance at broker Marsh, says customers will typically give up personal information under two conditions: if it is easy to do so and if they receive something in return. "In the insurance industry," he says, "it's still not easy."

Some information can be gathered without customers knowing and social media have made this much easier. Using sites such as Facebook and Twitter, insurers can get a better understanding of their customers' behaviour and risk profile.

The more insurers mine and use data, the more likely it is to become an area for regulators to address. Officials at the Switzerland-based International Association of Insurance Supervisors are discussing how insurers are using data in order to determine if the organisation should provide guidance.

In November, the UK's Financial Conduct Authority requested information on how insurers are using big data. It aims to publish its findings by mid-2016 and reveal its plans on what response it will make. This could include "a market study, adjustments to policy or guidance or another form of intervention," according to its website.

Data protection laws in many countries put some limit on what insurers can do. That does not mean, however, that insurance executives are paying attention as much as they might.

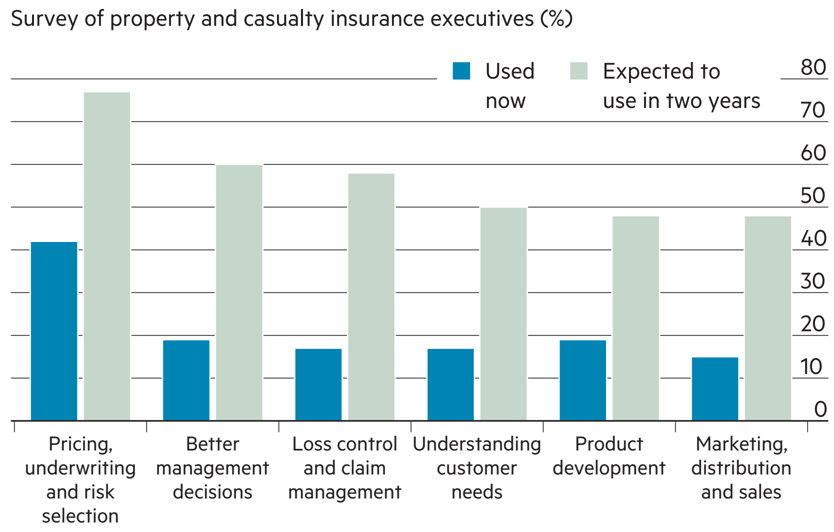
"There are differences at different companies with how seriously they take data protection," says Emma Bate, partner at international law firm DAC Beachcroft. "This needs to be discussed at the board level."

Regulatory and legal risks aside, one of the biggest challenges facing property insurers is making sure they have the right people with the right skills to capture and analyse big data properly. Respondents to the Willis Towers Watson survey ranked this as the top big-data challenge.

"Big data can be paralysing," says Helen Gemmell, catastrophe modelling manager at Liberty Specialty Markets. "Asking the wrong questions of it or using the data in isolation can lead to poor decisions."

How will insurers use big data?

Survey of property and casualty insurance executives (%)



Source: Willis Towers Watson

> 'Asking the wrong questions or using the data in isolation can lead to poor decisions'

Reinsurer provides lifeboat for flood victims

Water damage
A new industry scheme hopes to make itself obsolete within 25 years, writes *Oliver Ralph*

Wading in: Carlisle in northern England during Storm Desmond in December 2015
Jeff J Mitchell/Getty Images

The storms and floods that hit the north of England and Scotland in December 2015 were devastating for those who lived through them. Homes and businesses were destroyed as rising water engulfed towns such as York and Carlisle, leaving residents with a big clean-up job. In some cases this is still going on.

"The same areas flooded this time as in 2005, except that the water stayed longer this time and the severity was worse," says Neil Gibson, head of loss adjusting at Cunningham Lindsey, a claims manager.

PwC estimates that the storms caused total economic damage of £2.7bn. But only £1.4bn of that was covered by insurance.

People living in the affected areas, and in other flood-prone regions, have long complained that insurance is too expensive. They say that they cannot afford to buy sufficient cover and that excesses — the amount that policyholders must pay before the insurance kicks in — are too high.

So it was timely that just three months after the storms, and following many years of wrangling, a new organisation called Flood Re started to operate in the UK. Its aim is to lower the cost of home insurance for people who live in flood-prone areas, although it does not apply to businesses, or to homes built after 2009.

Under the scheme, homeowners will buy insurance in the usual way, and the insurers will then decide whether to pass the flood risk for specific properties on to Flood Re. The organisation estimates that about 350,000 properties will eventually be involved, although it may take some years to reach that level.

Flood Re is funded partly by a set premium for each property that the insurers place into the scheme. The level of the premium is based on municipal tax bands. It is also funded by a £180m annual levy on the whole industry. The majority of insurers say they will pass that levy directly on to all their policyholders — adding about £10 to the cost of home insurance — meaning Flood Re is regarded by some as a subsidy for people who live in flood-prone areas that is part paid for by people who do not.

Insurers have welcomed the scheme. "It is an opportunity to go for business that we couldn't have gone for before," says Lindsey Rix, managing director of Aviva's personal lines business.

She adds that the scheme has had a good start. "We're already seeing examples of customers being able to access home insurance where previously it would have been very expensive. Lots of people are shopping around [for policies] and the initial signs are very encouraging."

The company says that, in one example, a customer who was paying a £1,200 premium and a £12,000 excess with a different insurer has now been able to buy cover with Aviva for an £800 premium and a £200 excess.

But Flood Re's role is not limited to ensuring that prices fall for people buying insurance now.

The scheme is supposed to last only 25 years. The idea is that it also plans for its own demise by creating an environment in which insurance is affordable for everyone without the need for outside intervention.

With that in mind, Flood Re produced a transition plan in February. This laid out how it plans to ensure that there will be no big differences in pricing once it ceases to exist. That partly involves collecting data to analyse the extent and costs of floods. But it also involves encouraging the government and local authorities to do more work to understand the effectiveness of flood defences, and it wants insurers and householders to work together to help bring down claim costs.

That means making more homes resilient to flooding when it happens. "We have to learn to live with water so we need to think about resilience in a different way," says Mr Gibson of Cunningham Lindsey. "I don't think that people think much about flood resilience measures."

These measures, he adds, can include changing the materials used in walls and floors, replacing wooden kitchen units with stainless steel and routeing services such as electricity and telecoms into the properties from above instead of below. However, he adds: "There is a lack of clarity around when a property is and is not resilient, and what the most cost-effective measures to take are."

Given the scale of the task ahead for Flood Re, it is unsurprising that there is scepticism about whether it can achieve its aims. A paper published in February by the University of Oxford and the London School of Economics said that surface water risks are rising, and argued that "it remains unclear if and how Flood Re will be able to cope with future risks and fulfil its tasks". For the people still clearing up after last winter's storms, and fearing what may happen next winter, Flood Re's ability to prove the doubters wrong will be crucial.

Netherlands Rivers given more room to meander along path of least resistance to avoid flooding

Riverside development, Nijmegen

The North Sea flood of 1953 is still commemorated in the Netherlands, where 1,836 people died and nearly 50,000 properties were damaged or destroyed. The country, which was already known for its engineering prowess in flood defence, responded by embarking on an elaborate construction project known as Delta Works — making use of dams, dykes, levees, locks, sluices and storm surge barriers.

Now the impact of climate change on river levels has forced the country to rethink its approach to protecting people and property: by sacrificing land so water can flow more freely.

Rising river levels in 1993 and 1995 forced the government to question the effectiveness of its local flood defences. Heightening the dykes, a common practice for centuries, no longer seemed to work. "When rivers break their banks they carry a lot of sand into the floodplains," says Hans Brouwer of Rijkswaterstaat, the Dutch authority for waterways and public works. "Land on the residential side of dykes is subsiding. This increase in level difference [on either side of the dykes] could cause greater damage if they were to breach."

It was a turning point in Dutch flood risk management. "It became clear that we needed to start looking at the natural behaviour of rivers," says Hendrik Havinga, associate professor in river engineering at Delft University of Technology.

The Room for the River project began in 2006 and includes 34 places throughout the country where rivers are allowed space to expand in order to protect more populated areas along the river. The measures include lowering and extending floodplains, relocating dykes and bypasses, and removing obstacles such as bridges and old factories along river banks. "Rivers naturally seek the path of least resistance," adds Mr Brouwer.

Farmers voluntarily moved uphill, while about 250 residencies close to river banks were evacuated. Even riverside cities such as Nijmegen adapted their urban layout.

The Room for the River project, which was finalised this year, cost €2.3bn. "We experienced some [initial] resistance," says Mr Brouwer, "but farmers and citizens realised that the proposals helped secure their economic welfare. They've given up space so others are safe."
Esther Gotink

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Australia analyses calamitous cost of weather

Climate Damage from natural disasters is expected to double by 2030, says *Jamie Smyth*

Paul Epworth lost his house, car and most of his possessions in a bushfire in 2009 that ripped through his neighbourhood in Bendigo, Victoria, about 150km north west of Melbourne.

"I remember getting back to our house and seeing it was burnt to the ground and our shed was just a mass of twisted iron," he says. "It's the loss of personal things you can't replace, like family photos, which hurts most."

The 2009 Black Saturday bushfires in the state of Victoria that broke out on February 7 that year rank among Australia's worst natural disasters. Some 173 people were killed when 400 fires — fuelled by strong winds and an exceptional heatwave — spread rapidly across large swaths of the state.

Seven years on, many communities are still struggling to recover from the disaster, which burnt about 450,000 hectares of land, destroyed 2,000 homes and shut dozens of businesses. Black Saturday is one of several natural disasters in recent years, which have prompted Australian authorities, businesses and communities to study the costs of such events and how better to prepare for them.

In 2010 a government inquiry estimated the economic cost of Black Saturday at A$4.4bn ($3.3bn) with insurance claims of A$1.2bn. New research published by the Australian Business Roundtable for Disaster Resilience & Safer Communities, which reviewed the economic and social costs of Black Saturday and other national disasters, found that the true costs of disasters are at least 50 per cent higher than estimated.

"This is a conservative number," says Peter Harmer, chief executive of Insurance Australia Group (IAG) and a member of the Roundtable. "If you include the increase in domestic violence, the increase in alcohol and substance abuse, the increase in school truancy etc — and the long-term impact on societies which are rent asunder by disasters — it would probably be larger."

The Australian Business Roundtable estimates natural disasters caused A$9bn of damage in 2015 — about 0.6 per cent of Australia's gross domestic product — and this annual figure is expected to double by 2030, according to financial modelling conducted by Deloitte Access Economics.

Devastating: property damage after the Black Saturday bushfires in Bendigo, Victoria
Scott Barbour/Getty Images

The increasing threat posed by weather-related disasters linked to climate change is one of the reasons for the creation of the Australian Business Roundtable, which comprises the chief executives of some of the country's biggest companies and the Australian Red Cross. It lobbies the government, businesses and others to take a more co-ordinated national approach to make communities more resilient, keep people safe and reduce the costs of natural disasters.

One of the main findings of its work is that spending more on pre-disaster mitigation and critical infrastructure that builds community resilience — such as electricity networks, weirs and bridges — could vastly reduce the economic costs of disasters.

Five of the 11 biggest fires on Black Saturday, including the Kilmore East fire that killed 119 people, were caused by faults in the electricity distribution network. "We have found that if the government could invest A$250m per year in mitigation work the savings to the federal budget would be in excess of A$12bn by 2030," says Mr Harmer.

A combination of government budget pressures and short-term thinking has meant public funding is often skewed towards emergency response. A report by Australia's Productivity Commission last year found the government spent A$11bn on disaster recovery between 2009 and 2013, compared with just A$225m on mitigation efforts.

IAG is considering alternatives to fund infrastructure that can build resilience, such as issuing social impact bonds, financial instruments that pay a return based on the achievement of agreed social outcomes.

"We've come to the realisation that we just can't keep badgering government to spend money that they clearly don't have," says Mr Harmer.

The Roundtable has identified a lack of adequate planning as a hurdle to building resilience. It believes local planning authorities need to consider the risks of building in flood plains or areas prone to forest fires and set appropriate regulations.

Homeowners play a critical role in mitigating risks to their properties. Peter Hoeppe, head of reinsurer Munich Re's geo risks research unit, says measures such as flood protections or reinforced roofs to guard against high winds, storms and hail can potentially reduce the costs associated with climate risks.

Simple precautions such as trimming trees near properties, removing balcony furniture and clearing gutters can do a lot to protect homes from cyclones.

A global study by Munich Re found that total financial losses from natural catastrophes worldwide in 2015 amounted to $100bn, with insured losses at $30bn.

> 'We have come to the realisation we cannot keep badgering government to spend money they don't have'

Some homeowners in North Queensland — an area prone to cyclones and regular flooding — find that insurance premiums are unaffordable.

Mr Harmer says it is important to educate consumers on the risks of flooding before they purchase a property in vulnerable regions.

IAG has begun offering an InsureLite product that is specially tailored to consumers who cannot afford comprehensive home insurance. This is a cheaper product that provides customers with a basic accommodation option — building a standard three-bedroom home up to the value of A$200,000 — rather than rebuilding their property with its original specifications if it is destroyed.

"We . . . realise there is an affordability problem, particularly in far north Queensland and we want to ensure that customers still have the safety net of an insurance policy," says Mr Harmer.

Earthquake surge rattles Oklahoma's fracking industry

Seismic risk

The courts are yet to decide who is liable for damage caused by increased ground tremors. By *Anna Nicolaou*

Oklahomans are no strangers to natural disasters. The Midwestern state stretches across Tornado Alley — one of the most tornado-prone places in the world — and residents grapple with hail, thunderstorms and severe weather.

In the past few years, however, homeowners, property developers and insurers in Oklahoma have faced an unfamiliar challenge: earthquakes.

Oklahoma experienced 890 earthquakes with a reading of 3.0 or greater on the moment magnitude scale last year, compared with just one in 2007, according to the US Geological Survey. The jump coincides with the rise of hydraulic fracking in the state's oilfields. These earthquakes have become more and more violent, with one of magnitude 5.1 in February. A magnitude 3.0 earthquake would be barely noticeable, while those around 5.0 could cause windows to break.

Though alarming for local residents, the spike in earthquakes has left the insurance industry in flux because there is not yet a legal precedent for who is liable for damage. "There has been such great uncertainty for the last few years. It's just not clear what the future looks like," says Joe Woods, vice-president at the Property Casualty Insurers Association of America.

The Oklahoma Geological Survey said last year it is "very likely" that "the majority of recent earthquakes . . . are triggered by the injection of produced water in disposal wells" as a result of oil and gas extraction. But the government has not placed official regulations on drilling in a state whose economy is highly dependent on the oil industry.

Some homeowners and companies, as well as the Sierra Club, an environmental group, have taken legal action against energy companies. But these cases are in early stages so there is no ruling yet on liability.

The insurance industry is "concerned", Mr Woods says, but it has been hard to make the public fully aware of the issue because most of the earthquakes so far have been small.

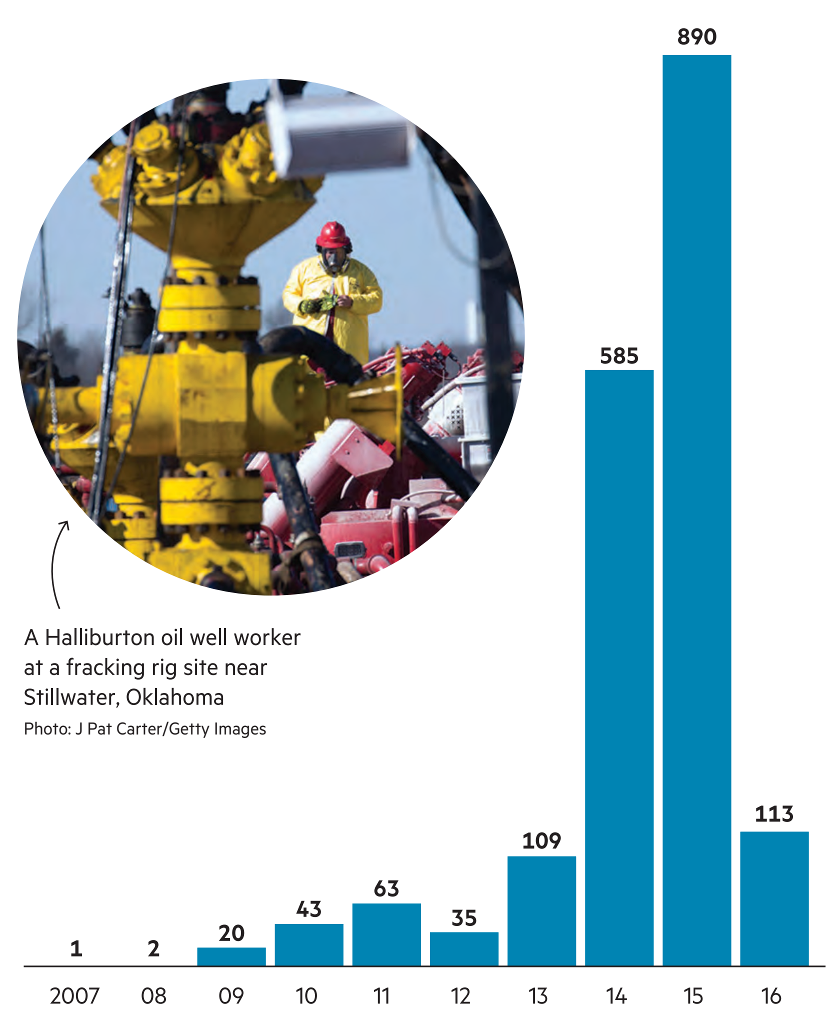
John Doak, Oklahoma's insurance commissioner, has warned insurance companies not to deny coverage of these earthquakes by marking them as "manmade", which is not covered under standard earthquake insurance.

"I am concerned that insurers could be denying claims based on the unsupported belief that these earthquakes were the result of fracking or injection well activity," Doak says.

There are signs, however, that the public is starting to take notice. More and more homeowners in Oklahoma are buying earthquake insurance, with 15-20 per cent of policyholders adding it to their coverage, compared with 2-4 per cent in 2011, according to the Oklahoma Insurance Commission.

> 'I am concerned that insurers could be denying claims [as man-made]'

If a precedent were set linking the actions of energy companies to these earthquakes, then homeowners and insurance companies would have the right to take legal action against whomever was in charge of the well, Mr Woods says. "The insurance companies would most likely try to strengthen the 'man-made' language to make it clear they're only covering acts of nature," says Mr Woods, although insurers are a "long way" from establishing a conclusive link.



Source: USGS

A Halliburton oil well worker at a fracking rig site near Stillwater, Oklahoma
Photo: J Pat Carter/Getty Images

Oklahoma's regulators in recent months asked oil well operators in some areas to cut their water disposal by 40 per cent, which has curbed fracking, although they do not explicitly forbid it.

Any moves to curb fracking will directly affect the commercial property market in Oklahoma, says Bruce Rutherford, international director of real estate investment company Jones Lang LaSalle. The mandate to cut water disposal will "make it more difficult" for the energy industry to rebound and will delay the recovery in commercial property prices in those areas, he says.

S&P analysts wrote last year that "earthquakes near fracking sites introduce a unique risk for investors that have exposure to real estate in affected regions", due to the uncertainty surrounding insurance and whether coverage includes man-made earthquakes.

The state and urban planners can play a role in mitigating the risks of property damage, says Robert Merkel, senior project engineer at Thornton Tomasetti, an engineering consulting company.

"Maintaining and enforcing building codes, that's how we've addressed seismic risk throughout the country as earthquake engineering evolved over the last several decades," says Mr Merkel. "Right now building codes in Oklahoma would be designed so that there's no catastrophic collapse, but it wouldn't prevent damage. So there could be a conversation to be had about whether that's an acceptable standard."

There are also steps homeowners can take to reduce potential losses from an earthquake. Removing parapets that hang around the perimeter of the building and carefully bracing short walls are a few of the actions that can help, although there is no way to "earthquake-proof" a home, he says.

"People in Oklahoma might have some attitude that, well, my building survived several tornadoes so it will be fine in an earthquake," says Mr Merkel. "But that can be a very bad assumption. Earthquake forces affect a building very differently than wind."

Cuba needs a culture change if it is to build an insurance market

GLOBAL BUSINESS

Robert Hartwig

At first glance, Cuba's opening market offers opportunities for the world's biggest insurers. The country has been struck by more than a dozen hurricanes and tropical storms since 2001, while its 11m people are mainly uninsured. Cuba's citizens, business and foreign investors would clearly benefit from the risk management expertise and financial resources international insurers could provide.

Nonetheless, there are numerous economic, regulatory and cultural factors that block entry to Cuba. Despite President Barack Obama's historic visit to Havana in March, it will take time and governmental policy changes to overcome the challenges.

The Cuban leadership that has been in place since the late 1950s has a history of abruptly launching economic experiments, and then quickly calling them off — making the prospect of operating in Cuba a risky one for international insurers. Equally challenging will be selling policies to Cubans who are accustomed to the government meeting their basic needs.

Cuba showed signs of wanting to broaden its economy in March 2014 by enacting Foreign Investment Law No. 118. This was intended to stimulate direct investment, but has so far had little impact.

The law stated that joint ventures and totally foreign-owned companies must insure all their property and casualty risks, with the first option for coverage going to Cuban insurers. If Cuban insurers do not offer terms and conditions that align with international markets, then an opportunity opens for foreign insurers — subject to Ministry of Finance rules. In other words, if a foreign insurer wants to do business in Cuba, it must be either a partner of the Cuban government or secure its permission to operate there.

Cuba's insurance industry is tiny and consists largely of two government-run insurers run under the auspices of the state-run Caudal Group. US insurers, however, will be among the businesses that begin to explore the prospect of foreign capital and investment flowing into Cuba. Progress will be slow. In 2013, insurance premiums per head totalled barely $35, ranking Cuba 85th in the world on this criterion, far below most of its Caribbean neighbours. The restrictions on vehicle and property ownership have inhibited the creation of a competitive, vibrant insurance market.

Cuba began allowing permanent residents to buy and sell real estate freely in late 2011. The step was a small, albeit positive, one. Still, in Cuba, home ownership is restricted to one primary residence and one vacation home. Buyers and sellers agree to a property's price, or they simply swap residences — and that means there are no home mortgages. Because little or no capital is accumulated by this sales process, the typical Cuban would be understandably reluctant to purchase an insurance policy covering their residence through either a homeowners' or renters' insurance policy.

The idea of transferring risk to a private insurer, rather than letting the

President Barack Obama's visit to Havana this year led to optimism about Cuba's market opening up

government absorb whatever losses occur, is alien to Cubans. It is also one of the primary reasons international insurers remain wary of doing business there until Cuba shows a greater commitment to encouraging the formation of a traditional market economy.

Robert Hartwig is president of the Insurance Information Institute