GLOBAL RISK DIALOGUE

ALLIANZ GLOBAL CORPORATE & SPECIALTY

ANALYSIS AND INSIGHT FROM THE WORLD OF CORPORATE RISK AND INSURANCE

LIGHTS! CAMERA! INSURANCE!

TV and film production poses all sorts of risks. Find out how insurers help keep the cameras rolling until the final cut

FIGHTING FIRE WITH FOAM

How to extinguish wildfire risk is a burning issue for insurers and business. Predictive and proactive mitigation responses can reduce loss

MAKING A NOISE ABOUT "SILENT" CYBER

How insurers are rethinking underwriting to provide certainty around cyber risk

FLY ME TO WORK!

Fast, economic and traffic-free - drone taxis are predicted to take-off in a big way. How ready are they for launch?

Allianz

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PUBLICATIONS EDITOR
Greg Dobie
greg.dobie@allianz.com

PUBLICATIONS/CONTENT SPECIALIST
Joel Whitehead
joel.whitehead@agcs.allianz.com

CONTRIBUTORS
Daniel Aschoff, Florence Claret, Gundula Eckert, Christina Hubmann, Greg Langley, Alejandra Larumbe Milla, Jessica Pilon, Heidi Polke-Markmann

PUBLISHING HOUSE
Larino Design

PRINTER
KNP Litho Ltd, Kent, UK

GLOBAL HEAD OF COMMUNICATIONS
Hugo Kidston
hugo.kidston@allianz.com

Allianz Global Corporate & Specialty SE
Fritz-Schaeffer-Strasse 9, 81737 Munich, Germany

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EDITORIAL

As much as the insurance industry changes, many of the same risks remain. New risks demand fresh solutions – cyber, drones. Yet, so many perils are "old school" – fire, wind, flood. In this sense, insurance is both ever- and never-changing. This edition of **Global Risk Dialogue** looks at both new and traditional exposures.

"Silent" cyber exposures – those not covered by traditional property and casualty (P/C) policies – create a great deal of uncertainty for customers, brokers and insurers, alike. Going forward, AGCS is Allianz's Center of Competence for Cyber and will globally manage all P/C cyber exposures across the Allianz family. How will this approach help us better tackle cyber risk? In this issue, we will help you understand the approach and what it means for cyber risk mitigation.

Another new peril – still evolving – is the introduction of unmanned passenger or "drone" taxis. Although only experimental, such vehicles promise to change transportation and mobility insurance. How will the new technology be regulated? How will insurance respond? Our experts weigh-in.

Finally, wildfire risks have recently "exploded" in California, wreaking havoc on personal and commercial property. We take a look at a novel fire-fighting approach – spraying biodegradable insulated foam onto structures and vegetation to suppress fires and save property – to see how insurers are using new technology to battle traditional fire risks.

Enjoy the issue.

Chris Fischer Hirs
Group CEO
Allianz Global Corporate & Specialty

NEWS FROM AGCS AND ALLIANZ

AGCS OPENS REINSURANCE BRANCH IN MUMBAI

Photo: iStock

India's bustling economy has outpaced China's four out of the last five years

AGCS has expanded into India – one of the largest, most under-penetrated and fastest-emerging re/insurance markets – following the government's 2016 move to open the reinsurance market to foreign companies.

AGCS's new Mumbai branch will allow for further expansion across the Asia-Pacific region, explore growth opportunities and better serve global corporate customers operating in India. **CB Murali**, previously Head of the Global Risks Division at Bajaj Allianz, will assume the role of CEO, AGCS India.

The Indian insurance market is the world's 11th largest (5th in Asia behind China, Japan, South Korea and Taiwan) by premium volume and holds significant potential for economic growth – although the real potential is in non-life insurance, where India's penetration rate is just 0.93% of GDP[1]. Predicted reinsurance premiums should increase at 11% to 14% compound annual growth rate (CAGR), to $11bn by 2022[2]. Besides 2017, India's economy has surpassed China as the world's fastest-growing every year since 2014[3].

ALTERNATIVE RISK TRANSFER EXPANSION

Large companies increasingly seek more control over their risk management beyond traditional property or liability insurance products for their more complex emerging or "intangible" risks. In response, AGCS has reshaped its Alternative Risk Transfer (ART) line of business into two new specialist teams.

Capital Solutions brings together the insurance and capital markets – areas where capital market investors such as pension funds are interested in accessing insurance risks to diversify their portfolios, for example through catastrophe bonds. It is led by former ART Chief Underwriting Officer, **Richard Boyd**.

The remaining ART practice groups – corporate solutions, reinsurance and climate solutions – continue under the existing name of **Alternative Risk Transfer**, led by **Michael Hohmann**, who moved to ART from his former position as Global Head of Liability at AGCS.

In its previous, 'combined' set-up, ART developed into a major global line of business, contributing €1.135bn of gross written premiums and fronting revenues in 2017.

AGCS WINS TWO EUROPEAN RISK MANAGEMENT AWARDS

AGCS won top place in the categories **"Technology Innovation of the Year"** and **"Captive Management Solution of the Year"** at the annual **European Risk Management Awards**, presented by the **Federation of European Risk Management Associations (FERMA)** and **Commercial Risk Europe**.

The technology award acknowledges the supply chain analytics tool, *BI Prepared*, a prototype app which helps customers and AGCS manage business interruption exposures. The captive management award recognizes a blockchain-based prototype for captive management which shows that international insurance transactions and money transfers can be significantly accelerated and simplified.

AGCS CEO, Chris Fischer Hirs, said the awards reflect AGCS' commitment to develop innovative solutions enabling "faster, simpler and more transparent services." "It is an honor for us to be recognized by Europe's leading risk management body."

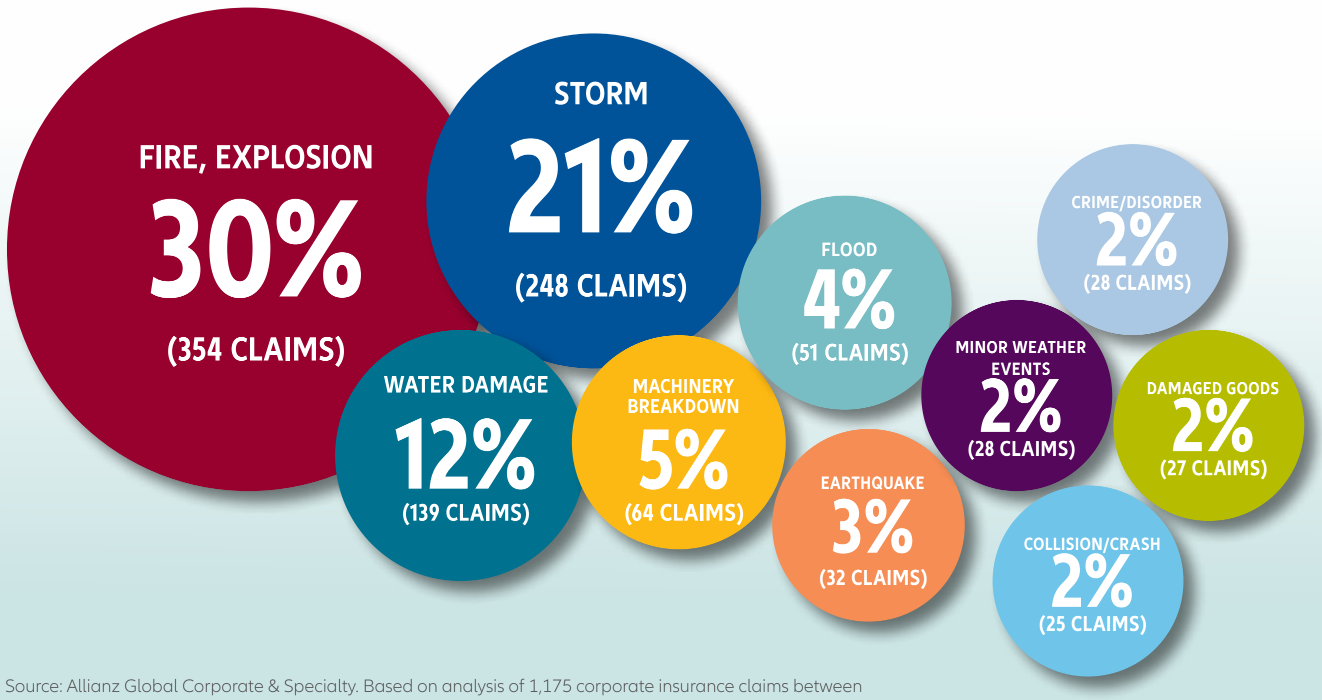
[1] Swiss Re: Sigma No. 3/2018
[2] GIC Re, Red Herring Prospectus, 2017
[3] International Monetary Fund, World Economic Outlook, October 2018

LOSS LOG

BUSINESS INTERRUPTION

Risk management experts have voted the impact of business interruption as the top risk for companies in the annual **Allianz Risk Barometer** for the past seven years. What are the main loss drivers?

MOST FREQUENT CAUSES OF BUSINESS INTERRUPTION CLAIMS



Source: Allianz Global Corporate & Specialty. Based on analysis of 1,175 corporate insurance claims between July 2013 and July 2018 which have both a property damage and business interruption loss component

Insurance claims analysis from AGCS highlights the growing relevance of **business interruption (BI)** as a consequence of property insurance losses, heightened by today's increasingly interconnected and globalized business environment.

Almost all large property insurance claims now include a major BI element, which typically accounts for the majority of the loss, when previously the split might have been nearer to 50:50. The average BI property insurance claim now totals over €3mn ($3.4mn) at €3.1mn ($3.5mn). This is more than a third (39%) higher than the corresponding average direct property damage loss (€2.2mn/$2.5mn), with both of these totals now significantly higher than five years ago.

As the claims analysis demonstrates, (*see graphic above*) the tremendous effect BI can have on a company's revenues if it is unable to operate or deliver products or services can result from a number of scenarios. According to AGCS, **fire and explosion incidents** are the most frequent cause of BI loss, accounting for almost a third (30%) of claims by number[1]. BI costs following a fire can significantly add to the final loss total. For example, the average BI loss, from a fire or explosion incident is €5.8mn ($6.7mn) compared to €4mn ($4.52mn) for the average direct property loss[2], or 45% higher. **Storm** is the second most frequent cause of BI loss, accounting for 21% of claims by number with the average BI loss costing €3.8mn ($4.3mn), compared to around €2mn ($2.26mn) for the average direct property loss. Together, fire and explosion and storm incidents account for over half of all BI claims by number and almost 80% of the total value.

Find out more about the top causes of corporate insurance losses in the **Global Claims Review** and the top business risks in the **Allianz Risk Barometer**. **www.agcs.allianz.com/insights**

[1] AGCS. Based on the analysis of 1,175 corporate insurance claims between July 2013 and July 2018 with a total value of €6.3bn ($7.1bn) that have both a property damage (€2.6bn) and business interruption (€3.7bn) component

[2] AGCS. Based on the analysis of 354 fire claims between July 2013 and July 2018 with a total value of €3.5bn ($4bn) that have both a property damage (€1.4bn) and business interruption (€2.1bn) component

NEVER WORK WITH ANIMALS OR INSECTS...

Heard the one about the raccoon and the destroyed interior of an unlocked truck? What about the coyote that ensured a company's sprinkler system was permanently extinguished? Or the fowl play from a turkey which had a gobble of someone's leg? These aren't just a list of bad jokes but are actual examples of some of the many claims insurers receive involving animals and insects.

Based on AGCS analysis of more than 470,000 global corporate and specialty insurance industry claims over the past five years in its latest **Global Claims Review: Top Causes of Corporate Insurance Losses** report, almost 2% (6,888) of these claims have involved animals, costing in excess of $500mn.

Dog incidents such as bites and scratches are the most frequent cause of animal-related claims, accounting for 30% (2,077). On average they cost almost €7,000 ($7,940). The second most common cause of loss is **deer incidents** (particularly involving collisions with vehicles). On average, these incidents cost in excess of €5,500 ($6,240) and account for 17% (1,186) of all animal-related claims received by insurers. The peak period for incidents (and claims) in the US is during October and November each year – otherwise known as the rutting season, which is when deer are engaged in fierce mating battles.

By far the most expensive insurance claims result from **bird incidents**, which are the third most frequent cause of animal-related claims (1,146). This is hugely influenced by one type of loss – bird strikes with airplanes – for which there have been over 900 claims in the past five years. The average bird strike claim costs around €322,000 ($368,000) in insured losses.

A BEDBUG FOR INSURERS

Bedbug incidents such as bites and infestations account for almost 8% (534) of animal-related claims received by insurers, according to the analysis, and have generated around €2.5mn ($2.84mn) worth of claims over five years, with the number of incidents rising. For example, the 2018 *Bugs Without Borders* survey, conducted by the National Pest Management Association and the University of Kentucky, found that infestations in the US continue at high rates, with 97% of respondents having treated for bedbugs in the past year. That number is significantly higher than 15 years ago, when only 25% of pest control professionals reported treating for bedbugs. Meanwhile, in the UK, there has been a year-on-year increase in incidents since 2006, which shows no signs of plateauing, according to Bed Bugs Limited, one of the world's first dedicated bedbug extermination companies[1]. While bedbugs are found year-round, infestations peak during the warmer months of the year (April to August in the northern hemisphere). The problem is exacerbated by a number of factors including warmer weather, bugs developing resistance to chemical treatments making eradication harder, and even people returning from their holiday with bedbugs in their luggage.

TOP 5 ANIMAL-RELATED CAUSES OF INSURANCE LOSS (ACCORDING TO NUMBER OF CLAIMS)

1. Dog incidents e.g. bites 30%

2. Deer incidents e.g. collision with vehicles 17%

3. Bird incidents e.g. collision with planes 17%

4. Cats e.g. bites 8%

5. Bedbugs e.g. bites, infestations 8%

Other 20%

Source: Allianz Global Corporate & Specialty. Based on analysis of claims of 6,888 insurance industry claims between July 2013 and July 2018 worth approximately €466mn ($526mn).

[1] The Guardian, Bedbugs plague hits British cities, August 19, 2018

Photo: iStock

EXPOSURES FOR FINANCIAL INSTITUTIONS CONTINUE TO EVOLVE

The financial services industry is going through significant change and directors and officers (D&Os) have to navigate their companies through this tough environment. **Global Head, Financial Institutions (FI) Insurance** at **AGCS**, **David Van den Berghe,** identifies the major trends boards need to stay on top of.

1. FIs and their D&Os are facing increasing exposure with the growing willingness of both investors and regulators to hold them accountable for matters that involve culture, governance and oversight responsibilities.

2. Boards, risk committees and senior management have to demonstrate that they understand the impact of technological innovation, cyber risks, changing consumer preferences and even climate change on their business models and risk profiles and that they are ready to take effective mitigating actions where needed.

3. From a financial perspective, we have seen pressure on revenues stemming from the low interest rate environment, while since early 2018 stock market volatility has also started to increase.

4. Banks in Australia, Korea, Malaysia, Singapore and Thailand are experiencing rising household debt, while Chinese lenders are exposed to some weak regional economies and reliance on volatile funding.

5. In the UK, banks have been busy complying with ring-fencing regulation and preparing for the possibility of a turbulent Brexit. In addition, the UK Senior Managers and Certification Regime, and its 2018 amendments, sets out minimum standards of behavior and the Financial Conduct Authority (FCA) expects firms to promote cultures that support the spirit of regulation in preventing harm to consumers and markets.

6. US regional banks are facing rising shareholder merger objections while Canada is now ranked second to Australia in terms of litigation funding, which may incentivize shareholder activism.

7. For FIs in Europe, the Middle East and Africa, 2018 was a year of multiple regulatory deadlines, including the EU's Markets in Financial Instruments Directive, the Payment Services Directive and the General Data Protection Regulation, and potential compliance violations with these regulations has led to higher exposure.

8. In Southern Europe, Spanish banks' exposure to Turkish debt and the impact of widening spreads on Italian sovereign debt on the balance sheet of Italian banks have been noted.

9. In Africa, there has been a rise of digital-only banks and some recent high-profile company failures, as well as large crime losses, which have led to a corporate governance crisis in South Africa.

10. For FIs in Brazil, it is a positive sign that, continuing in 2019, the economy is expected to slowly climb out of its deep recession with new regulation likely to boost the real estate market and mortgage lending.

OPERATIONAL RISKS

1. Globally, conduct risk and operational resilience remain the headliners. In the UK, in particular, senior executives have been placed in the line of fire and companies are facing higher capital charges following a series of outages (technology failures). Adequate data security and cyber resilience is also a key theme in the UK's FCA's business plan for 2018-2019.

2. In Australia, the Royal Commission released its final report "into misconduct in the Banking, Superannuation and Financial Services Industry". The report identifies areas where the financial sector is expected to make significant changes and where regulatory supervision could be strengthened. It remains to be seen what policy responses will be given to the Commission's recommendations and how regulated entities will react. It is not unlikely that regulators will take a stronger stance in relation to their enforcement activities.

3. Distributed ledger technology could bring greater efficiency to custody, payments and securities trading, adding new risk control challenges. AGCS expects more attention on security standards going forward, also from regulators.

4. The Basel Committee for Banking Supervision published the final reforms for the calculation of risk-weighted assets which includes new rules for the standardized measurement of operational risk, as from 2022.

INSURANCE IMPACT

For FI insurance, these trends translate into companies buying more stand-alone transactional risk cover as well as more cyber insurance, in addition to fraud and professional liability. With many FIs operating in multiple jurisdictions, AGCS also observes a need for more efficient coordination of international programs. AGCS is investing significantly in its network and expertise to best respond to these evolving needs.

OUR EXPERT

David Van den Berghe
david.vandenberghe@allianz.com

Photo: iStock

ENGINEERING/CONSTRUCTION TRENDS

4 QUESTIONS FOR … CHRIS VAN GEND

GLOBAL HEAD OF ENGINEERING, AGCS

As construction projects become bigger and harder to fund, market challenges mean many insurers are exiting the engineering sector. Regulatory scrutiny and socio-political uncertainties threaten investments and project delays impinge on contractors' expenditures. Add to the mix the strain of new technologies and growing cyber threats, and it's tempting to sound "retreat". But there are rewards for staying the course, explains **Chris van Gend**.

WHAT ARE SOME GLOBAL TRENDS AND THEIR MAIN DRIVERS FOR THE CONSTRUCTION INDUSTRY?

Many insurers are exiting the construction sector or scaling back their offerings. The past year saw many losses from fires, mechanical failures and natural catastrophes, including the Hidroituango dam collapse in Colombia which is estimated to be more than $1.2bn[1] and which may prove to be the largest construction loss in history. The sector's problems are years in the making: **growing portfolio volatility**; **years of declining rates**; and **widening coverages**. Construction is a long-tail business. Today's premium is from projects written several years ago.

WHAT IS THE STATE OF GLOBAL CONSTRUCTION PROJECTS? WHAT ARE THE EFFECTS OF PROTECTIONISM, BREXIT AND TARIFFS?

Construction projects are far more global than in the past, as sizeable infrastructure projects are moving more to international companies. Equipment is being sourced internationally and construction site risk management is improving – a positive development from both a cost perspective and from the standpoint of a continuous process improvement, knowledge-sharing strategy among contractors. But there are downsides: contractors operating in new territories must comply with new regulatory environments, building codes, etc. which can lead to delays, pressuring schedules and creating overruns. Political uncertainties can result in project delays and even cancellations. Projects will doubtless continue, since developing countries need continuing infrastructure investment and developed countries need to replace aging infrastructure. Uncertainty is the enemy of investment, however, so we'd like to see a more stable socio-political environment.

WHAT ARE SOME SIGNIFICANT DELAY IN START-UP (DSU) TRENDS? WHY IS DSU INSURANCE A VOLATILE ISSUE?

Business interruption (BI), contingent BI, supply chain risks – each has had significant insurance coverage in property markets for years. Construction DSU insurance take-up has increased as customers see the need to protect completed project revenues – often driven by lenders – while, at the same time, coverages and the insured parties have broadened. BI losses can be substantial, but construction risks are volatile because there is greater uncertainty regarding rebuild-times and the project completion. DSU exposures are much more difficult to assess. Thankfully, DSU losses are rare, but they can be significant. In 2018, AGCS had enough DSU losses to erode several years of DSU premium. Engineering portfolios for many carriers are much smaller than property books, so these covers bring a level of portfolio volatility to support losses and, since projects are non-recurring, there's no chance to recoup losses at renewal.

HOW HAVE ADVANCEMENTS IN TECHNOLOGY AFFECTED PROJECTS?

The construction sector is slow to adopt innovative technologies, but we've seen them start to gain traction. For example, building information modeling (BIM) – 3D model-based technology that allows for more efficient planning, design, construction and management – is replacing traditional 2D design methods and may change how projects are designed and delivered. But increased reliance on technology increases cyber threats – an exposure much less focused-on in this sector than in others. We help customers become aware of new technologies, but simultaneously educate them about new cyber threats and the importance of adding cyber risk management to their risk registers. Cyber awareness is key in today's world and we offer a variety of coverages in the event of a cyber incident.

Find out more about AGCS's Engineering and Construction Insurance at **www.agcs.allianz.com/solutions/engineering-insurance**.

BIOGRAPHY
CHRIS VAN GEND

Based in Munich, Chris van Gend joined AGCS in 2013 as Regional Manager Engineering, Asia, where he developed the construction and operational power portfolio and led underwriting teams throughout the region. Van Gend works out of the Munich office.

[1] Insurance Insider, Ituango Dam loss $1.2bn and rising. October 9, 2018

POLAR HAUL

During the 'polar vortex', **AGCS Senior Marine Risk Consultant, Randall Lund**, is onsite as an 820-ton, 97-meter long petrochemical distillation splitter undergoes a four-day, 80 mile crawl – 'the heaviest load in Alberta highway history'.

AGCS is the leading insurer on the move

It's a January midnight on the frozen Canadian prairie near South Edmonton, Alberta, as polar winds sweep in on a slanting snow.

AGCS Senior Marine Risk Consultant, Randall Lund, dressed in layers topped by a thick parka, stands in the -30°C cold with hundreds of other onlookers watching eight semi-trailer trucks latched to two-by-four, 26-line self-propelled modular transporter (SPMT) trailers bound together in a coordinated, centipede-like line haul a piece of industrial equipment as long as a football field onto Highway 14 – a combined total of 912 wheels digging into the frozen pavement.

The hauling contraption is massive and crowds line the highway at all times of day and night over the four-night move just to get a glimpse. Local media has warned the public for days of highway closures and delays along the route stretching from the Dacro Industries assembly yard in South Edmonton to Inter Pipeline's $3.5bn project site at the Heartland Petrochemical Complex, 80 miles away in Fort Saskatchewan.

Alberta's provincial government calls it **the "heaviest load in Alberta highway history"** – a splitter that will separate propylene gas from 22,000 barrels of low-value Alberta propane per day and process it into 525,000 tons of high-value, easy-to-transport polypropylene (PP) pellets per year to be used in the manufacturing of currency, medical products, apparel, computers and other petrochemical products.

"This was a massive endeavor," says Lund. "It was a significant news story in the local and regional press and was the culmination of a lot of coordinated project work by AGCS, Dacro (the fabricator), Inter Pipeline (the project owner), Mammoet (the heavy-lift transporter) and Kiewit (the contractor), local authorities and everyone else involved. For AGCS, it was a real team effort – from ARC colleagues in both North America and Germany to underwriting in New York. A great team win!"

AGCS is the leading insurer on the move, providing project cargo cover for the journey to the project site and offloading of the splitter, once it arrives. A marine delay in start-up (MDSU) policy is in place to secure coverage.

Once the project site is operational in late 2021, it will be Canada's first integrated propane dehydrogenation (PDH) and polypropylene (PP) complex.

FACTS AND FIGURES

820 =	weight in metric tons (about four times the weight of a blue whale)
97 =	height in meters (about the length of a football field)
1 =	years to fabricate the splitter
80 =	percent of all materials sourced in Alberta
80 =	miles for the move from Edmonton to Fort Saskatchewan
4 =	days to complete the move
912 =	total number of truck/ trailer tires on equipment transporting tower
13,000 =	number of direct and indirect Canadian jobs created for the four-year project

OUR EXPERT

Randall Lund
randall.lund@agcs.allianz.com

BURNING ISSUE: FIGHTING FIRE WITH FOAM

Another record wildfire season has come and gone; each new season seems worse than the last. While mitigation against firestorms is tricky, evolving technologies like fire-fighting foam used for pretreatment and suppression around the perimeter of a property, can help businesses avoid peril and keep a company's doors open as long as possible.

$19BN

Estimated losses from California wildfires in 2018

Each year, California burns – some seasons worse than others.

In 2018, major fires stretched from the Oregon border in northern California south to the Los Angeles suburbs – a distance of over 685 miles (1,100 km). The worst was the Camp Fire (so called because of its outbreak on Camp Creek Road in Butte County), which broke a 2017 record for the number of structures destroyed (15,573 – 472 of which were commercial) and killed over 80 people[1]. It became the deadliest wildfire in California's history and the worst in a century in the US[2].

Just three fires, alone – **the Camp, Woolsey** and **Hill fires** – caused total insured losses of $9.05bn[3], which could balloon to over $13bn when final tallies are in. CoreLogic, a third-party loss estimator, places total California wildfire losses for 2018 at between $15bn and $19bn[4].

[1] CBS News, Rain could cause ash flows in town devastated by Camp Fire, November 20, 2018
[2] Government of California, Cal Fire Incident Information: Camp Fire, November 20, 2018
[3] Claims Journal, About $9B in Insured Losses After Three California Wildfires, December 13, 2018
[4] Insurance Journal, Report Puts Losses from California Wildfires at $15B to $19B, November 27, 2018

California's Carr Fire in 2018 was the 8th most destructive wildfire in the state's history

Of the 20 largest wildfires in California history, 15 have occurred since 2000[5]. And while data show the overall frequency of wildfires has remained relatively constant season-on-season, the size, volatility and impact of wildfire events has dramatically increased.

Reinsurance and risk modeling experts have begun using terms such as "mega-fires" and "the new abnormal" when mentioning recent wildfire trends and have identified some contributing trends to worsening conflagrations (*see box page 12*).

So, is this a new normal? And how can improved risk mitigation techniques help extinguish wildfires.

FOAM "COVERAGE" FOR FIRE-PROTECTION

Among fire mitigation solutions, one of the more novel is the application of environmentally-safe, biodegradable fire-fighting foam used for pretreatment and suppression around a property's perimeter and buildings when fire threat is imminent.

One such solution, marketed by **Consumer Fire Products, Inc. (CFPI)**, a professionally trained brigade of fire professionals dedicated to wildfire property protection, is applied manually from private fire trucks fashioned with state-of-the-art equipment. The brigades coordinate closely with local incident command centers and operate within active fire zones, at the behest of insurers and other interested parties.

In 2018, AGCS had significant accumulations of customers concentrated in the areas of the Mendocino Complex and Woolsey Fires, with variations in topography, density of vegetation and exposed construction. The Allianz Risk Consulting (ARC) and MidCorp Underwriting teams conferred and decided conditions within these areas warranted engaging CPFI services for certain customers (*see box page 13*).

AGCS worked with CFPI to evaluate exposed locations, assess fire threat and prioritize deployment of resources. Eight customers with significant exposure and in close proximity to the forecast fire path were identified, representing all segments of the MidCorp portfolio. CFPI patrolled these locations and took precautionary measures such as clearing brush, relocating flammable materials away from combustible construction and, as a last resort when under imminent threat, spraying buildings and foliage with biodegradable, fire-fighting foam.

THE 1 MINUTE DIALOGUE

- Although wildfire numbers have remained relatively constant, season-on-season, their size, volatility and impacts have dramatically increased
- Risk modeling experts attribute "mega-fire" events to increased human activities in fire-prone areas, more dry/dead vegetation due to drought and worsening weather volatility
- Innovative fire-fighting methods, such as spraying biodegradable insulated foam onto structures and vegetation, have been successfully used to suppress fires and save property
- A variety of insurance covers are available to mitigate against fires and, during the wet season that follows, mudslides in previously burned areas

Although the ability to know exactly where to invest and deploy protective services real-time is challenging, the concerted monitoring of conditions with underwriters enabled protection services, once deployed, to continue until conditions like wind speed, low humidities and underbrush dryness diminished enough over a seven-day period to safely discontinue services.

PREDICTIVE AND PROACTIVE MITIGATION

Insurance can offer mitigation solutions to wildfire events, through close association with support services like CFPI.

"We are pleased to support communities struggling to mitigate extreme catastrophes like wildfires," says **Scott Steinmetz, Global Head of Risk Control, MidCorp, AGCS**.

He explains that innovative approaches and services such as CFPI's represent a part of the new frontier in **predictive and proactive mitigation** responses and that the insurance industry should be at the center of the dialogue as such capabilities emerge.

[5] Advisen, California fires: Why there will be more disasters like Paradise, November 19, 2018

Remains of Paradise, California, after the Camp Fire, November 2018

CONTRIBUTING FACTORS TO WORSENING WILDFIRES

- Increase in property development in and adjacent to areas between unoccupied land and human development (90% of wildfires are caused by people – accidentally or purposefully)
- Increase in fuel loads such as dead trees on the ground due to drought and insect infestation, and a decrease in fuel moisture content as a result of prolonged arid conditions
- Increase in weather volatility year-on-year, as well as longer dry seasons when intense seasonal wind patterns are most conducive for fire spread
- Changes in fire behavior, with rapid expansion becoming more explosive due to a confluence of extreme conditions including high temperatures, low humidities, strong winds, high fuel loads (vegetation and structures) and steep, hilly terrain
- Multiple fires have erupted at the same time and often in close proximity, stretching the availability of fire-fighting resources and their capability for aerial drops of retardants due to massive smoke plumes which reduce visibility.

After an event, insurers should ramp-up communication efforts with customers – making immediate contact and maintaining it until adjusters can access impacted areas to assess damages, advance funds and analyze and facilitate customer needs (e.g. finding temporary storage locations or modifying existing undamaged structures – as in the case of the help AGCS provided to a winery in 2018 when it paid to modify an existing structure to accommodate a destroyed tasting room and enlisted winery employees to help clean-up so the business could reopen).

"While our capabilities as an insurer are overmatched by the nature and size of weather patterns and resulting consequences," said **Brian Klepchick, Global Head of MidCorp Property**, "we support and respond to wildfire events when they occur and help solve problems in the very communities in which we also live. We are committed to bringing risk awareness, property preparation and customer service wherever we can."

INSURANCE SUPPORT

Besides property insurance, which covers existing structures, and time element coverages to protect against business interruption, some "inland marine" coverages can also help in the rebuilding phase (e.g. repairing a burned-out site that is damaged by ensuing mudslides).

- **Builders risk** coverages protect real estate developers, contractors, subcontractors, architects and property owners against rebuilding or remodeling damages.
- **Installation floaters** insurance protects machinery and equipment to be installed at a project or job site or in temporary storage awaiting installation.
- **Riggers liability** covers the legal liability of contractors acting as riggers for third-party property that they are holding for others.
- **Construction block** insurance covers all projects until the customer's interest ceases.

AFTER THE FIRES, DELUGE: MUDSLIDE MITIGATION

Often, heavy rains during the wet season in previously burned areas can cause devastating mudslides which can further exacerbate and even increase property loss.

According to the State of California Department of Insurance, insured losses from the 2018 mudslides which especially hit the Santa Barbara area hard resulted in 358 commercial property claims, totaling $129.2mn. Taking all claims into account – commercial and personal property – the grand total was $589.5mn .

Damages from mudslides can be as costly as damages from fires. Some tips to mitigate mudslide dangers include:

- Monitor local warnings to know if you are in a mudslide-prone area; common sense is key
- Be aware of your surroundings and the possibility of mudslides
- Be mindful of the potential for large pieces of landscape, including trees, logs, boulders and other debris fields, as well as "floating" destroyed houses, buildings, vehicles, etc. to fall or move in your vicinity.

CFPI trucks patrol a property's perimeter as precautionary measures against encroaching fires

CFPI – FIRE SERVICES FOR INSURERS

In 2017 and 2018, AGCS engaged **Consumer Fire Products, Inc. (CFPI)** – a brigade of trained fire professionals dedicated to wildfire property protection – to evaluate exposed locations for certain customers whose businesses were faced with an immediate fire threat to analyze the situation and prioritize resources. CFPI offers innovative fire protection services when wildfire threatens.

CFPI trucks are equipped with state-of-the-art equipment, including an environmentally-safe foam system which, when applied to combustible material, creates a thermal barrier to protect property in imminent danger of fire. CFPI coordinates closely with local incident command and can travel within active fire zones.

CFPI monitors exposures and takes precautionary measures, such as clearing brush, relocating flammable materials away from combustible construction, and, in extreme cases of danger, spraying buildings/foliage with biodegradable, fire-retardant foam.

The solution is offered where properties are most vulnerable and as brigades are available. Underwriters use the information gained during these monitoring operations for ongoing predictive and early response opportunities.

HARDENING DEFENSES

Irene Rhodes, Founder and **CEO of CFPI**, united her backgrounds in engineering and firefighting to create a system that automatically sprays a biodegradable protective foam onto structures when a wildfire is nearby. Rhodes has 30 years of experience responding to wildfires and says the 2017 and 2018 seasons were unprecedented.

"These were back-to-back 200 year events. Drought, warmer trends, 100% ember fire combustion rates, and 1% humidity were all contributing factors," Rhodes says. "There was just so much fuel from the quick growth in the spring — enough fuel to burn 40,000 to 50,000 acres in under 6 hours — that's a lot of flash fuel." Rhodes noted the fires were more terrain- than wind-driven, feeding off dry vegetation.

"We took risk prevention and mitigation to the next level by hardening clients' defenses and preserving property in partnership with policyholders", added **Scott Steinmetz, Global Head of Allianz Risk Consulting MidCorp**, "We're looking into how this form of an innovative, in-event mitigation service on such a large scale can be tailored to meet the needs of customers exposed to various natural perils."

WILDFIRE FACTS AND FIGURES – 2017-2018*

- In 2018 there were 58,083 wildfires in the US, compared to 71,499 in the same period in 2017
- The 10-year average (since 2008) of annual US wildfires is 69,020, up from the 5-year average of 63,717 in 2013
- Mendocino Complex Fire in Northern California in July 2018 was the largest fire in state history (459,123 acres)
- Carr Fire a week before was the eighth most destructive in California's history
- Both fires claimed 8,900 homes, 329 businesses, 800 autos/commercial vehicles resulting in over 10,000 claims
- Camp Fire in November 2018 was the deadliest, most destructive fire on record in California killing 88 people and destroying around 530 commercial buildings
- Hill and Woolsey fires occurred on the same day as the Camp Fire, but further south, destroying over 100,000 acres combined
- About 10 million acres were burned in 2017 in the US, compared with 5.4 million in 2016
- In both 2018 and 2017 average acres burned in California were higher than the 10-year average.

* Insurance Information Institute (III), Facts and statistics: Wildfires, 2019

90
percent of wildfires caused by people

OUR EXPERTS

Brian Klepchick
brian.klepchick@agcs.allianz.com

Scott Steinmetz
scott.steinmetz@agcs.allianz.com

MAKING A NOISE ABOUT "SILENT" CYB

Hackers snag a transit system's controls causing a train derailment. Malware snakes through a GPS-linked navigation system, steering a ship into a bridge. Cyber risks can easily cause physical damages or claims. So-called "silent" cyber exposures in traditional property and casualty (P/C) insurance policies create uncertainty for clients, brokers and insurers alike. Allianz is one of the first insurers to rethink established modes of underwriting in order to clarify cyber risks.

$3BN

estimated "silent" cyber insurance losses to date from NotPetya

It was just a pre-taste of what a real global **"cyber hurricane scenario"** could look like – and still the impact was disastrous for many companies globally.

In 2017, large cyber-attacks like Petya/NotPetya and WannaCry caused significant losses for businesses – insured losses for the former are estimated to be $3.3bn. Global conglomerates like Merck and Maersk suffered severe disruption of their systems and businesses during that attack. Pharmaceutical giant, Merck, by far the most severely hit, is reportedly receiving about $2bn in cyber insurance coverage[1]. Meanwhile, Maersk reported a $300mn loss from NotPetya.

According to US claims analyst, PCS, nearly 90% of the total industry loss of Petya/NotPetya was attributed to so-called **"silent cyber exposures"**, which are potential cyber-related losses stemming from traditional property and liability policies not specifically designed to cover cyber risks. Cyber loss events can impact multiple lines of business beyond specialist cyber cover such as property, business interruption (BI), errors and omissions (E&O) or kidnap and ransom (K&R).

[1] Artemis, Merck & silent cyber impacts drove Petya industry loss: PCS, November 7, 2018

A hacker potentially could open the floodgates at a hydroelectric dam, likely causing flooding and triggering property policies downstream

THE 1 MINUTE DIALOGUE

- So-called "silent" cyber exposures in traditional P/C policies create uncertainty for clients, brokers and insurers
- The nature of cyber risk is ever-evolving with hacker attacks becoming more sophisticated, targeted and far-reaching
- Most traditional policies were designed when cyber wasn't a major risk and don't explicitly mention or even consider cyber risk
- AGCS has been named the Center of Competence for Cyber ensuring a consistent underwriting approach for cyber risks for Allianz Group, worldwide

"The 2017 WannaCry and NotPetya attacks highlighted the risks and potential damage across all business areas causing significant concern around cyber risks in traditional P/C policies," says **Emy Donovan, Global Head of Cyber and Tech PI, AGCS**.

CYBER GOES MAINSTREAM

In the past few years, cyber risks have gone mainstream. For the first time in the eight-year survey, cyber incidents is the top global risk in the **Allianz Risk Barometer 2019**, tied with BI. Cyber incidents can trigger not only extensive financial or disruptive losses but, potentially, physical damage, BI, product recall, bodily injury or even life-threatening consequences.

"The nature of cyber risk is evolving rapidly and constantly, with hacker attacks becoming more sophisticated, targeted and far-reaching," Donavan says.

Companies increasingly are exposed to "large-scale, multi-vector mega attacks using advanced attack tools", often outpacing the maturity level of corporate IT security systems[2]. Besides cyber-crime, often it is technical failure, IT glitches or human failure which cause massive system outages or data losses.

"Silent" cyber scenarios could include a hacker attack on a transit system causing a train derailment or a malware-infected, GPS-linked navigation system incorrectly guiding a ship[3]. Another silent risk might include a hacker creating significant disruption by opening the floodgates at a hydroelectric dam, likely causing significant downstream flood damage[4] and potentially triggering property policies.

"Most traditional policies were designed when cyber hadn't yet emerged as a major risk and don't even explicitly mention or consider cyber risk," Donavan explains.

Such "silent," or "non-affirmative," cyber exposures lead to inadequate protection of customers with a lack of certainty and transparency for all parties involved – customers, brokers and Insurers – who are faced with coverage uncertainty.

NEW ALLIANZ UNDERWRITING STRATEGY FOR CYBER

Group-wide, Allianz is reviewing cyber risks in P/C policies and has developed a new underwriting strategy to address "silent" cyber exposures, ensuring that all P/C policies will be updated and clarified in regard to cyber risks. It has nominated AGCS to establish a **Center of Competence for Cyber** for the entire company.

"We will make it clear how cyber risks are covered in traditional policies and for which scenarios a dedicated cyber insurance solution is needed," Donavan

[2] Check Point, Achieving fifth generation cyber security: A survey research report of IT and security professionals, March 2018
[3] Willis Towers Watson, Silent cyber outlook: Is silent cyber risk creeping up on insurers?, September 11, 2017
[4] Guidewire, Aon and Guidewire launch cyber scenario for a US dam attack, October 25, 2018

says. The new strategy also responds to growing concern from regulators and rating agencies about cyber exposures in insurers' portfolios.

WHAT CHANGES?

For policyholders, the set-up depends on the line of business, as well as the market and regulatory environment. If unclarified, cyber exposures with clear definitions of when cyber risks are and are not covered in traditional policies will be specified in policy wordings.

"There is no one-size-fits-all approach," says **Marek Stanislawski, Deputy Global Head of Cyber, AGCS**.

AGCS policyholders will choose among several options to tailor cyber risk coverage to their individual needs and risk profiles – ranging from "now-affirmative" coverage in a traditional P/C policy to an endorsement embedded into a traditional policy to a specialist cyber insurance policy. In many cases, cyber event definitions will be added to existing wordings (e.g. property offers a dedicated cyber BI extension).

"A comprehensive solution for all products – while extremely challenging – is best for everyone involved," explains Stanislawski. "This keeps specific cyber expertise in the lines of business where they've traditionally been underwritten and also benefits customers by providing certainty about the products they've bought."

WHAT DOESN'T CHANGE?

Under updated wordings in Allianz P/C policies, physical damage and bodily injury arising from cyber events will generally continue to be covered. Cyber-related "pure financial losses" without physical damage or injury, however, will be covered in affirmative cyber insurance solutions only (*see box*).

While the global market is beginning to address "silent" cyber exposures, Allianz is a "first-mover" insurer and is engaged in market information and education.

The new strategy helps Allianz better measure its cyber exposure and effectively respond to regulators and rating agencies. With these efforts, Allianz aims to be able to better manage the cyber aggregation risk in its P/C portfolios to deal with large-scale cyber loss scenarios that could potentially affect multiple policyholders at the same time.

REGULATORS AND REINSURERS RESPOND

Financial supervision increasingly warns of significant "silent" cyber risk in insurers' portfolios. The German supervisory authority, Bafin, has announced that it will be more attentive to insurance "silent" cyber exposures in 2019. The UK's Prudential Regulatory Authority urged insurers and brokers in 2017 to address cyber risks, so the move is on by regulators globally to raise awareness.

Reinsurers have increasingly put silent cyber on the agenda, as well. **Munich Re Board Member, Doris Hoepke**, says: "Insurers have to address silent cyber exposures in their traditional policies."[5]

The topic is also increasingly on brokers' agendas. Aon's reinsurance division has announced a "silent" cyber facility, while catastrophe modeling firm, AIR Worldwide, collaborated with reinsurance broker, Capsicum Re, to identify which non-cyber lines of business are exposed to cyber-related losses. Willis Towers Watson's *2018 Silent Cyber Outlook Survey* highlights growing concerns about "silent" cyber exposures.

"I would expect 2019 to be definitely noisier around 'silent' cyber exposures," Donavan says. "The industry has to get a grip on these challenges in one way or another and we are expected to provide attractive solutions around cyber – as today's key business risk."

AFFIRMATIVE COVERAGE

TWO SCENARIOS

AFFIRMATIVE COVERAGE IN TRADITIONAL POLICY:
A hacker attack on industrial software causes an explosion at a factory; physical damage and subsequent BI loss would be covered in a standard Allianz P/C policy.

AFFIRMATIVE COVERAGE THROUGH CYBER POLICY OR ENDORSEMENT:
Malware leads to a disruption of production or service delivery and loss of revenues for a company without physical damage; such "pure financial losses" may require a dedicated cyber insurance policy, or a cyber-specific endorsement to traditional policies.

KEY BENEFITS OF ALLIANZ'S NEW CYBER RISK STRATEGY

- Full transparency, clarity and certainty of cyber risk coverage for customers and brokers
- Increased speed of claims settlement in the event of a loss, as policies provide coverage certainty for cyber scenarios
- Updated policies designed for the new generation of cyber risks
- Custom solutions for cyber risk coverage: From embedded cyber cover in traditional P/C products to standalone cyber insurance
- Elimination of "unknown" overlaps in various coverages and gaps for policyholders
- Dedicated cyber expertise in the new Center of Competence for Cyber
- Clear portfolio monitoring and exposure management for Allianz, allowing effective use of underwriting capacity and optimal capital management.

OUR EXPERTS

Emy Donavan
emy.donavan@agcs.allianz.com

Marek Stanislawski
marek.stanislawski1@allianz.com

[5] Baden-Baden Reinsurance Conference in 2018

CYBER INSURANCE TAKE-UP TRENDS:

The **Allianz Risk Barometer 2019** – the eighth annual survey of over 2,400 risk management and insurance experts from more than 80 countries which identifies the top risks for businesses – included questions about take-up trends in cyber insurance. **Global Risk Dialogue** asked **Marek Stanislawski, Deputy Global Head of Cyber, AGCS**, to comment on the results.

STANISLAWSKI: "While a quarter of respondents detected a cyber incident last year, more than half did not, calling into question the degree of confidence we can place in detection and prevention systems, as there is a possibility that a cyber-attack was sophisticated and evasive enough that it managed to run undetected. Companies need to constantly monitor, update and modernize their IT security measures. Unfortunately, as with any effort to stay ahead of this risk, it's a never-ending and circuitous process."

Was a cyber incident experienced in the last year? (587 respondents)	Answers	%
	YES	24%
	NO	57%
	DON'T KNOW/ NOT SURE	19%

STANISLAWSKI: "The fact that more than half of respondents purchased cyber insurance last year goes hand-in-hand with their perception of cyber as a serious risk. The rise in take-up of this insurance product is expected to continue, as more and more companies become convinced of the gravity and severity of cyber as a risk."

Was cyber insurance purchased in the last year? (527 respondents)	Answers	%
	YES	54%
	NO	46%

STANISLAWSKI: "We take very seriously the message that 61% of respondents point to the insufficiency of available capacity. While traditional business lines provide world-leading capacity, our Alternative Risk Transfer service can assist large corporations in structuring a tailored risk transfer solution which can overcome the insufficient capacity in traditional markets."

Cyber insurance coverage limits are currently sufficient. (506 respondents)	Answers	%
	AGREE	39%
	DISAGREE	61%

STANISLAWSKI: "It's interesting that almost as many respondents feel that cyber insurance coverage is priced in line with expectations as those who don't. This seeming discrepancy can be attributed to the fact that the market is softening, despite all the exposures and uncertain accumulation risk, and underwriters can't always price according to the technical risk. Cyber policies often include coverage for other types of loss such as business income loss or ransom payments and, hence, are generally underpriced to fully cover all the various sources of insured loss because of competition. Pricing will harden as more losses occur and the industry perfects its modeling and analytics."

Cyber insurance coverage is adequately priced. (501 respondents)	Answers	%
	AGREE	49%
	DISAGREE	51%

STANISLAWSKI: "Although a vast majority of respondents (over 90%) agree to the need of having cyber insurance, only a little over half of them have equipped themselves with the product. The reason for this might be due to anything from internal budgeting constraints to uncertainty about the scope of cover to purchasing cyber extensions on existing policies rather than stand-alone products."

There is no need for cyber insurance. (481 respondents)	Answers	%
	AGREE	9%
	DISAGREE	91%

Source: Allianz Risk Barometer 2019

LIGHTS! CAMERA! INSURANCE!

Little magic would appear on the silver screen if it was not for the security that insurance provides to filmmakers.

No insurer would cover James Bond given the extreme punishment he inflicts upon his body – not to mention the property damage he causes – in service to Her Majesty, The Queen. Daniel Craig is a different matter. The latest actor to play the suave superspy, Craig, like other incarnations of 007 before him, must be insured before setting foot anywhere near a set.

Why insurance is necessary was clearly demonstrated during the filming for *Spectre* (2015), the 24th film in the James Bond series. The then 37-year-old actor suffered a meniscus tear during a stunt and underwent arthroscopic surgery. This resulted in a significant delay.

"With daily shooting costing up to half a million dollars a day for a blockbuster,

Photo: iStock

THE 1 MINUTE DIALOGUE

- With the high cost of film/TV production, any delay can significantly impact a studio's budget and cause losses to mount
- Entertainment insurance covers cost and extra expense resulting from potential delays due to injuries to actors or props/sets/equipment damage and equipment breakage
- The entertainment business has grown internationally – especially in China and Europe – and the industry is technologically more advanced as time goes on
- Hollywood still commands the most insurance premiums with an estimated $400mn annually

Activity in front of and behind the cameras translates to a lot of risk exposures for studios

losses can quickly mount if filming is delayed," says **Michael Furtschegger, Head of Entertainment International at AGCS**.

LOVE THE DRAMAS

As a filmgoer, Furtschegger prefers thrillers and blockbusters like the *Mission Impossible* series. However, when it comes to underwriting, he loves comedies, dramas and especially romances. "They are easier to cover," he explains with a laugh. "They tend to be without the death-defying stunts and high-octane pyrotechnics of the blockbusters."

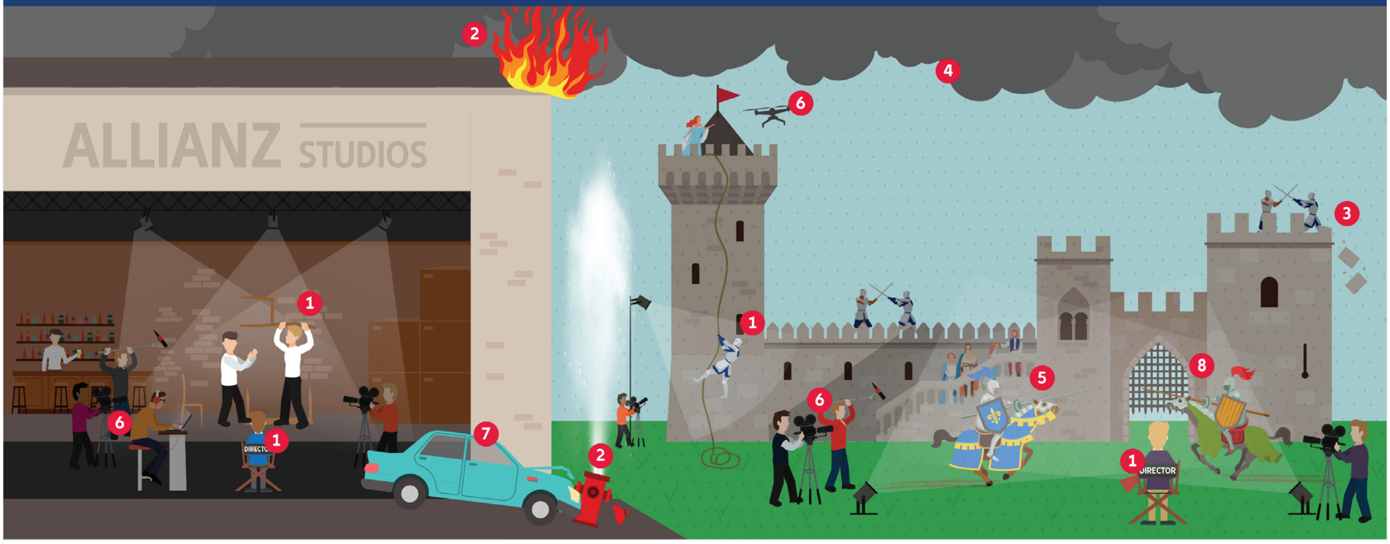
Between the dangerous stunts, the kaleidoscope of explosions and human error, a lot can go wrong on a set (*see infographic*). Most studios and independents will not start a film unless it's insured against potential delays from injury or incapacitation of actors, damage to props, sets and costumes, and equipment breakages. AGCS also covers extra expenses such

$45MN

Annual insurance premiums from the Chinese film industry - and growing

TAKE ONE! WHAT CAN GO WRONG IN FILM PRODUCTION

Whether it's adverts, documentaries or dramas – TV and film production poses all sorts of risks. And they can quickly lead to financial losses. Behind the scenes, entertainment insurers help keep the cameras rolling until the final cut.



FILM PRODUCTION RISKS KEY

1. **Cast**
   Delay/rescheduling/cancellation due to cast injury, illness, accident or death
2. **Fire/explosion/water damage**
   Extra expense due to delay/rescheduling of filming
   Physical damage to studio/set, props, equipment, cameras
   Liability claims for rented equipment/premises
3. **Filming in a studio and/or on location**
   Physical damage to studio or set
4. **Weather (e.g. storms/rain)**
   Physical damage to props, sets, wardrobe, equipment
5. **Animal scene/on-set**
   Delay/rescheduling/cancellation of filming due to actor/animal injury
6. **Equipment/film material**
   Physical damage to cameras, lighting, drones, sound equipment, film material
   Extra expense due to damage/loss of film material
7. **Vehicles on and off camera**
   Physical damage
   Traffic/stunt safety
   Liability claims
8. **Props, sets, wardrobe**
   Physical damage to sets, wardrobe and/or props leads to costs and extra expense

Allianz

Find out more at www.agcs.allianz.com/insights

$400MN

Annual insurance premiums from Hollywood

as damage to film material. Historically, this meant 16mm or 32mm film, but nowadays covers storage on electronic devices such as chip cards.

As part of their daily work, the global entertainment team at AGCS analyzes scripts, shooting schedules and budgets. In their assessment, among other factors, AGCS underwriters look at the cast involved, the stunts, the locations where they will be shot and sensitive medical history of the actors.

Nicole Kidman is one actress who was impacted by a problem injury. After insurers paid $3mn in production delays when she injured her knee on the 2001 film *Moulin Rouge*, it then prevented her from filming *Panic Room* (2002) and Jodie Foster was brought in as a costly replacement.

Typically – depending on genre, insured budget, deductibles and other risk factors – premiums can range from 0.6% to 1% of a movie's total budget, which could amount to between $1mn to $2mn for a $200mn movie production. Furtschegger says coverage usually has to be tailor-made for each production, and with blockbusters costing $200mn or more there is a lot riding on risk assessment getting it right.

"We see a lot of 'red flags,' but usually find a compromise in discussions with the client and by risk appropriate underwriting actions," says Furtschegger. "However, anything involving a member of the main cast doing their own stunts has proven to be very risky to cover. And once a famed documentary channel inquired about a presenter being swallowed by a python – that was a definite 'No.'"

Typically, the AGCS underwriter assesses the risks in meetings with

Photo: iStock

Analyzing scripts and shooting schedules is part of an entertainment insurance specialist's job

brokers and clients, special effects managers and technical crews well before the first day of shooting. For blockbusters, however, a risk engineer is often on-site to assess the risks and liabilities involved in stunts.

After thorough risk assessment, it could well be that Allianz requires changes to the script because of risk aggravating factors like asking to add stunt doubles or to rewrite scenes to limit the risks the actors are involved with.

SINCE THE SILENT FILM ERA

Allianz has a long link with the film industry stretching back to Hollywood's early silent era in the 1890s through the Fireman's Fund Insurance Company. From the Keystone Cops and Charlie Chaplin to Harry Potter and the latest Marvel superhero films, AGCS has protected thousands of Hollywood blockbusters, independent films and documentaries, as well as commercials and television productions.

Some of the classics insured during those decades include *Spartacus, The Godfather, Apocalypse Now* and *The Dark Knight Rises*. The company also underwrote the Iowa cornfields in *Field of Dreams*, treasures of the Louvre during filming of *The Da Vinci Code* and the **Sunset**, the ship cast as **The Black Pearl** in *Pirates of the Caribbean*, when it sailed from the Bahamas through the Panama Canal for filming.

"I think our long history gives us an outstanding reputation," comments Furtschegger. "It is why today every second or third blockbuster movie is insured by AGCS."

One of the longest associations is with the James Bond movie franchise.

"I think that is a good example of a true trust relationship we have built up over decades and why we are the insurer of choice for so many companies," he says.

GLOBAL DISTRIBUTION AND THE CHINA SYNDROME

Since 2015, when Fireman's Fund was integrated into AGCS, the business has grown internationally. This mirrored developments within the industry. New market formats such as online streaming platforms from players like Amazon and Netflix were challenging the status quo. Today, those companies are among the largest producers of content worldwide.

"We started offering our film portfolio globally and it was great timing," says Furtschegger. "These companies have gone truly global and are looking for a partner that can support them with a standardized global approach. In addition to our international breadth, we also have local insurance capacity that competitors cannot compete with."

The other significant trend, Furtschegger notes, has been the rise of the Chinese film industry. While Marvel Studio's *Black Panther* generated over $100mn in China after its March 2018 release, *Operation Red Sea*, an action movie about Chinese troops in Yemen that debuted the same month, grossed $579mn. This year has also seen a string of other Chinese domestic successes including *Detective Chinatown 2* ($541mn), *Dying to Survive* ($451mn) and *Hello Mr. Billionaire ($367mn)*. In fact, of China's 10 all-time highest-grossing movies, five are domestic films released since 2017.

"There has been a boom in Chinese cinema and, given the budgets, a corresponding growth in awareness about the importance of insurance," says Furtschegger.

Globally, the entertainment and media industry has been growing by 5.1% annually for the past four years and is expected to continue so in 2019. Although figures are difficult to come by, Hollywood still commands the most insurance premiums with an estimated $400mn annually, followed by the UK with approximately $40mn to $50mn and then France and Germany at $20mn to $30mn each. China is around $45mn and growing.

"I think it is fair to say that without insurance there would be no film industry," says Furtschegger. "Without insurance, there would be few backers to provide the big finance needed to put the magic on the silver screen and we at AGCS are one of the few parties worldwide with the ability to provide the necessary insurance."

OUR EXPERT

Michael Furtschegger
michael.furtschegger@allianz.com

TAXI! FLY ME TO WORK, PLEASE!

One day, commuting in an **unmanned electric flying taxi** will be possible: fast, economical, traffic-free – and with a virtual zero-carbon footprint. But we aren't there yet. Infrastructure improvements, regulatory decisions, safety issues – and assignment of insurance liability – must be addressed long before the technology "takes off."

Sometime soon, a commuter in Seoul, Sao Paolo or San Francisco will catch a taxi on top of a nearby parking garage to go to work. It will be a flying taxi – a zero-emission, **electric vertical take-off and landing (eVTOL)** vehicle – and the commute will take a fraction of normal commuting times.

We're not there yet, but probably will be by the next decade. **Urban air mobility (UAM)** promises many improvements – traffic decongestion, improved mobility, reduced commutes, decreased pollution and diminished accidents, but also many challenges – infrastructure to handle vehicle fleets, regulations to codify and certify their use, manufacturers to produce sufficient quantities to catch-up with demand, and insurance solutions protecting passenger safety and reducing operator liability.

CURRENT STATE

Chinese manufacturer, Ehang, debuted the world's first electric-powered unmanned passenger drone – **the Ehang 184** – in 2016 in Las Vegas and around 1,000 test-flights have since been flown. Simultaneously, to help boost infrastructure, Uber formed a ride-sharing and cargo delivery platform – **Uber Elevate** – to prepare for flight demonstrations in select US cities by 2020 with an eye to full operational capacity by 2023. It is seeking an "Uber International City" to similarly run test flights in either Japan, India, Australia, Brazil or

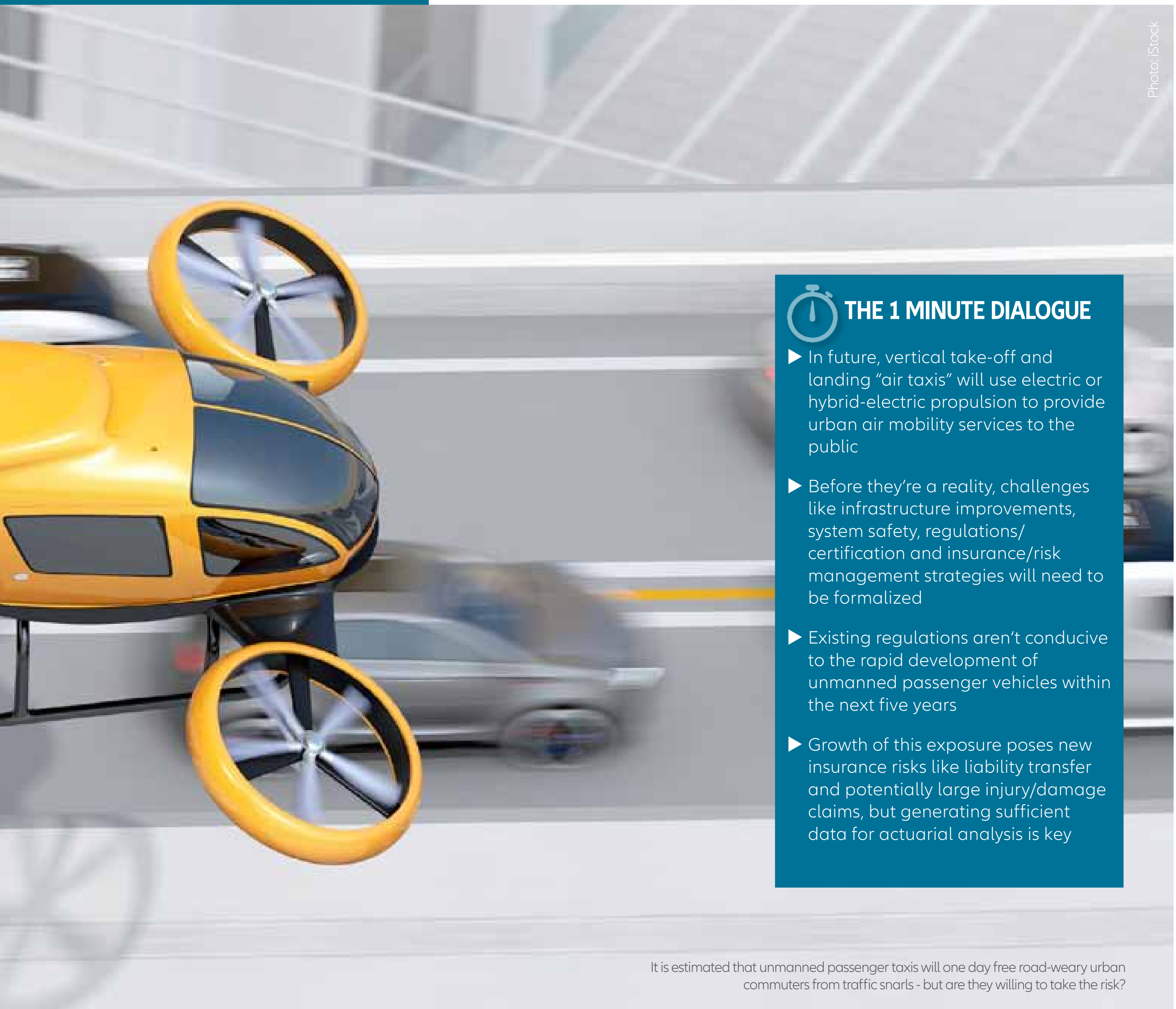


Photo: iStock

THE 1 MINUTE DIALOGUE

- In future, vertical take-off and landing "air taxis" will use electric or hybrid-electric propulsion to provide urban air mobility services to the public
- Before they're a reality, challenges like infrastructure improvements, system safety, regulations/ certification and insurance/risk management strategies will need to be formalized
- Existing regulations aren't conducive to the rapid development of unmanned passenger vehicles within the next five years
- Growth of this exposure poses new insurance risks like liability transfer and potentially large injury/damage claims, but generating sufficient data for actuarial analysis is key

It is estimated that unmanned passenger taxis will one day free road-weary urban commuters from traffic snarls - but are they willing to take the risk?

WORLD'S TOP 10 CONGESTED CITIES[1]

1. Mexico City, Mexico
2. Bangkok, Thailand
3. Jakarta, Indonesia
4. Chongqing, China
5. Bucharest, Romania
6. Istanbul, Turkey
7. Chengdu, China
8. Rio de Janeiro, Brazil
9. Tainan, Taiwan
10. Beijing, China

France (the winner is announced later this year).[2]

There are currently more than 130 companies producing and testing prototype eVTOLs, as tracked by the Vertical Flight Society (VFS) World eVTOL Aircraft Directory[3]. Such companies have attracted over $1bn in investment in a market valued between $500bn to $2trn – companies including some of the world's largest aerospace manufacturers (Airbus, Bell, Boeing, Embraer), automotive companies (Audi, Honda, Rolls Royce, Toyota), and technology leaders/investors (Google, Intel, Uber). The potential is for over 100,000 commercial manned/ unmanned electric aircraft to flood the market once an integrated support system is in place[4].

Yet, after applying operational constraints and barriers, only 0.5% (between $2.5bn and $10bn) of potential capital can be realized in the near term, according to the US National Aeronautical and Space Administration (NASA)[5]. Fully-operational eVTOL investment is a long-term play.

Before such technology is accepted, however, there are significant challenges, driven by four overarching areas: **infrastructure**; **vehicle inventory**; **regulations**; and **safety**.

[1] TomTom Traffic Index, Measuring Congestion Worldwide: Full Ranking, 2017
[2] Uber Elevate, Press Release, August 30, 2018
[3] Vertical Flight Society, eVTOL Aircraft Map (companies and test flights), http://evtol.news/evtol-aircraft-map/
[4] Vertical Flight Society (VFS), press release, November 2018
[5] National Aeronautical and Space Administration (NASA), Executive briefing: UAM market study, October 5, 2018

CHALLENGES

INFRASTRUCTURE

Perhaps the biggest challenge facing UAM integration is on-ground support infrastructure[6]. Airports aren't the answer, due to safety concerns (*see box page 25*), so landing areas, charging stations and customer access points are required. German start-up, Volocopter[7], envisions a network of rooftop "voloports" serving around 10,000 passengers per day.

Airspace control is also important. An air traffic control (ATC) system monitoring air taxis and traditional traffic isn't currently possible – safe integration of manned and unmanned traffic is best accomplished through autonomous Unmanned Traffic Management (UTM) systems.

"Beyond visual line of sight (BVLOS) operations will expand and enable flights only after autonomous UTM systems are available and fully functional," says **Tom Chamberlain, Underwriting Manager, Aerospace and General Aviation, AGCS**. Further, once fully integrated, cybersecurity of the entire operation will become paramount.

"Redundant critical components, along with functioning sense-and-avoid technology and clear airborne priority rules, will also be required and will make eVTOLs more safe," adds **Thomas Kriesmann, Senior Underwriter, General Aviation, AGCS**.

But, first, there have to be vehicles to meet the demand.

VEHICLE INVENTORY

Although many companies are investing in various concepts, and some are already flight-testing, the lack of inventory is a major problem. "Before being functional, years of vehicle testing and development are needed. Operational services, at least in the US, are years away," says **James Van Meter, Regional Head of Aviation Programs and Product Development North America, AGCS**.

The Chinese-made Ehang 184 debuted in 2016 and has undergone over 1,000 test flights

One bottleneck is battery capacity, as power loss is a safety issue. Charging requirements need to evolve from recharging after every flight to recharging after five or so flights for full operational functionality. Performance degradation occurs as batteries lose power during flight, whereas efficiency actually improves as fuel is burned and weight is decreased with conventional aircraft.

Thousands of eVTOLs will need to be ready once UAM services launch – estimated to reach 23,000 by 2035, in a $32 billion passenger market. Currently, no company makes more than 700 vehicles a year. Mass production will require considerable investment[8].

REGULATIONS

Regulatory approvals and certification testing for eVTOLs will also need to be worked out, difficult in the US and, to a lesser degree, Europe. Conversely, Asia and Middle East markets are more ready to roll. Only Dubai and Singapore are developing air taxi systems to launch within the next few years, although unmanned cargo operations are in full test-mode in 64 municipal areas around the world[9].

"Existing regulations aren't conducive to the rapid development and implementation of unmanned passenger vehicles within the next five years or more," says **Ryan Wallace, Assistant Professor, Department of Aeronautical Science, College of Aviation, at Embry-Riddle Aeronautical University**. The FAA is shy about integrating UAM technology into national airspace, a position likely to harden as more near-misses with small unmanned aircraft are reported at airports (*see box page 25*).

Less conservative, the European Aviation Safety Agency (EASA) issued a proposal of airworthiness standards in October 2018 to clear initial hurdles enabling the safe operation of piloted air taxi and eVTOL aircraft in Europe[10] – unmanned regulations have not yet been codified.

As UAM technology contributes new propulsion systems and vehicles that haven't been certified or addressed by regulations[11], stringent testing requirements will necessarily follow.

SAFETY

The transition to unmanned passenger service will require substantial shift of public trust. A fatal accident in the early years of development would damage confidence, investment and enthusiasm for the technology. The key to this

6 Washington Post, This company says its air taxis could be flying people across major cities by the 'mid-2020s', January 10, 2019
7 The Verge, Volocopter envisions 'air taxi' stations that can handle 10,000 passengers a day, April 17, 2018
8 Porsche Consulting, The future of vertical mobility: Sizing the market for passenger, inspection and goods services until 2035, 2018
9 Unmanned Airspace, Urban air mobility takes off in 64 towns and cities worldwide, December 10, 2018
10 EASA, press release, October 15, 2018

Like with any new product, risk exposures will need to be assessed by insurers

technology will be a demonstrably safe, well-tested and certified vehicle.

According to a YouGov survey, only a quarter of US adults have heard of unmanned passenger drones and 54% reported they wouldn't feel safe in one. Only 5% felt safe enough to ride in one[12].

"People already travel on unmanned vehicles in most airport terminal shuttles and commercial flights routinely operate on autopilot, without thinking of safety", says Chamberlain. Autonomous vehicles are predicted to eventually be safer than traditional aircraft.

Without a pilot onboard, a new automated communication and guidance system will need to be developed, performing identical functions as a manned crew while rapidly responding to ATC instructions to avoid traffic, weather or similar hazards. Safety measures will have to be robust to attract riders – and investors.

In case of accidents, liability questions will shift from pilots to developers, manufacturers or operators. "Given today's litigious conditions, I doubt most companies will roll-out a product without substantial validation testing," says Wallace. This is where we enter the domain of insurance.

INSURANCE AND AIR TAXIS

Like any new product, risk exposures will need to be assessed by insurers, but adequate historical data doesn't yet exist. "From a risk standpoint, it will be important to generate sufficient data and make it available to all stakeholders," says Kriesmann.

Once authorities have cleared the technology, the public may embrace it and insurers will step-up their commitment to offer solutions. Hull and physical damage coverages will be similar to aviation coverages that already exist, while liability scenarios will change.

"I think this process will dramatically deviate from the path smaller unmanned aircraft systems (UAS) insurance has taken," says Wallace, "since the amount of damage or injury capable of being inflicted is relatively minimal. With a human passenger onboard, the potential liability escalates considerably."

"Aviation insurance will continue evolving and the industry will develop insurance products to understand, mitigate and manage risk and create the safest possible environment for eVTOLs to thrive, once the market evolves," says Van Meter.

INCREASING AIRPORT DRONE INTRUSIONS

Severe disruptions occurred at Gatwick Airport, London's second busiest airport, resulting in 1,000 flight cancellations or diversions and affecting 140,000 passengers, when recreational "drones" reportedly appeared over the airport for three days in December 2018. Similar drone incidents with airliners or near airports occurred in late 2018 and early 2019 in Tijuana, Mexico; Newark, New Jersey; and London's Heathrow Airport, to name but a few.

Flight intrusions are increasing as more drones and pilots enter the market, explains **Tom Chamberlain, Underwriting Manager, Aerospace and General Aviation, AGCS**. The incidents at Gatwick were monitored closely by the aviation industry; coincidentally, beginning in 2019, UK drone owners will be required to register their vehicles over 250g – similar to what pilots in Australia and Germany have done for some time.

"We're also asking the authorities to look at requiring drone pilots to be insured, as with automobile drivers. After all, the risks remain the same," he says.

OUR EXPERTS

Tom Chamberlain
tom.chamberlain@allianz.com

Thomas Kriesmann
thomas.kriesmann@allianz.com

James Van Meter
james.vanmeter@agcs.allianz.com

[11] Inside Unmanned Systems, Urban Air Mobility: Catching a very local flight, April 20, 2018
[12] CNBC, Would you feel safe riding a passenger drone? According to research, most Americans wouldn't, July 10, 2017

Photo: iStock

SIX AVIATION LOSS TRENDS ON THE RADAR

Despite a number of crashes, the global airline industry has also experienced some of its safest years ever in recent times, yet the number of claims shows no sign of abating. Human error, rising repair costs from composite materials and higher value engines, an increase in ground incidents at more congested airports and a growing reliance on automation are just some of the main factors influencing loss activity.

1 SAFETY MILESTONES AND LOSSES CONTINUE

With more reliable engines and technology and following significant improvements in airline risk management, serious accidents are far fewer today. According to the International Air Transport Association (IATA)[1], there was just one major accident for every 8.7 million flights in 2017 – over four billion travelers flew safely on 41.8 million flights.

"For the first time in more than 100 years of aviation history in 2017 there were no fatalities on a commercial airline, a remarkable achievement by any measure," says **Kevin Smith, Global Head of Aviation Claims at AGCS**. "This is not an aberration. Flying has become a much safer mode of transport and is the result of the considerable efforts of aircraft and engine manufacturers to get to this stage."

With more than one million people in the air at any one time, this impressive statistic is to be applauded but 2018 and 2019 to date have seen a number of fatal airline accidents, the worst being the loss of a Lion Air Boeing 737 off Indonesia in October 2018 which went down shortly after take-off with the loss of 189 people. Similarly, on March 10, 2019, an Ethiopian Airlines 737 crashed after take-off with the loss of all 157 passengers. These incidents followed the loss of a Cubana de Aviación Boeing 737, in May 2018, with 112 passengers and crew. In addition 2018 also brought a number of total hull losses, where all passengers survived. For example, a Pegasus Airlines Boeing 737 was written-off after it overshot the runway at Trabzon Airport, Turkey in January, while a Xiamen Airlines Boeing 737 was declared a total loss after it crash-landed in bad weather in August. In total, 2018 saw a total of 15 fatal airliner accidents, resulting in 556 fatalities,[2] but this still ensured it was the third safest year ever by the number of fatal accidents and the ninth safest in terms of fatalities, according to the Aviation Safety Network.

2 HUMAN ERROR A MAJOR LOSS FACTOR

Technological advancements and improved quality control of aviation manufacturing and maintenance has significantly reduced the number of accidents caused by mechanical or structural failure. Consequently, human error has become a more significant cause of loss.

"Pilot error is a major factor behind many aviation accidents," says Smith. "It has been estimated that as many as 95% of airline accidents involve human

[1] IATA, IATA releases 2017 airline safety performance, 22 February 2018
[2] Aviation Safety Network, Aviation Safety Network releases 2018 airliner accident statistics.

AVIATION INSURANCE CLAIMS – WHAT ARE THE TOP CAUSES OF LOSS?

BY VALUE OF CLAIMS

Collision/crash	59%
Faulty workmanship/maintenance	10%
Machinery breakdown (including engine failure)	6%
Travel issues (including luggage delay)	4%
Slips and falls	3%
Other	18%

BY NUMBER OF CLAIMS

Collision/crash	27%
Travel issues (including luggage delay)	20%
Faulty workmanship/maintenance	13%
Slips and falls	5%
Defective products	3%
Other	32%

Source: AGCS, Global Claims Review: Top Causes of Corporate Insurance Losses. Based on analysis of 48,692 insurance industry claims worth approximately €13bn ($14.9bn) between July 2013 and July 2018.

Aviation collision/crash incidents are the second top cause of insured losses globally overall behind fire and explosion incidents according to AGCS analysis of more than 470,000 insurance industry claims over the past five years[3]. Aviation claims from this data set show collision/crash incidents account over half the value of all claims (59%) and more than a quarter by number (27%). Such incidents do not just include major crashes; they also incorporate events like hard landings, bird strikes and runway incidents such as incursions and excursions (the average claim for which is now almost €1.4mn [$1.6mn])[4].

error in some capacity. Aircraft are now very safe but most accidents involve errors of judgement, such as taking off in bad weather or the way in which a pilot reacts in adverse conditions."

3 INCREASING CLAIMS FREQUENCY AND AIRCRAFT VALUES

While catastrophic air crashes are now far less frequent, the overall frequency of aviation claims is slightly up, due to factors such as higher repair costs, increased values at risk and the relatively low deductibles maintained by airlines in what has become a highly competitive aviation insurance market. The average deductible at $1mn today is around the same as it was in 1982, yet aircraft values have increased three fold, Smith explains.

Despite few major losses and no fatalities in 2017, the aviation insurance market barely broke even – a reflection of market conditions and attritional losses while 2018 represented the sixth consecutive year where airlines claims exceeded premiums according to broker JLT[5].

Claims frequency is up, but this is not the only factor. "The size of loss has increased and deductibles have not kept pace with technology and values. A $5mn loss today would probably have cost just $1mn five years ago and been within the deductible," says Smith.

4 COSTLY COMPOSITE MATERIALS AND MORE EXPENSIVE ENGINE REPAIRS

The use of composite materials in aircraft manufacturing really took off around a decade ago, and today the majority of the world's commercial airline fleet now relies on such materials. Composites – such as carbon fiber layers bonded with resin – are strong, but also light, therefore reducing weight and increasing fuel efficiency. Such materials are now used extensively in modern aircraft – some 50% of Boeing's 787 Dreamliner[6] is made of composite materials by weight.

"Composite materials have many benefits, but they can be more challenging and expensive to repair,"

THE 1 MINUTE DIALOGUE

- Claims frequency up due to factors such as higher repair costs, increased values at risk and low deductibles
- Collision/crash, maintenance and machinery breakdown are top three causes of insured losses.
- More aircraft on the ground, in servicing areas and aprons resulting in more collisions
- Cyber risk voted number one concern by aviation risk experts in future

[3] AGCS, Global Claims Review – The Top Causes of Corporate Insurance Losses. Analysis of 471,326 insurance claims worth €58.1bn ($66.5bn) featuring AGCS and other insurers.
[4] AGCS. Based on 404 aviation insurance claims involving runway incidents between July 2013 and July 2018
[5] JLT, Plane Talking Q4 2018
[6] Boeing website, 787 Dreamliner by design, advanced composite use

The rapid growth in air travel is resulting in more congested skies and airports

says Smith. "Aircraft manufacturers may not have envisaged the realities of repairs when developing these materials a decade or so ago."

The claims experience has revealed a higher repair cost associated with composite materials which are generally more expensive to manufacture than traditional metal alloys, more labor intensive to repair and often require a larger repair area.

"We are now at the stage where we have had some seven or so years of claims experience with composite materials and we can say that composite aircraft are more expensive to repair," says Smith. For example, a claim involving a fire under the front landing gear of a 787 cost $13mn to repair. The same incident for an older generation metal alloy aircraft would have cost somewhere between $3mn and $4mn.

While safer and more reliable, aircraft engines are also now much more expensive to repair or replace. Top-of-the-range engines used on the Airbus A350 can easily cost more than $40mn each – just under the value of a whole 737 a decade ago. The drive for fuel efficiency has resulted in lighter engines that fly longer distances. However, technical advances such as the use of new materials and thinner, lighter turbine blades have reduced the tolerances at which engine components operate while the cost of spare parts has also increased.

Find out more about the top causes of corporate insurance losses in the latest AGCS **Global Claims Review** report.

www.agcs.allianz.com/insights

TOP RISKS IN THE AVIATION SECTOR FOR 2019

	RISK	PERCENT	2018 RANK	TREND
1.	Cyber incidents	43%	2 (44%)	↑
2.	Business interruption	37%	1 (45%)	↓
3.	Changes in legislation and regulation	36%	4 (26%)	↑
4.	Market developments	33%	3 (33%)	↓
5.	Natural catastrophes	19%	9 (11%)	↑
6.	Political risks and violence	16%	4 (26%)	↓
7.	Product recall, serial defects	13% **NEW**	-	↑
8.	New technologies	12%	6 (17%)	↓
9.	Loss of reputation or brand value	11%	8 (14%)	↓
10	Shortage of skilled workforce	11%	9 (11%)	—

Responses: 86. Figures represent how often a risk was selected as a percentage of all responses for the aviation sector. Figures don't add up to 100% as up to three risks could be selected.

Source: Allianz Risk Barometer 2019

5 CONGESTED AIRPORTS BRING MORE GROUND INCIDENTS

In addition to increased repair costs, insurers are seeing more attritional claims. The rapid growth in air travel – the number of air passengers is expected to double to 7.8 billion by 2036[7] is resulting in more congested skies and airports.

"With increased air travel, congestion in and around airports has become an issue," says Smith. "In many cases airport infrastructure has not kept pace with the rapid growth in passenger and aircraft numbers. With more aircraft on the ground, servicing areas and aprons have become more congested and this is resulting in an increase in the number of collisions with other aircrafts or ground handlers."

Analysis of 523 loss events at 14 German airports last year by AGCS shows that damage to vehicles on the tarmac is the leading cause of insured losses. More than half of these events are due to collisions with pushback tractors, baggage trolleys, aerial work platforms or washing systems.

For example, the introduction of a new form of tow-truck (that wraps-around an aircraft's front landing gear) has resulted in several large claims. A number of tow-trucks have caught fire while in operation, damaging aircraft – one resulted in the total loss of a Boeing 777.

6 NEW LOSS DRIVERS: CYBER AND RELIANCE ON TECHNOLOGY

Aircraft and airlines are increasingly reliant on technology – from aircraft to ticketing. An A350 aircraft today sends some 400,000 computer messages to ground controllers during a six hour flight, 60% more than the older A380.

The technology for crew-less commercial passenger aircraft already exists, but the reality is many decades away. However, aircraft are likely to become increasingly automated, driven by the desire to reduce costs and because of the predicted shortage of pilots – Boeing has said over 600,000 pilots will need to enter the industry over the next 20 years. According to Smith, flights with just one crew member on the flight deck, with ground support, would have implications for crew skills and training, as well as how they deal with adverse conditions.

Then there is the threat to the sector posed by technology or cyber-related losses, such as physical damage to aircraft or business interruption such as IT system outage. Cyber risk ranks as the number one concern for the aviation sector for 2019, according to the eighth annual Allianz Risk Barometer (*see graphic page 28*) which surveys industry risk experts. To date, there have not been any major aviation claims triggered by a cyber incident, although insurers have paid out on some indirect cyber claims. For example, AGCS settled a liability claim from passengers seeking compensation for flight cancellations caused by a ticketing system failure.

While crewless passenger aircraft are some way off, autonomous flight is an emerging area for aviation insurance claims. AGCS has a growing global book of drone insurance, and has seen a corresponding increase in claims. As drone use broadens into different areas, claims will become more relevant, says Smith.

BIRD STRIKES - A NOTABLE CAUSE OF AVIATION LOSSES

Photo: Wikimedia Commons

Ten years ago, US Airways Flight 1549, en route from New York's LaGuardia Airport to Charlotte, North Carolina, ditched into the Hudson River seven minutes after take-off (*pictured*). All 150 passengers and five crew survived. The accident was due to a collision with a flock of Canada geese, which severely damaged both engines. The so-called **"Miracle on the Hudson"** was later turned into a film with Tom Hanks as the plane's captain called *Sully*.

A decade later bird strikes continue to pose a significant threat to flight safety and cause accidents. According to AGCS analysis of aviation insurance claims they are a notable contributor to aviation collision/crash incidents being the top cause of loss in the sector, resulting in excess of €300mn ($340mn) of insured damages between July 2013 and July 2018 – 956 related claims were received by insurers during this period. The average claim costs €322,065 ($368,000) with some claims costing as much as €15mn+. Most accidents occur when birds hit the windscreen or fly into engines.

Estimates of the economic toll of bird strikes have been calculated at as much as $400mn a year in the US to $1.2bn worldwide, although conclusive numbers are hard to come by. Attempts are being made to reduce further the number of strikes on take-off and landing at airports through bird management and control. Many airports have implemented wildlife management plans and employ wildlife biologists. Other approaches include utilizing sounds, lights, pyrotechnics, radio-controlled airplanes, decoy animals, lasers, dogs and bird capture and relocation. However, population increases in flocking birds together with the growth in commercial air traffic continue to pose challenges.

$368,000

average insured loss from a bird strike on a plane

OUR EXPERT

Kevin Smith
kevin.smith@allianz.com

[7] IATA, 2036 forecast reveals air passengers will nearly double to 7.8 billion, 24 October 2017

UPGRADING A DUTCH LOCK FOR THE 21$^{\text{ST}}$ CENTURY

AGCS is covering the equipment transport and construction of one of the most important locks in the Netherlands – the major inland route from Rotterdam to Amsterdam – as it expands after 80 years.

AGCS supports the lock project with a construction all-risks policy and delay in start-up extension

Due to more ships passing through the **Princess Beatrix Lock**, the busiest inland lock in the Netherlands accommodating over 50,000 ships per year, a third passage gate is under construction and the Lek Canal is being widened to create extra berths. A new passage gate consisting of four colossal doors (*see box*) will help ease congestion.

BACKGROUND

Because of increased traffic on the canal, Dutch officials in 2012 announced construction of a third lock chamber at Nieuwegein, about 45 km (28 miles) from Amsterdam, removing the future bottleneck between Amsterdam, Rotterdam and Antwerp. Construction will be completed in 2019. At a cost of €178mn ($201.7mn), the complex project requires careful coordination between authorities, engineers and insurers.

LOGISTICS

The first phase of the project commenced in 2016 with a bridge extension and the movement of three casemates, a small lock, a diver's head and a pole's group in order to maintain UN World Heritage status as a "New Dutch Waterline (NDW)" project and yet accommodate future traffic, as well as the manufacturing in China of the hull construction of the four doors by a Chinese supplier during 2017-2018 who recently provided lock doors for a project in Antwerp.

FACTS AND FIGURES

453	Weight in tons of each door at transport
523	Weight in kilos of each door and fitting when ready to install (including hoisting equipment)
28	Length in meters of each door
6.25	Width in meters of each door
14	Height in meters of each door

The second phase began in 2018 with the canal's expansion, as well as the transport of the door hulls to the job site from Shanghai through the Indian Ocean via the Suez Canal and the Mediterranean to Schiedam, near Rotterdam, where they were further reduced in port before being lifted onto a barge for the inland journey to Nieuwegein.

"The doors weigh 490 tons each," says **Anastasios Leonburg, Risk Engineer, AGCS**. "Transporting and lifting them from ship to barge was very complicated and required advance preparation."

The first two doors were installed at the end of August and the next two followed in mid-September. During 2019, further construction of the lock complex, including buildings and walkways, will commence. The two existing lock channels will be renovated during the second and third quarters of 2019. By 2020, construction of the new lock and the full widening of the Lek Canal will be completed.

COVERAGES

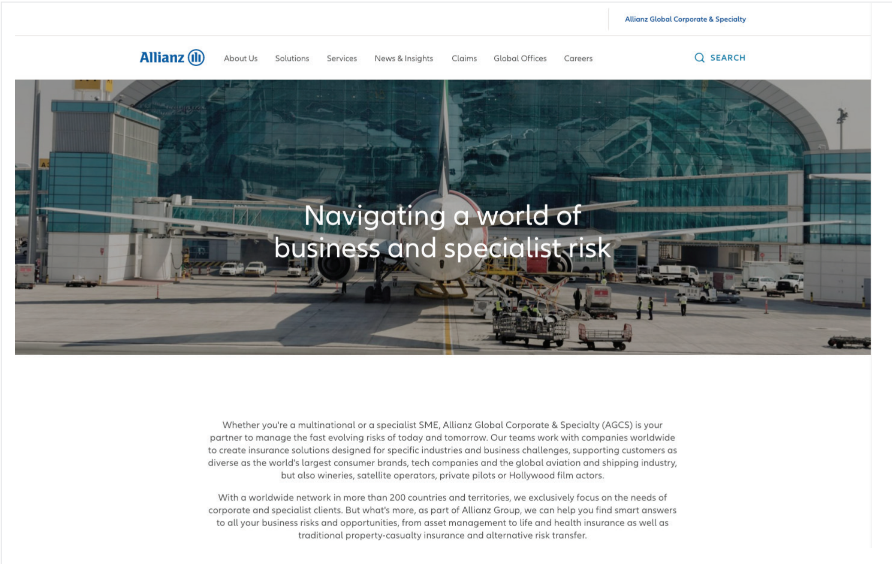
Leonburg explains that AGCS Netherlands supports the Princess Beatrix Lock project with a construction all-risks (CAR) policy and delay in start-up (DSU) extension. Part of the coverage guarantees risk control services by an AGCS risk engineer – in this case, Leonburg and later other engineers.

"When it was decided the lock doors would be sourced in China," he says, "it was necessary to have transport insurance from China to Rotterdam." For that piece, the AGCS UK and Germany marine teams got involved. "The cooperation among teams from different offices was seamless. We work with colleagues around the world, so assisting with this kind of project was an easy fit."

"ARC consists of many excellent engineers who are good at their jobs," says Leonburg. "We combine each engineer's strength and expertise on projects like this where more than one line of business is involved. The more early interaction we have in a project, the better," he says.

CONTENT SHOWCASE

CHECK OUT THE NEW AGCS WEBSITE



AGCS' "shop window" has a new shine. The rebooted AGCS website improves user engagement and simplifies visitor accessibility, especially on handheld devices, while maintaining its growing library of expert insurance and risk management content. Replacing the previous platform, the new site also benefits from additional improvements, including geo-targeting of content to visitors by location, meaning readers get the most pertinent results to their region.

The website can still be found at the old address **www.agcs.allianz.com**. Peek into the new "shop window" and subscribe to our regular updates at **www.agcs.allianz.com/news-and-insights/newsletter.html**

#ARB2019 THE MOVIE!

What keeps business leaders around the world up at night? Every year, the **Allianz Risk Barometer** identifies the most important risks for companies for the next 12 months and beyond. For the 2019 edition, more than 2,400 risk experts from over 80 countries were surveyed. Watch the video to learn more about the 10 major threats for business. **https://www.agcs.allianz.com/news-and-insights/videos/allianz-risk-barometer-2019.html**

WORKFORCE PODCAST

Shortage of skilled workforce is one of the fast-rising risks in the 2019 **Allianz Risk Barometer. Thomas Varney, Regional Manager of the Americas, Allianz Risk Consulting (ARC)** and **Scott Steinmetz, Global Head of MidCorp, ARC** discuss the implications for the insurance industry and look at how the world of recruiting is changing in the AGCS podcast.

https://www.agcs.allianz.com/news-and-insights/podcasts/allianz-risk-barometer-2019.html

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