GLOBAL RISK DIALOGUE

ALLIANZ GLOBAL CORPORATE & SPECIALTY

Analysis and insight from the world of corporate risk and insurance

The railway revolution

Why driverless trains could be the high-speed track to safety and sustainability

Floating wind farms
The new technology making waves in renewable energy

Floods: a picture of devastation
Are they getting worse and can you mitigate against their ferocity?

Energy risk trends
Business interruption challenges in an industry feeling the heat

Allianz

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Let's start the dialogue

Welcome to Global Risk Dialogue, the twice-yearly exchange of ideas between AGCS and risk managers, broker partners, insurance professionals, and the media. As always, we're discussing the burning issues and emerging exposures in global risk management, drawing on the extensive expertise of AGCS underwriters, claims experts, risk engineers and leaders to bring you informed and thought-provoking content, designed to help you navigate through eventful times.

We hope you enjoy this latest issue.

agcs.communication@allianz.com

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HEAD OF CONTENT
Greg Dobie | greg.dobie@allianz.com

GLOBAL RISK DIALOGUE EDITOR
Helen Saunders | helen.saunders@allianz.com

CONTRIBUTORS
Daniel Aschoff, Iryna Bondarenko, Christina Hubmann, Greg Langley, Heidi Polke-Markmann, Olivia Smith

PUBLISHING HOUSE
Larino Design | w.forrester@larinodesign.com

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

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Dieselstr. 8, 85774 Unterfoehring, Munich, Germany

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News from AGCS and Allianz


Photo: Adobe Stock

The group is setting itself measurable science-based targets

Allianz joins the Net-Zero Insurance Alliance

Allianz Group has joined forces with seven other leading insurers and reinsurers to form the UN-convened **Net-Zero Insurance Alliance**. The group has committed to transition its insurance portfolios to net-zero greenhouse gas emissions by 2050, setting themselves measurable and science-based targets to be updated every five years.

"As a founding member of the Net-Zero Insurance Alliance, Allianz wants to accelerate the urgently-needed transformation to a 1.5°C economy. By integrating net-zero targets into both our insurance and investment business activities, we can comprehensively support our clients to adapt to low-carbon business models," says **Oliver Bäte, Chair of the Board of Management of Allianz SE**. "We are pleased to bring in our climate expertise and join forces to extend the net-zero ambition to the entire insurance market."

New Global Head of Cyber

Scott Sayce is the new **Global Head of Cyber at AGCS**, based in London. With almost 20 years' experience in the field of cyber and technology risks, Sayce will steer the AGCS cyber underwriting business as well as lead the group-wide Cyber Center of Competence at Allianz.

Sayce started out as a Lloyd's insurance broker before moving to underwriting to focus on cyber and technology risks. Sayce joins AGCS from AXA, having previously served as Global Chief Underwriting Officer Cyber within AXA's corporate solutions division, progressing to Group Head of Financial Lines and Cyber. Previously, Sayce was Head of the Cyber, Technology and Life Science divisions for CNA Hardy.

AGCS ART team recognized at industry awards

The AGCS Alternative Risk Transfer (ART) team was recently announced winner of the Underwriting Solution category in the US Captive Review Awards 2021. The prize-winning solution was a multi-line, multi-year captive fronting and reinsurance transaction for a global biopharmaceutical company, covering 12 lines of business. Key to the success was close collaboration with the client and expert advisors. Chosen by a judging panel of 11 industry experts, the award was open to all insurance and reinsurance companies providing services to US-owned captives. The virtual ceremony took place in October 2021 and was hosted by New York-based comedian and writer Kevin McCaffrey.

Loss log:
Arctic shipping incidents

There have been more than 500 reported in Arctic Circle waters over the past decade, according to AGCS analysis. With sailing activity across the region set to grow in future, the industry will need to find new ways to manage risks.

Sailing in Arctic waters continues to make waves. Overall, shipping activity grew 25% in the six-year period 2013 to 2019, while the distance sailed by vessels in the region increased by 75%, according to the Arctic Shipping Status Report[1].

With more traffic comes greater risk. There were 520 reported shipping incidents in Arctic Circle waters over the past decade, according to AGCS' annual **Safety & Shipping Review 2021**. Last year, 58 incidents were reported – up by 17 on 2019 and the highest total for three years.

Sailing in Arctic waters poses a number of unique challenges, including dealing with unpredictable and extreme weather conditions. The harsh operating environment means that machinery damage/ failure is the most frequent cause of incidents, accounting for almost half (48%) of all reported. The remoteness of these shipping routes from infrastructure and emergency response services means that in the event of any serious accident such as a grounding or a fire, the cost of salvage and the environmental impact would likely be considerably higher than elsewhere.

In future, melting ice caps have been predicted to increase commercial traffic on previously little used Arctic shipping routes such as the Northern Sea Route (NSR). The NSR has already seen cargo traffic grow almost fivefold in the last five years, reaching 33mn tons in 2020[2]. Russian officials have estimated this could increase to 100mn tons by 2030, although climate-change concerns may yet hamper development.

For those vessels that do choose to set sail, there is currently a lack of detailed voyage and hydrographic data. The industry will need to find new ways to manage Arctic shipping risks. Polar shipping requires a much more proactive approach to risk management, including new frameworks for data, technology and training.

Arctic Circle waters

Top five causes of incidents 2011 to 2020

- Machinery damage/failure **249**
- Wrecked stranded/grounded **89**
- Fire/explosion **44**
- Collision (involving vessels) **30**
- Contact (e.g. harbor wall) **23**
- Other **85**
- Total **520** (including 14 total losses)

Top five causes of incidents 2020

- Machinery damage/failure **18**
- Fire/explosion **8**
- Wrecked stranded/grounded **8**
- Collision (involving vessels) **6**
- Foundered (sunk) **2**
- Other **16**
- Total **58** (including 2 total losses) – up 17 year-on-year

Vessels over 100 GT only. Source: Allianz Global Corporate & Specialty, Safety & Shipping Review 2021

Find out more about loss trends in the maritime sector in the AGCS **Safety & Shipping Review 2021**

[1] PAME Arctic shipping status report - The increase in Arctic shipping 2013-2019 | March 2020
[2] Northern Sea Route Information Office, NSR Shipping Traffic – Transit Voyages in 2020

Virtual captives: the best of both worlds

Captives are booming – and AGCS offers captive-based solutions that cater to this trend. But not every company can or wants to operate its own insurer, so the AGCS Alternative Risk Transfer (ART) division also offers 'virtual captive' solutions, which combine the advantages of traditional risk transfer with those of risk financing.

In the 1970s and 1980s, it was the liability crisis in the US insurance market; today, it is strained capacity in Directors & Officers (D&O), cyber and business interruption. Many companies are looking at ways to self-retain risk in order to reduce their exposure to rate increases and capacity constraints in the insurance market. The silver bullet of self-retention is a captive: growth in the number of captives gained momentum in 2020 with 100 new formations and is continuing at a similar rate in 2021, according to a recent report from Marsh[1]. Those who already operate a captive – around 7,000 are active globally – are expanding its volume or taking on new risks.

"Supporting large companies with their own captive programs is definitely a growth area for us," says **Grant Maxwell, Global Head of Alternative Risk Transfer**, one of AGCS' nine insurance lines. ART works with many captive managers to develop and grow a program, provide reinsurance or handle some of the insurance infrastructure, such as issuing policies worldwide or making premium payments or claims.

Captives come with challenges

However, not every company can or wants to act as an insurer itself. "Captives are an efficient vehicle for companies to manage risk through the cycle, but they are not everyone's cup of tea," says **Rob Makelaar, Regional Head of ART EMEA (Europe, Middle East and Africa)**. "Setting them up – let alone winding them down later – is challenging."

The company must be able to set aside large amounts of equity/capital as reserves. The risk manager must not only convince the CFO with a business case, but also satisfy the requirements of insurance supervision as well as complex criteria for accounting and balance-sheet management. Operational risk management must also meet the highest standards for analyzing and evaluating risks. In addition, there are ongoing administrative costs for the captive to take into account. "A captive is always a long-term play over various market cycles," says Maxwell.

What are the advantages of a virtual captive?

- No need for equity capital
- Easy establishment and expansion of self-retention capacities
- Increased predictability of results due to lower or partially transferred volatility on the income statement
- Cost transparency and more cost-effective than a fully-fledged captive
- Inclusion of tailor-made cover for difficult or uninsurable risks
- Suitable for all risks; multi-line solutions also possible

An innovative third way

But what if a captive is not an option for your business? For such clients, ART offers an innovative solution that combines the advantages of a classic insurance product with those of risk financing: the so-called virtual captive.

[1] Marsh: The 2021 Captive Landscape Report, September, 2021

Photo: Adobe Stock

A virtual captive is a useful solution for businesses that find it difficult to achieve the desired cover in the current market environment

"This solution combines the best of both worlds; it is essentially a hybrid solution of risk transfer and self-retention," explains Makelaar. "In the current market environment, companies can take on more risk themselves, getting coverage for risks that are difficult to insure or uninsurable."

Other advantages include better planning for corporate finances and full cost transparency. Unlike cell captives, which allow companies to rent a share in a captive operated by a third party, there is no connection to offshore financial centers, which can be subject to critical scrutiny.

Put simply, a virtual captive is a multi-year rolling insurance program that leaves a portion of the risks with the policyholder but reduces the results volatility from major loss events. The company pays an annual premium to provide for the risk of owning claims with a bonus-malus system. The contract is renewed for a further year if the cumulative loss ratio does not exceed an aggregated level; if it does, negotiations between the parties are required to adjust the terms or the contract is terminated. Both the financial commitment (a single-digit million amount) and the time commitment (usually up to five years) are kept within manageable limits.

Solid financial credentials are a must

A virtual captive is a useful option for those businesses that find it difficult to achieve the desired cover and capacities in the current market environment. These are likely to be companies in critical, loss-prone sectors that have a very good risk management performance and are therefore confident they can take on more risks themselves. In order to develop and structure such a solution, and gain backing for it within the company, the risk manager needs solid technical underwriting know-how and financial acumen.

In principle, all risks that are insurable from a legal perspective can be included in a virtual captive, even D&O and cyber risks, for which capacities are scarce in the current market. Multi-line solutions are also possible: "They are even to be recommended because this enables risk diversification and therefore leads to lower volatility," Makelaar emphasizes.

AGCS has already implemented a virtual captive for several companies. "For AGCS, traditional property and casualty (P&C) insurance products on the one hand and alternative risk transfer on the other are complementary and to the benefit of our clients. We can always offer businesses a tailor-made solution that perfectly matches their approach to risk management," says Maxwell.

OUR EXPERTS

Rob Makelaar | robert.makelaar@art-allianz.com

Grant Maxwell | grant.maxwell@art-allianz.com

4 questions for...

Michael Bruch, Global Head of Liability Risk Consulting/ESG at AGCS

As well as the ongoing Covid pandemic, 2021 has been a year of climate-related catastrophes and social activism, sending environmental, social and governance (ESG) concerns up the boardroom priority list. Here, **Michael Bruch, Global Head of Liability Risk Consulting/ ESG at AGCS**, discusses the key issues and explains why tackling them needs to be embedded throughout a company's processes.

Which areas of ESG are causing the most concern, and what is the role of the risk manager and board of directors in overseeing these?

ESG investment is growing significantly and we are seeing several important trends emerging, in particular surrounding climate change, human rights violations and severe corruption allegations. The major challenge for corporates is that there is no standardized approach to calculating ESG metrics. Truly understanding the relative benefits and limitations of the various metrics can help to build a more complete ESG picture and highlight opportunities for change. So, for example, risk managers need to be able to assess the ESG risks associated with any transaction and – crucially – they also need to be able to inform others of the nature of those risks.

It's important to note, however, that identifying and mitigating risks is not limited to the risk management function in a company. ESG risk topics should be integrated into enterprise risk management and all relevant operational processes. What we are noticing in many of the industry sectors of our client community – and in


Photo: Adobe Stock

ESG and sustainability are having a high impact on almost all business functions

particular the power and utilities sector, which is heavily challenged by the transition of its own business model into a more green energy related power supplier – is that ESG and sustainability are having a high impact on virtually all functions within the company.

What are the consequences for companies that don't meet ESG expectations or fail to live up to their own commitments?

The consequences can be severe – and far reaching. Take climate change litigation as an example. Climate change is a subject that cuts across all stakeholders as well as company employees. So, we have seen increasing levels of engagement from employees, who want to know that their employer is doing the right thing by the environment. At the same time, there are institutional investors – pension fund and fund managers – pushing for more action from boards to protect the environment. And then there's the question of reputational risk. If companies don't live up to their commitments or, worse still, if they attempt to greenwash their credentials, their reputation can plummet. Disclosing misleading corporate messages about climate change impact poses a severe risk in terms of company liability.

We know that climate change is one of the key ESG factors driving litigation and investor/ shareholder actions against companies. But how widespread is this kind of action?

According to the London School of Economics (LSE)[1], there have been more than 1,800 cases of climate change litigation in 40 countries as of the end of May 2021. The majority were in the US (1,387), followed by Australia (115), the UK (73) and the EU (58). The numbers are steadily growing, and the implications are significant.

In a recent landmark ruling, for example, a Dutch court ordered Royal Dutch Shell to reduce its carbon emissions by 45% compared to 2019 levels by 2030[2] – much deeper cuts than it had planned. The ruling only applies to the Netherlands, but it could have wider consequences for the energy industry elsewhere. For the moment, this kind of litigation remains concentrated in high income countries, but we've seen cases in Colombia, India, Pakistan, Peru, the Philippines and South Africa. We expect it will continue to grow in the Global South.

What other tips can you suggest to identify and mitigate ESG risks?

What we have learned from our own ESG experience is that you need a strong commitment to ESG at the management and board level, setting specific targets from the top down. Within Allianz, we have implemented our own ESG board, so that all the important group centers are really committed to sustainability and the ESG topic.

The board must acquire the appropriate skills that will enable it to fully understand what the external requirements are for a successful ESG strategy in the long term. ESG matters should be a regular fixture on boardroom agendas, and that way of thinking should be embedded throughout the organization. It should ultimately become part of the company DNA so that everyone sticks to it, everyone embraces it, and at a certain point no one even thinks about it because it's an integral part of all your processes and everything you do.

At the same time, ESG information can also help to improve the underwriting process, to the benefit of insurers and companies. We have statistically modeled a lot of ESG data points against claims and public litigation and we do see some predictive power there. From an insurer's point of view, conversations around ESG related topics, in addition to financial topics, are becoming much more important.

Podcast Find out more by tuning into the AGCS podcast: **ESG and the insurance industry**

[1] LSE, Global Trends in Climate Litigation: 2021 Snapshot, July 2, 2021
[2] BBC, Shell: Netherlands Court Orders Oil Giant to Cut Emissions, May 26, 2021

Photo: Adobe Stock

Cologne and its surroundings were deluged in July 2021 when a month's worth of rain fell in 24 hours over parts of western Germany

Flooding: more likely, more extreme and more unpredictable

2021 has been a year of climate shocks, including serious flooding in Europe, Asia and America. What was once a relatively well-defined risk has become more erratic, if not unprecedented, meaning effective business continuity planning is more vital than ever.

The rain began falling across Europe on July 12. The storm started over the United Kingdom and swept east across France, Belgium, the Netherlands, and then Germany. There it stalled for two days. During the pause, more than 20 centimeters (7.9 inches) of rain fell in east Belgium and 15 centimeters – a month's worth – in 24 hours in the west of Germany.

Streams swelled, burst their banks and then the flash flooding started. Cars and houses were washed away; streets were smashed and covered in mud and, as the rain continued to fall, it triggered massive landslides so intense that part of the historic castle in Erfstadt, near Cologne, was carried away.

At least 220 people died in Germany and Belgium. The damage has been estimated at up to €7bn[1] in insured losses. The New York Times noted that affected regions may not have seen rainfall of this magnitude in the last 1,000 years.

Not long after, heavy flooding hit central China with the city of Zhengzhou, which produces half of the world's iPhones, receiving over 61.7 centimeters (two feet) of rain over three days – more than as much as falls in a typical year. More than 300 people died, 9,000 homes were damaged, 13 million people were affected, and the world was left with the image of a carriage full of people in an underground train growing desperate as floodwaters gradually rise towards the ceiling. It was a storm to be expected once in a thousand years, the Zhengzhou weather bureau said.

Then, at the end of August, Hurricane Ida made landfall in Louisiana, USA, before travelling north, where its remnants caused record flooding on the north-east coast of the country, leaving 50 people dead and prompting the governors of New York and New Jersey to declare a state of emergency. Overall insured losses are estimated at US$30-US$40bn.

Flood catastrophes result from a complex web of climatic, hydrological, and social factors. However, scientists were quick to see the fingerprint of climate change in the disasters. After all, for years, they have warned climate change will mean more flooding in China, Europe and elsewhere. For every degree Celsius of warming, the atmosphere can hold about 7% more moisture[2], which can supercharge rainstorms.

"The flood risk landscape, previously well defined by historical and government flood maps and to some extent local knowledge, is being challenged with erratic and unprecedented weather patterns," says **Boris Gao, Senior Risk Consultant at Allianz Global Corporate & Specialty (AGCS)** and based in Shanghai. "What we accepted as 'normal,' is being challenged by new realities of climate change, rapid urbanization and human development. It is creating specific new risks for companies."

Climate change is here – the precaution not yet

As if to underline Gao's point, the latest United Nations' Intergovernmental Panel on Climate Change (IPCC) report was released shortly after the floods. It made clear that this year's burst of extreme weather results from rising average temperatures. Disasters, such as the recent floods, will become even more severe as the water cycle continues to intensify as the planet warms. Each fraction of warming will bring greater rainfall, higher rises in sea levels and more intense droughts and extreme wildfires.

Thomas Heintz, Property Risk Consultant at AGCS, notes that floods damages can also occur outside mapped river floodplains. "The damage picture of the recent European flooding is likely to be similar, with companies outside larger hazard zones but close to small rivers or even streams affected by massive flooding," says Heintz. And the losses suffered by the victims of flash flooding are often higher than those incurred along rivers, largely because of the unpredictable nature of flash floods.

Sitting 7,000 kilometers away in Chicago in the United States, **Thomas Varney** can only agree. Commenting after yet another unprecedented fire season, the **Allianz Risk Consulting Regional**

THE 1 MINUTE DIALOGUE

- Unprecedented weather patterns are challenging the flood risk landscape, which was previously well defined by government and historic records
- Many flood damages occur outside of mapped river floodplains, and companies outside larger hazard zones can still be affected by small rivers or streams
- Flood risk is amplified by 'missiles', such as cars and tree trunks, and the hazards involved in resuming operations
- Businesses should draw up contingency plans that include early warning systems, to reduce losses, avoid being overwhelmed, and enable them to get back into operation quickly

€7BN

Insured losses expected as a result of the German floods in July 2021

[1] German Insurance Association (GDV)
[2] IPCC Frequently Asked Questions, p13

Manager for North America can readily cast his memory back to many recent floods.

"Looking at Europe, it immediately reminded me of Hurricane Harvey," Varney says. "You drop that much water in a short time on any place in the world, and it will be flooded incredibly quickly."

Hurricane Harvey was a devastating Category 4 hurricane that made landfall on Texas and Louisiana in August 2017, causing catastrophic flooding and more than 100 deaths. Over four days, more than one meter (40 inches) of rain fell as the system slowly meandered over eastern Texas, causing unprecedented flooding and laying the city of Houston lame. It remains the most significant tropical cyclone rainfall event in United States history, both in scope and peak rainfall amounts, since reliable rainfall records began around the 1880s.

Components of a business continuity plan

A business continuity plan should consist of the following:

- list responsibilities and accountabilities in the event of an emergency
- list damage restoration contractors, machinery manufacturers, supply engineering and other key providers
- contact information for utility contractors
- clarity on where to move critical supplies, equipment or records to higher ground very quickly in the event of an emergency
- identification of alternative access points to the site
- where relevant, temporary contingency options for manufacturing, either in-house or via contract manufacturing by outside vendors
- continuity of operations planning must be prepared in advance and revised regularly

Find out more about business continuity planning at
Scenario planning for future disruptions | AGCS (allianz.com)

But record rainfall and flash floods are only part of the risk picture. "Flood depths and rainfall levels get widely reported, but other contributory factors such as the speed of the flood and flood 'missiles' – like cars, tree trunks or household appliances – ramp up the potential risk," says **Carina Wichert, Catastrophe Risk Analyst at AGCS**.

Varney recommends that companies prepare for such natural events with a flood contingency plan, also known as a business continuity plan, to reduce potential losses. "Current events show how important it is also to think about business continuity planning," Varney comments.

Business continuity management in focus

Many companies in western Germany were shocked to discover that their emergency plans were quickly overwhelmed in the face of the masses of water, says **Juergen Wiemann, Regional Head of Property at AGCS, Germany**. "Our risk engineers recommend that all companies use early warning systems and draw up a flood contingency plan in order to reduce potential losses and be adequately prepared for extreme events."

It is not possible to make all sites equally resilient and measures should be weighed up against risk exposure such as geographical location and the risk of natural disasters, along with the importance of the site for value creation and its place in the supply chain.

As well as sandbags and other physical barriers, flood mitigation methods could include securing empty containers that might be washed away, the reinforcement of roofs, especially in corner and edge areas, to dissipate the acting storm forces, and the fixing of roof superstructures, such as solar panels.

Yet, Heintz adds that companies are often reluctant to make the effort of creating a business continuity plan. "However, there are always good examples of clients who can pull this plan out of the bag in the event of a loss and thus have a decisive speed advantage in getting back into operation quickly."

Business continuity planning for crisis events – and floods are just one scenario among several – must be prepared in advance and revised regularly.

Once an event has occurred, business owners need to react quickly to ensure the interruption remains minimal, explains **Michael Specht, Head of Field Adjusting, Energy & Construction, Central and Eastern Europe, at AGCS**.

"First, it is important to shut down electronic supplies and prevent runoff of pollutant-containing liquids so that any heavy metals or oils do not get into the groundwater. It is also important to secure and store important items and preserve machinery and production equipment. Important documents should also be secured."

The second step, and a critical one for the later insurance claim, is to inspect and record the damage with the insurance expert and take initial drying measures in the production halls.

Flooding is always an exceptional situation entailing increased risks during recommissioning. Machinery and equipment – primarily high-value and production-critical equipment – must be cleaned and dried comprehensively. Electrical equipment should be inspected before being switched on and repaired if necessary to prevent short circuits and subsequent ignition.

Any debris from the interior and exterior floor inlets, gutters, downspouts and catch basins must also be removed. Ultimately, the safety equipment must be returned to service as quickly as possible, and ignition sources must be eliminated to avoid fire.

Insurance in the age of climate change

One of the questions arising with an increase in extreme weather events is whether companies should increase their insurance or if insurance companies will have to increase their premiums. Wiemann says that, in general, companies are better insured against natural hazards than private households – in Germany, for example, only about 46% of households are insured against floods and heavy rain. Usually, classic property insurance for companies also includes coverage against natural hazards.

"As an insurer, we have to expect increasing exposure from flooding in the future, especially after heavy rain," he says. "In our estimation, this will also have an impact on capacity allocation. Customers who convince us with suitable risk management concepts will have advantages when purchasing insurance cover."

He explains that the premium for natural hazards insurance depends on individual risk, coverage and the customer's property contribution. Other relevant criteria are the location of the risk, protection concepts, vulnerability of insured property, precautionary measures for business continuity management and maintaining/resuming operations after a loss event.

"The latest catastrophe reports on weather extremes around the globe are an overdue wake-up call," says Wiemann. "Insurers and their corporate clients must prepare themselves for the fact that previous once-in-a-century events may well occur more frequently in the coming decades. Climate change is a reality."

Floods are just one example of weather extremes that businesses must be prepared for – heavy rain, drought and extreme cold can also take their toll. AGCS can help clients evaluate their emergency plans as part of its preventive loss prevention consulting services and recommend improvements where necessary. AGCS also offers a valuable **Flood Checklist** that provides tips, actions and advice to be undertaken before, during and after a flood.


Photo: Adobe Stock

The clean-up operation and return to service after a flood entail their own risks and must be undertaken carefully

Flooding in figures

- **US$1trn** estimated flood damages worldwide since 1980, only 12% of which were insured[3]
- **181%** increase in annual average reported flood events since 1980[4]
- **2.2bn** people live in locations expected to experience inundation during a one-in-a-hundred year flood event[5]
- **25** new countries could be added to the **32** already experiencing increasing floods by 2030 as a result of climate and demographic change[6]

OUR EXPERTS

Boris Gao | boris.gao@allianz.cn

Thomas Heintz | thomas.heintz@allianz.com

Michael Specht | michael.specht@allianz.com

Thomas Varney | thomas.varney@agcs.allianz.com

Carina Wichert | carina.wichert@allianz.com

Juergen Wiemann | juergen.wiemann@allianz.com

[3] Munich Re, Risks From Floods, Storm Surges and Flash Floods: Underestimated Natural Hazards
[4] Marsh McLennan, Sunk Costs: the Socioeconomic Impacts of Flooding, June, 2021
[5] World Bank, 1.47 Billion People Face Flood Risk Worldwide, November, 2020
[6] Willis Towers Watson, New Satellite Data Reveals Increasing Proportion of Population Exposed to Floods, August, 2021

Burning issues for the energy sector

Larger complexes, budget pressures and critical asset aging are driving loss and business interruption challenges in the oil and gas industry.

In recent years, pressures on oil prices have squeezed the oil and gas industry hard. An increasingly competitive environment has forced producers to seek cost-saving measures to drive optimization and profitability. The sum of these activities, however, may be new business interruption (BI) and contingent business interruption (CBI) challenges – whereby a company suffers a loss due to an event occurring at a customer's or supplier's location – especially if supply chain complexities are not fully understood and taken into consideration. Many companies' supply chains are much more integrated and complicated, resulting in BI losses that impact multiple producers at once. The 2011 Thailand floods and their devastating, unforeseen impacts on the semiconductor

Photo: Adobe Stock

The trend for larger, more complex, business interruption losses continues unabated

THE 1 MINUTE DIALOGUE

- New business interruption challenges could arise from an increasingly competitive environment for producers
- Small fires, machinery breakdown and unit shutdown/start-up incidents are contributing to larger losses than previously, due to increasing complexity and rising values
- Concerns have been raised that budget pressures may lead to reduced expenditures on maintenance and mechanical-integrity inspection programs, at the same time as a degradation of some protection features
- For companies to truly mitigate increasing business interruption risks, onsite surveys by risk engineers are essential

industry was the first of a number of significant events that provide an excellent illustration of the impacts of supply chains, BI and CBI over the past decade.

Business interruption ranks as top risk for energy sector as exposures grow

BI, including supply chain disruption, was again voted the most important risk for companies in the **Allianz Risk Barometer 2021** annual survey, which surveyed a record 2,769 respondents from 92 countries and territories in order to identify the most important corporate risks they faced. It was also ranked, by some distance, as the top risk by those who worked in the oil and gas sector, where it accounted for more than half of all responses (*see graphic*). The trend for larger, more complex, BI losses – from major fires and natural catastrophes – continues unabated, with the cost of these claims rising, driven by the trend towards higher values and more concentrated supply chains. Exposures are growing in tandem as more volatile and severe weather brings the increased risk of damage and disruptions from storms, floods and wildfires.

In addition, smaller fires, machinery breakdown and unit shutdown/start-up incidents, and longer lead times for critical parts are also contributing to larger losses than seen in the past due to increasing complexity and rising BI values. Indeed, partial shutdowns of plants/units for relatively short periods of time now have the potential to cause the kind of financial losses previously expected from larger events/longer shut-downs.

Covid-19 could bring future problems

The Covid-19 pandemic created the largest oil and gas demand stress in history, which may well cause future problems as oil and gas companies curtail their spending on upstream operations, such as exploration, drilling and extraction. Producers cut their capital expenditures by a combined 34% in 2020 and will likely make additional cuts through 2021 – perhaps by another 20%, according to industry analyst, the Boston Consulting Group (BCG)[1]. While investment has been reduced, however, suppliers have not followed suit. BCG suggests that industry investment will have to rise by about 25% annually over the next three years to avoid a crisis[2].

One problem in the industry is that today's refineries and petrochemical plants have enormous throughputs and plants of this size can introduce hazards and BI exposures that far surpass the available insurance policy limits. In

[1] Boston Consulting Group, Oil And Gas Investment In The New Risk Environment, December 10, 2020
[2] Boston Consulting Group, Oil And Gas Investment In The New Risk Environment, December 10, 2020

Photo: Adobe Stock

How companies manage the aging process of both equipment and workforce is what counts

51%

of responses from the oil and gas sector had business interruption as the top risk in the Allianz Risk Barometer

recent years, several losses have resulted in claims in excess of $1bn to the insurance market and a significant component of these losses were driven by BI claims.

"Increased BI exposures are being driven by a number of factors. Companies are building larger plants and using bigger equipment with higher throughputs to capture economies of scale. We are seeing significant consolidation of industries and operations as companies strive to remain profitable. Some consolidation activities are predictable like the impact of renewables, green energy and retirement of old, less efficient plants. Other consolidation drivers, like the pandemic and its impact on demand and margins, are very difficult to predict," says **Steffen Halscheidt, Global Practice Group Leader for Oil & Gas at AGCS**.

Loss recovery time grows, as do concerns over impact of budgetary pressures

Increased volatility is coming from a range of issues facing the industry. Certainly larger plants are introducing more technology and more complexity, so recovery after a loss can take more time. More integration of world-scale refineries with petrochemical operations creates greater interdependencies. Another problem area is increased incidences of starting, stopping and slowing down production operations due to fluctuations in demand. Simultaneous operations (SIMOPS), such as doing construction work at a plant that is running at full speed, introduces additional complexity – and risks. Although difficult to clearly quantify, budget pressures are leading to reduced expenditures on maintenance and mechanical integrity inspection programs, as well.

"One might also argue that small incidents can more easily morph into large incidents because there has been some degradation of protection features over the years as companies squeeze on design and insurers have less say about how plants are constructed," says **David Robertson, Global Expert Group Leader Oil & Gas at AGCS**. For example, equipment spacing has been reduced in new plant designs, meaning a pump or tank fire could more easily spread to adjacent equipment because of reduced footprints.

"We have seen that new, more risk-based, mechanical integrity inspection programs tend to be less comprehensive," says Robertson. "Process control technology has increased in complexity and is being used more often than more 'tried and true', inherently safer designs or safeguards, due to the drive for cost savings and operational efficiency.

"Fixed fire protection has decreased, in part from greater reliance on technology and partly because of budget pressures. Fire brigade/first responder expectations and funding have also gone down.

This graphic shows the top risks for the oil and gas sector as voted for by **Allianz Risk Barometer 2021** survey respondents. Business interruption accounted for 51% of responses followed by fire, explosion (39%), pandemic outbreak (25%), climate change (24%) and cyber incidents (24%).

Source: Allianz Global Corporate & Specialty

All of these factors can potentially enable small losses to become large claims, especially with the high BI vertical exposure and limited opportunities to mitigate production losses."

Consolidation and retrenchment of refinery operations and aging assets

Another area of concern is the consolidation and retrenchment of refinery operations. For example, in Asia-Pacific, reduced operations or shutdowns from reductions in demand and competition from more modern, lower cost and more efficient refineries in India, China and South Korea are driving increased concentrations of exposure. And expansion projects not only increase scale and complexity, but SIMOPS have been identified as contributing factors in a number of large energy losses. While this is going on, plants and equipment are getting older every day.

"How companies manage the aging process of both equipment and workforce is what counts. It is very dependent upon ownership, culture, management and, ultimately, budgets," says Robertson. "Does management have the right people and processes in place, and are they allocating sufficient money for inspection, testing, maintenance, and equipment replacement? Are retiring employees being replaced by younger, less experienced people or even by machines?"

For companies to truly mitigate increasing BI risks, onsite surveys by qualified risk engineers remain essential. Insurers need to understand both the physical and BI exposures throughout the plant's value chain in order to support risk management processes and mitigation.

"We are starting to see specialist BI pre-risk reports generated for the market," says **Tom Taberner, Global Product Leader for Energy at AGCS**. "Also, we will continue to witness the delicate balance between capacity and volatility. Insurers are increasingly managing capacity deployment against volatility. BI waiting periods, volatility caps, and premium allocations are all in focus."

OUR EXPERTS

Steffen Halscheidt | steffen.halscheidt@allianz.com

David Robertson | david.robertson@agcs.allianz.com

Tom Taberner | tom.taberner@allianz.com

Floating wind power – the next frontier for renewables?

Technological innovation could harness the potential of the world's offshore wind as floating turbines make it possible to operate further out to sea in regions where it has not previously been possible. How viable is this cleaner energy and what are the new risks it could represent to operators and insurers?

The blades of the Kincardine wind farm rotate 15km off the coast of Aberdeen, their monumental structures mounted on five triangular platforms, each weighing 3,000 tons. Floating on North Sea waters 60-80 meters deep, they are collectively capable of generating 200,000MW of clean electricity a year – enough to power 50,000 Scottish homes. This is the largest floating offshore wind (FOW) farm in the world and a graphic snapshot of what can be seen on the horizon of the energy industry.

As the leading economies ramp up their commitments to decarbonize and transition to cleaner power, the global offshore wind industry is expected to record a CAGR of 12.3% between 2021 and 2026. Revenue generation is forecast to reach $56.8bn – an increase of $25bn[1].

Europe is the largest market for offshore wind with a 57% share and the North Sea has long been the cradle of the industry. "This is because of the windy conditions, of course, but also, significantly, because of its relatively shallow waters," explains **Jean-Marie Grosset, Energy and Construction Underwriter at AGCS**. "This has allowed 'bottom-fixed' turbines to be installed on the seabed at depths of about 30 meters around the coasts of the UK, Denmark, Germany and Belgium. Development of the industry was also supported by the accessible manufacturing footprints those countries have nearby."

But 80% of the world's offshore wind blows over waters deeper than 50 meters and often farther away from shore, where installing bottom-fixed turbines is either impossible or economically unfeasible. This has limited the extent of offshore wind deployment in the past, but promising developments in FOW technologies mean all that might be about to change.

THE 1 MINUTE DIALOGUE

- The global offshore wind industry is expected to record a CAGR of 12.3% between 2021 and 2026
- Floating offshore wind has potential to harness wind that blows over waters too deep for conventional fixed wind turbines
- Construction of floating wind turbines takes place largely on land, but harsh sea conditions could present risks for certain components, particularly mooring and cabling
- Skills from other sectors, including oil and gas, could be drawn upon to overcome challenges and de-risk floating wind turbines

An industry on the commercial cusp

Unlike bottom-fixed platforms, which are constructed offshore, FOW platforms are largely assembled in a dry dock, then towed out to the site of their installation, where they are anchored with mooring lines. Prototypes and pilot projects in FOW have grappled with the practical problems associated with their massive scale, aerodynamics and instability. But in recent years a number of technologies (*see page 21*) have come to the fore that engineers believe can overcome these. FOW remains more expensive than fixed offshore wind, and while technical and logistical challenges still exist for large-scale

[1] Power Engineering International: Global Offshore Wind Market to Hit $56.8bn in Revenue by 2026, August 27, 2021

Photo: Courtesy of Principle Power. Artist: DOCK90

Three semi-submersible platforms with turbines are installed off the coast of Viana do Castelo, Portugal

deployment, as well as the need for funding from investors and governments, costs are expected to fall as FOW scales up. The industry is poised for industrialization.

And the potential is huge. The 74.05MW of FOW power that is currently installed in Asia and Europe is estimated to increase to 127.87MW of deployed technology by January 2022[2]. Europe has the highest potential for FOW, at 4,000GW, followed by the US at 2,450GW and Japan at 500GW.[3]

FOW allows power to be generated in areas of deeper water with higher, more consistent wind speeds, and the list of countries keen to assess its feasibility outside Europe includes South Korea, Japan, Taiwan, and the US, where the Department of Energy is investing more than $100mn into researching, developing and demonstrating FOW technology, with a particular eye on California. FOW is also being explored for its potential in converting seawater into green hydrogen for export.

Not surprisingly, many global energy players are investing in FOW's potential. German energy giant RWE is working on three floating demonstration projects in Norway, Spain and the US and recently announced a joint feasibility study with Kansai Electric Power Co Inc. into a project off the coast of Japan. Shell has announced a joint venture with offshore wind specialist Coens Hexicon off the coast of South Korea, and the Kincardine site was developed by Spain's Cobra Group. Equinor, Orsted, Statoil, EDF, Engie and Total are all involved in FOW projects.

"With floating offshore wind, the major energy companies are able to mobilize and leverage existing skills in areas such as offshore platforms and pipelines," says Grosset. "It also feeds into their strategic plans for transitioning to cleaner energy."

A less risky undertaking

Constructing a turbine on land, rather than offshore, has advantages. As well as being safer, it reduces the extent of specialist heavy lifting required and sophisticated vessels used for that purpose. It also opens up the possibility of new and more cost-effective means of operating, as wind turbines are mobile and could, in theory, be dismantled and towed back to port for maintenance.

Another advantage is that FOW is less likely to meet with resistance from coastal communities, as the wind farms are installed further out to sea, reducing concerns about noise and visual pollution. However, the fishing industry has raised some concerns about the level of intrusion it might have on their operations and marine life.

[2] Floating Wind Joint Industry Project FWJIP Phase III Summary Report, July 2020

[3] Wind Europe Floating Offshore Vision Statement, June 2017

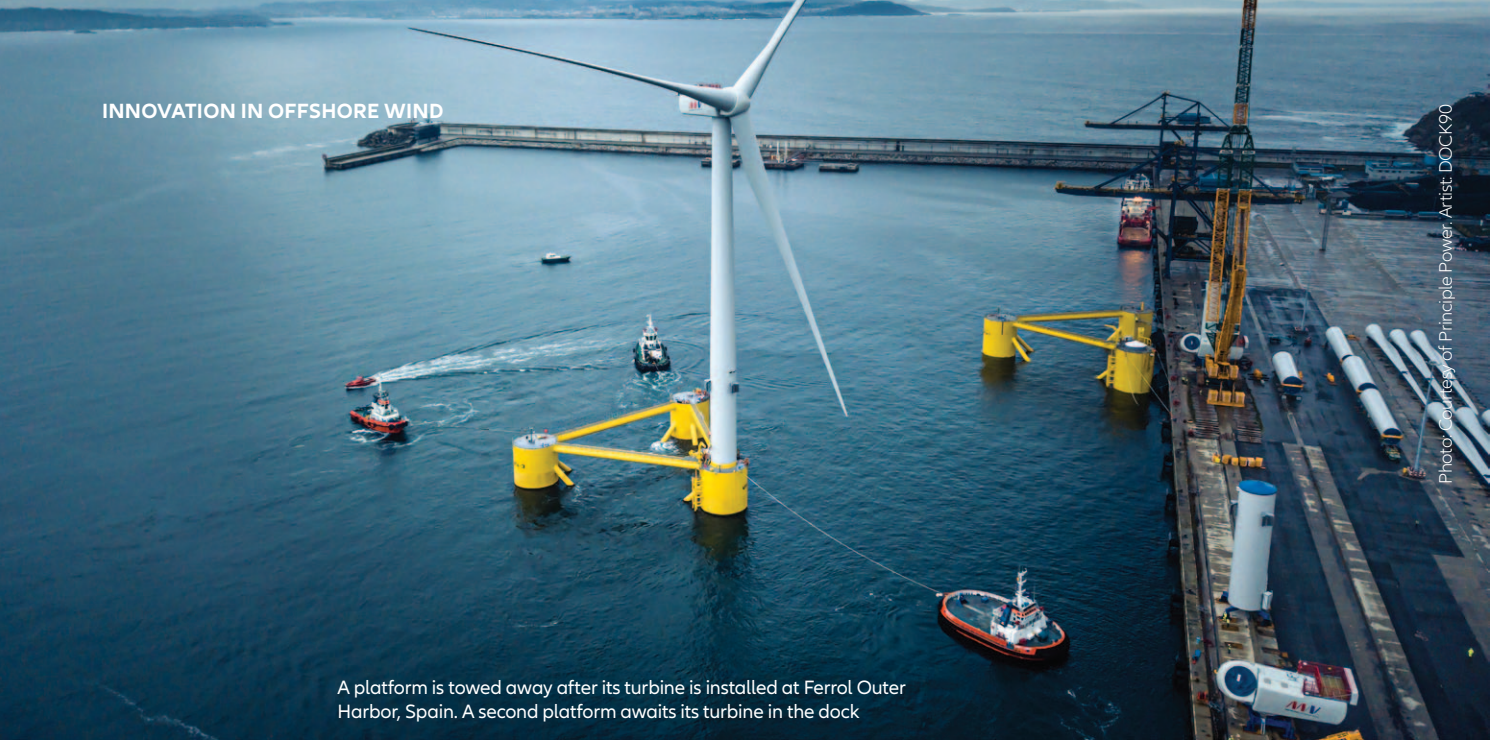


Photo: Courtesy of Principle Power, Artist: DOCK90

A platform is towed away after its turbine is installed at Ferrol Outer Harbor, Spain. A second platform awaits its turbine in the dock

New technology, new hazards

Installing innovations offshore inevitably introduces new risks, but the full extent of these is not yet known because the technologies are still immature. However, mooring, cabling and weather extremes are potential areas of concern with FOW. Mooring lines are particularly vulnerable to failure due to fatigue, corrosion, impact or harsh marine conditions.

"We had a claim, quite a substantial loss, where a chain that was used to lift a mooring line broke and fell into the ocean," says Grosset. "As developments are made further out to sea, around the world, we will see challenges in accommodating harsher conditions. The structures themselves can sustain those conditions but any kind of maintenance – even relatively minor – will become more critical in that environment. This could result in more significant business interruption or delayed start-up if the facility is not yet operational."

Stefan Atug, Engineering Global Practice Group Leader at AGCS, adds that changing weather patterns will increase this risk. "The units themselves can withstand windstorms, but the mooring and cabling systems are less tested. Most claims in bottom-fixed offshore wind have been connected to cabling, and we expect this will also be the case with FOW. The losses we've seen with cabling, especially during construction, tended to be impact losses where they were bent too much, for example, or cut by an anchor. I anticipate the inter-array cabling, which connects one unit to another, will be more challenged on a floating wind farm."

As with conventional offshore wind turbines, the risks associated with humidity, oxidation, corrosion, hazardous weather, and salt water are ever present.

Mitigating the winds of change

"The main risks with floating turbines arise from the fact that so many of their parts are designed to move," says Atug, "and whatever moves has a lifetime limit because it incurs more wear and tear."

Then there are issues of scale, adds **Joachim Eichhorn, Energy & Construction Underwriter at AGCS**. "If you're looking at longer distances, the longer the cable, the higher the probability of a loss. The same applies to the design and manufacturing – there will be quality control issues to consider in the context of greater distances and harsher conditions."

With so many moving parts and little-known risks, contingency planning is paramount. "The industry relies on a lot of specific competencies," says Grosset. "Choosing the most competent designer, builder and operator and the most expert service provider, is critical."

Atug adds quality control is key and that owners or operators should ensure designers, manufacturers and other contractors share responsibility for this, not only during the testing period, but for an agreed period of time after a plant is operational.

Collaboration is the way ahead

Before FOW can be deployed on a commercial scale, there are technical issues to resolve that will require innovative solutions from developers, manufacturers and the supply chain. According to the Floating Wind Joint Industry Project (FWJIP), an R&D initiative between the Carbon Trust and 17 international offshore wind developers, these challenges are common to several floating wind projects and suitable for industry-led collaborative R&D. They include heavy lift

maintenance and the logistics of this for wind farms further away from ports, tow-to-port maintenance, and moorings in challenging environments. Water depth, whether it's very deep or very shallow, can be problematic, as can seismic environments and certain seabed conditions.

"It is expected that many of these challenges can be overcome using existing solutions from other sectors," the FWJIP report states, "but there is a need for further investigation to establish the true level of risk presented and undertake research that can reduce risk throughout the project life cycle."

"I believe we will see more knowledge sharing and strategic partnerships going forward, such as we've seen with RWE and Kansai," says Eichhorn. "There are comparable, transferable skills and technologies in the offshore oil and gas sector that can be drawn upon to de-risk the development of FOW."

Grosset says there are opportunities for innovation in a number of related areas going forward. "The integrated wind farms that produce hydrogen are an interesting development, and we've even seen prototype airborne wind turbines, like airships. In Holland recently, the largest wind farm (fixed) on fresh waters inland came into operation.

"Pressure will grow in the coming years to produce energy away from the land. Renewables, whether it's onshore wind or solar, use a lot of land, and this can conflict with agricultural or housing needs. These concerns combine with regulatory pressures to decarbonize and increasing public unease about emissions and climate change.

"However, given FOW turbines are arguably less intrusive on the environment than those that are fixed, we don't anticipate significant increase in environmental-related litigation – there might even be less – but the industry and technology are so new this remains to be seen. We don't foresee increased risk from cybercrime, compared to existing offshore wind plants."

As the industry emerges from the realm of R&D, prototyping and feasibility studies, there are now calls for policymakers to commit to it with a supportive regulatory framework, investment in infrastructure, and funding and investment solutions that will support commercial roll-out. Only then, say industry experts, can the seemingly limitless potential of FOW become cost-effective to harness and fully integrated into the energy market.

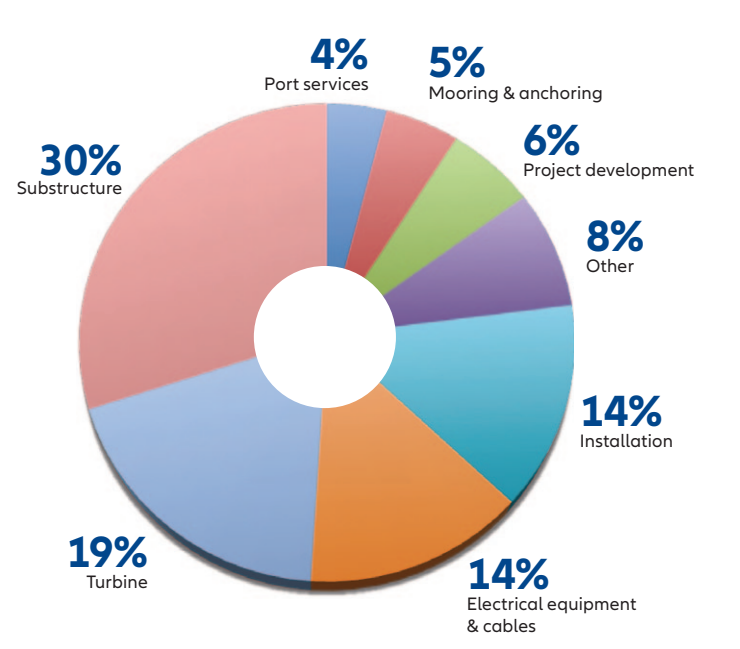
Floating offshore wind: four possible solutions

Four different technologies have emerged to make floating offshore wind generation possible. The first three are loosely moored to the seabed, while the tension leg platform is more firmly attached to the seabed and more stable.

Photo: WindEurope / Adobe Stock

CAPEX of a pre-commercial floating offshore wind farm

AGCS experts estimate the cost of a single floating offshore wind turbine to be €40-€50mn. Industrialization is expected to lower the CAPEX of floating-specific technology in the coming years.



Source: ETIP Wind[4]

OUR EXPERTS

Stefan Atug | stefan.atug@allianz.com

Joachim Eichhorn | joachim.eichhorn@allianz.com

Jean-Marie Grosset | jean-marie.grosset@allianz.com

[4] ETIP Wind: Floating Offshore Wind - Delivering Climate Neutrality, June 2020

BTS were among the global stars who explored the potential of hybrid events when the Covid pandemic struck in 2020

That's (virtual) entertainment!

The Covid crisis compelled many of us to consume leisure content online in the absence of live entertainment attractions to enjoy in person. We take a look at the incredible growth of virtual events under the pandemic, explore where this might lead in the future, and ask what the insurance implications might be.

When Swedish superstars ABBA heralded their first new album for 40 years with the news that they would be performing a series of London concerts as AI-enhanced 'Abba-tars', the livestreamed announcement itself clocked up more than 200,000 viewers on YouTube.

For some, the concept represented a gimmicky betrayal of the wonder of live music and all its unpredictable alchemy. For others, it was a fascinating glimpse of what was to come – a new and exciting dimension to the world of in-person entertainment.

"Whichever side of the fence you fall on, there is little doubt that the nature of live entertainment has been evolving – and the pace of transformation within the industry was turbocharged by the Covid crisis and subsequent lockdowns," says **Michael Furtschegger, Global Head of Entertainment at AGCS**. "When the pandemic hit, artists, producers and venues scrambled to host online or livestreamed alternatives for sporting events,

concerts, theatrical productions and other cultural attractions that usually gather a crowd."

Early lockdown 2020 saw a spate of informal performances staged at home from the likes of singer-songwriter John Legend, Coldplay frontman Chris Martin, and Neil Young, who played acoustic sets around his home in the Rocky Mountains, filmed by his wife, actress Daryl Hannah. By June the South Korean mega-band BTS was drawing in nearly three quarters of a million viewers in over 100 countries for its livestreamed **Bang Bang Con: The Live event**, an extravaganza that was performed across several different rooms and is believed to have generated around $20mn in ticket sales.

With so many live sporting events cancelled, major sporting bodies which had already innovated their own e-sports versions filled the breach with video-game alternatives. Formula 1 staged a Virtual Grand Prix series in 2020 that achieved a record 30mn views on TV and digital platforms, EA Arts' FIFA soccer franchise added 7mn players in the second quarter of the year, and, in basketball, the NBA 2K20 recorded an 84% increase in active players during the same period.[1]

Video game and e-sports revenues reached US$147.7bn in 2020 and the segment is expected to become an almost US$200bn global business by 2025, according to Pwc.[2] Virtual reality is the fastest-growing entertainment and media segment, with revenues increasing by 31.7% in 2020. The report highlighted the changing dynamics within the industry, including the shifting of box-office revenues to streaming platforms, and more content being consumed on mobile devices.

Youngsters mix it up

Live music is forecast to make a strong rebound and a survey of over 25,000 UK live music fans showed 75% of under-24s would be happy to return to events as soon as possible, according to a survey by LIVE[3], a UK music organization. Significantly, the same survey reports 70% of fans saw a live music performance online in 2020 and one in four was interested or very interested in attending online music events in the future.

A hybridized approach to consumption could be the model for media and entertainment going forward, especially if the habits of Gen Z (those born between 1997 and 2007) are anything to go by. These digital natives are consuming culture on a number of platforms, and for them, the boundaries between fashion, music, film and gaming are blurring. Gaming is particularly influential, with just over a quarter of that age group saying that playing video games is their favorite activity, followed by listening to music (14%), according to Deloitte.[4]

This trend was illustrated in spectacular fashion with the live appearances of rap star Travis Scott and singer Ariana Grande in immersive, interactive events hosted by Epic Games' Fortnite, their avatars performing in virtual spectaculars viewed by millions.

The space where interconnected physical and virtual realities converge – if not quite yet then very likely in the future – is often referred to as the 'metaverse', a term that has become something of a buzzword. Mark Zuckerberg recently announced the name of the Facebook holding company would be changing to Meta. "We believe the metaverse will be the successor to the mobile internet," he said in an online presentation. "We'll be able to feel present - like we're right there with people, no matter how far apart we actually are."

The roar of the digital crowd

Immersive innovations are also shaking up sports broadcasting, with virtual and augmented reality being used to personalize the viewer experience and offer a 'front-row experience'. Fans of both the NFL and the NBA (National Basketball Association) can use Microsoft Teams to share a collective experience and celebrate with players when they score, while Sky Worlds allows Premier League soccer fans to move around the stadium using an Oculus Quest headset.

THE 1 MINUTE DIALOGUE

- The virtual events held during Covid-19 lockdowns look set to evolve into a hybrid model of part-live, part-livestreamed content in the future
- Digital technologies and AI are creating new kinds of audience interaction with sports and live entertainment events
- The most critical exposure for virtual events is loss of transmission, so organisers need robust broadcasting infrastructure and backup systems
- As virtual events become more sophisticated, with higher ticket prices and viewing figures, lost revenue from outage or cancellation represents a significant financial risk

[1] World Economic Forum, Game on: How Covid-19 became the Perfect Match for Gamers, September 2020
[2] Pwc Global Entertainment & Media Outlook 2021-2025 Report , July 2021
[3] Live Music Venues Industry and Entertainment, #ReviveLive Music Report, May 2021
[4] Deloitte Insights, Digital Media Trends, 15th Edition, April 2021

Virtual concerts hit the high notes

Massive online viewing figures on gaming and social media platforms point to hybrid methods of consumption emerging on the cultural landscape.

Background illustration: Shutterstock

169mn views on YouTube of **Travis Scott & Fortnite Present: Astronomical**

33mn watched four shows across two days by rapper Lil Nax X on game platform Roblox

5.5mn watched singer Ed Sheeran's show over two days on TikTok

5mn viewers watched a livestreamed concert by singer Dua Lipa on Live Now

4mn unique views of Justin Bieber's Valentine's Day broadcasts on TikTok

756,000 tuned in to watch the BTS **Bang Bang Con: The Live event**

"I see more of us getting used to pay-per-view ticketing and watching live events streamed in parallel in the future," says Furtschegger. "The prospect of a VIP or front-row experience will make the virtual experience more appealing, giving fans a chance to interact with their favorite band or get special access behind the scenes at a big sporting occasion."

This trend towards customization does not only apply to big-arena events, adds **Alastair MacLean, Global Product Leader – Live, at AGCS**. MacLean expects to see growth in the number of livestreams from smaller venues hosting comedy and music events. "These events can be more intimate online. You can have interactions with the performer. If you have a very small gig, you can have a Q&A session with the artist. In person, access is restricted because you are not allowed backstage." Several social-media companies are already offering platforms for livestreaming events, MacLean notes, among them Twitter Spaces, Spotify and Instagram Live.

Transmission failure, no-shows and other perils

Given the combination of changing viewer behavior and rapidly developing technology, it seems likely virtual events will remain a part of the entertainment mix even after the pandemic is over. But even without a physical audience or staged event, things can go wrong in the virtual world.

"With so much technology involved, transmission failure is probably the most critical risk," Furtschegger says, adding that AGCS has seen a rise in insurance enquiries for transmission of events through satellite, live streaming and pay-per-view contracts. "Transmission could fail because of a weather-related interruption, natural catastrophe, a fire that affects your broadcasting unit, or network issues within your broadcasting infrastructure."

Events dependent on a single star or band can be left high and dry if the headline act does not

show up because of health issues, and for this there is non-appearance cover, Furtschegger explains. "If you have an event centered on a particularly crucial announcement or element – say the 89th minute of a soccer game – you can even specify a 'critical moment' and insure against that vital element not going ahead."

Even if you are running a virtual event without a live audience, you should still be aware of the usual property and casualty perils. "You may not be so concerned about slip-and-fall coverage, for example, but you could still be renting equipment in a studio and staging a smaller-scale event, so you will have some exposures in that location."

How to reduce the risks

"For transmission, any risk assessment should look at your infrastructure, how you will generate the signal, and how it will be broadcast and transferred," Furtschegger adds. "What is your reboot time if there is an outage and what backup systems are in place? Then there are more mundane physical risks that need to be managed, like protecting cables to guard against power outage."

As with live entertainment, for a virtual event you will probably need to mitigate against weather perils, fire, property damage and risk to an audience, if anyone is present in person. Weather perils could increase in the future as a result of climate change, Furtschegger notes. "The Bonnaroo 2021 festival in the US was cancelled this summer due to waterlogging and flooding, so if you're streaming an event in parallel with a physical event, choose your location with care and consider the vulnerabilities of the physical environment."

Because virtual events rely so much on digital technology, cyber security is inevitably a concern for organizers and an area of increasing interest for insurers, says MacLean. "With events being livestreamed and heavy use of technology even at venues, there is a lot of interest in coverage for cyber outages. In the future, increasing demand might lead to a specific cyber product offering for events. This is a hot topic across all areas at the moment."

A bigger, bolder, brighter future

As entertainment offerings proliferate and innovate in the years to come, the financial stakes and investments could be high. With viewing figures for virtual events sometimes running to their tens of millions, lost revenue in ticket sales, merchandising, advertising and sponsorship represents a significant economic risk.

Showstoppers: what can go wrong at a virtual or livestreamed event?

Virtual events carry their own risks, as well as those associated with live events.

- **Cancellation:** no-show, terrorism, natural disaster
- **Transmission:** failure or interruption during the event
- **Non-appearance:** a key participant is unable to attend
- **Critical moment:** a key element cannot take place or is not broadcast
- **Weather/fire/explosion/water:** damage to studio, set, props and equipment
- **Liability claims:** rented equipment, premises
- **Stage stability:** inadequate for wind conditions or weight load
- **Injury:** performers, audience, projectiles, accident

Find out more about the risks associated with live events here: Live events risks (allianz.com)

"In terms of future risk mitigation, shows are getting bigger and more exciting. They're using mixed reality, augmented reality and other immersive technologies, offering more and more ancillary offerings to customize the experience, so this will lead to more demand and capacity. Ticketing is likely to become more expensive," says Furtschegger.

"I think we all agree there's nothing to match the atmosphere of live entertainment or sports enjoyed as part of a crowd," Furtschegger adds. "At the beginning of the pandemic, many people engaged with virtual events and streamed content because there wasn't much else to do, but going forward it will no longer be such a binary choice."

After a period of crisis, turbulence and reinvention in the world of entertainment, it appears that the show will go on after all – and in more ways than one.

OUR EXPERTS

Michael Furtschegger | michael.furtschegger@allianz.com

Alastair MacLean | alastair.maclean@allianz.com

Rail revolution: autonomous trains coming down the line

Advances in digital technologies are bringing the mainstream rollout of autonomous or driverless trains on longer routes a step closer. What will this mean for risk managers in the rail sector and their suppliers? We talk to the AGCS experts to find out.

In the remote Pilbara region of north-western Australia, a heavy-haul locomotive sweeps across the plains, its 240 wagons stretching two and a half kilometres behind it towards the horizon. Laden with iron ore, the driverless train is making the 300km journey from mines inland to a port on the Indian Ocean, while a team of controllers from the mining giant Rio Tinto monitors its progress from a control centre in Perth, 1,500km away.

On the other side of the world in Brazil, the fully automated Line 4 of the Sao Paulo metro system carries a human cargo – sometimes as many as 800,000 people a day – along an


Photo: Shutterstock

China's high-speed rail network boasts the world's fastest long-distance driverless train, capable of speeds up to 350km/h

11km route through one of the most populous cities on the planet.

Both are examples of what innovation has made possible on the world's railways, and how adaptable technology must be to cater for such varied uses and contexts.

Many of us think nothing of boarding a driverless transit service at an airport or taking a short hop on an automated metro system. Fully automated trains have been around a surprisingly long time – the first opened in Kobe, Japan, in 1981, and they now operate in over 40 cities around the world, including Copenhagen, Paris, Singapore, Dubai, and London. But Rio Tinto's AutoHaul fleet, developed with Hitachi Rail, was the first driverless, heavy-haul, long-distance train in operation when it completed its first loaded run in 2018. In many ways it represents the changes that are speeding down the track for rail transport.

Making autonomous rail a reality

Governments, operators, research bodies, and industries are rising to the challenge of how to take autonomous trains from research prototypes to operational viability, and from urban, closed systems to the more open environments associated with freight, regional and long-distance rail travel. Collaborative partnerships, many of them international, are starting to bear fruit.

THE 1 MINUTE DIALOGUE

- Digital technologies are facilitating the roll-out of driverless and autonomous trains beyond urban transit systems to longer-distance networks
- Pressures to decarbonize transport have given the rail sector more impetus to innovate and create new efficiencies
- The risks of autonomous trains vary according to whether they operate in a closed or open environment
- Digitization could affect all aspects of rail travel from back-office admin to real-time operations

The French national railway SNCF, with industry partners, has announced the launch of two autonomous trains it aims to have running by 2023. One will be a freight train, developed with Alstom, Altran, Hitachi and Apsys, and the other a regional passenger train, with Bombardier, Bosch, SpirOps and Thales.

Another consortium in Finland, led by rail operator Proxion, is developing an autonomous freight train for short distances in the steel and forestry sectors, also by 2023.

In China, the world's fastest driverless long-distance train, the Beijing-Zhangjiakou Railway, opened at the end of 2019 and covers the 174km between those two cities in less than an hour at speeds of up to 350km/h.

"These are just some of the projects taking rail travel in a whole new direction, thanks to 'smart' technologies like artificial intelligence, or AI, robotics, and the Internet of Things," says **Oliver Lauxmann, Chief Underwriting Office – Liability, Global Practice Group Leader at AGCS**. "Combined with the capabilities of data analytics, satellites, lidar [laser scanning], radar, and 5G, they offer monitoring and safety systems with wide-reaching benefits."

The drive to digitize rail travel has been given extra impetus by global efforts to decarbonize

AutoHaul: the world's first driverless, heavy-haul, long-distance train

Making the grade: the different levels of autonomy

Some trains are more autonomous than others, and the degree of automation is often categorised according to four Grades of Automation (GoA)[1].

GoA1: Uses automatic train protection (ATP), which checks that speed is compatible with permitted limits and can activate an emergency brake; driver starts and stops train and closes doors; driver operates in event of disruption.

GoA2: Uses ATP and automatic train operation (ATO), a safety device used in the operation of automated trains; starting and stopping is automatic; driver closes doors; driver operates in event of disruption.

GoA3: driverless; starting and stopping is automatic; an attendant closes doors; attendant operates in event of disruption.

GoA4: UTO (unattended train operation); starting and stopping is automatic; door closure is automatic; operation in event of disruption is automatic.

Source: UITP (International Association of Public Transport)

240

Number of wagons on a driverless AutoHaul train used by mining giant Rio Tinto

and transition to more sustainable forms of transport, as well as the need to tackle congestion in urban environments.

In France, the government has announced plans to limit domestic flights that can be covered by train in under two and a half hours, while China is aiming to double the length of its high-speed rail network to an astonishing 70,000km by 2035.

Rail's role in the global transport mix is expected to increase in future, whether it's in intermodal freight, long-distance passenger travel, or in and around the digitized, highly networked urban centres of the future – China alone is building 500 of these 'smart cities'.

"Disruptive technologies have affected so many areas of our lives, from our phones to our cars," says Lauxmann. "They support human activity in many different industries and are highly transferable. We're seeing increasing interest from transport operators in exploring autonomous solutions and we expect they will ultimately contribute to even higher safety standards in the rail sector by reducing risk exposures, including human error."

A glimpse of what's to come

The efficiencies offered by advanced technology could touch all areas of rail operations. They include optimized speed, braking and acceleration, which could reduce energy consumption by up to 30%[2] and improve network capacity and reliability. Monitoring systems could spot acts of vandalism or theft before they pose a danger to rolling stock or human life and reduce the need for trackside repairs. Geolocation technology could alert operators to hazards on the network and ensure time is made up after stoppages. Data fused from a range of sensors could identify obstacles and calculate their distance from a train, even in the dark, faster and more accurately than the human eye. Data gathered could also support machine learning for more streamlined operations and predictive maintenance.

The passenger experience is likely to be heightened, too. Travelers could be alerted to their nearest available seat or where to stand on the platform. Higher capacity and greater reliability could encourage people off the roads and onto the rails and even lead to lower ticket prices.

Train autonomy could also support beleaguered supply chains, by giving logistics providers the data to optimize routes and maximize capacity, reducing the inefficiencies caused by empty containers.

De-risking driverless rail

The list of 'what could be' in the future of rail travel is long, but the obstacles facing the mainstream rollout of autonomous long-distance trains present real and tangible risks for operators, manufacturers and their suppliers. The rail industry is highly regulated, but the regulatory framework surrounding AI and other

[1] UTIP, World Report on Metro Automation, 2018
[2] Thales, Autonomous Trains: the Journey Starts Here, January 2021

digital technologies is still evolving. The European Union[3] is proposing new rules to manage risks posed to the public by AI, with standards for 'high risk' areas such as critical infrastructure likely to be stringent. This new standard could have repercussions around the world, and concerns have been raised that it might stifle innovation in the technology sector, while others say the measures do not go far enough to protect human rights.

As well as the perils faced by conventional rail operations, such as hazardous cargo, impact, terrorism and geography, some particular exposures affect autonomous trains.

"Urban driverless systems in closed environments present different risks from networks in open environments," says Lauxmann. "An item of clothing caught in the doors of a city light railway, for example, represents a different risk from a passenger train colliding with a vehicle on a level crossing. Rail operational exposures vary widely and there is no one-size-fits-all solution. Whatever software works in a mass-produced car won't apply to all autonomous trains. The technology needs to be highly customized.

"The main severity-driven incidents we see in the rail sector concern collisions, either between vehicles or with an object, and derailment. These are usually down to human error, possibly caused by fatigue, a missed signal or an issue with speed. Damage can occur to passengers, the train itself, the track, people nearby or surrounding property. These incidents are thankfully very rare, but they are high-profile."

The systems used by autonomous trains need to contend with weather events, objects on the line, animals or people intruding on the tracks, and other unforeseen events. "So these trains must be able to react with agility and accuracy to their environment," says **Thomas Berning, Senior Risk Consultant, Liability, at AGCS**. "The systems need to be extremely high-performance in terms of on-board intelligence and the integrity of the infrastructure. With such bespoke technology involved, cyber-security measures must be watertight."

Berning adds that he sees a possible shift in liability from the human-error aspect to the reliability of the technology used. "And that's not just software, but hardware too. Was it properly tested and maintained? Have operators and manufacturers taken the requisite steps to protect those systems from attack? This is important because we're not talking about legacy technology; it's all very new. The operator is usually the first to be put under the spotlight in case of an incident, but liability does not start and end with them. Litigation could affect the manufacturer, the technology consultants, the designers, programmers, software suppliers... There are multiple parties involved."

There are also ethical concerns to take into account, because transitioning to autonomous trains will require retraining staff, negotiating new ways of working and possible job losses, not to mention addressing public concerns over safety and privacy.

Any risk assessment needs to take a holistic view, Lauxmann says, and AGCS can draw on its global experience of exposures in this space to explore not only insurance solutions but also technical issues with the Allianz Risk Consulting team: "We'll draw on internal data, external data, and in-house experts to make recommendations on how best to proceed. We see it as like a partnership with a risk manager or broker. For us, the dialogue is key."

AI applications in public transport

Results from a survey conducted by the UITP (International Association of Public Transport) indicate the direction of travel when it comes to AI usage. Respondents were drawn from a range of public transport-related organizations, including authorities, operators, industry providers and research institutes.

Percentage of organizations surveyed using, testing and/or offering AI

- Real-time operations management **25%**
- Customer analytics **25%**
- Intelligent ticketing system **21%**
- Predictive maintenance **17%**
- Scheduling and timetabling **17%**
- Multimodal journey planner **17%**
- Disruption management **15%**

Source: UITP (International Association of Public Transport)

OUR EXPERTS

Thomas Berning | thomas.berning@allianz.com

Oliver Lauxmann | oliver.lauxmann@allianz.com

[3] European Commission: Europe Fit for the Digital Age - Commission Proposes New Rules and Actions for Excellence and Trust in Artificial Intelligence, April 2021

Antwerp's missing link

A huge infrastructure project is underway in Belgium's second city, bringing many potential benefits for international trade and local residents. AGCS is on board as lead insurer on the construction side.

A multi-modal hub for logistics activities around the continent, the port of Antwerp is situated 80km inland from the North Sea, covers an area the size of 24,000 soccer pitches, and provides employment for around 144,000 people. It is the second busiest port in Europe and the 14th largest container port in the world.

But the traffic in and around this strategic gateway is putting pressure on the region's transport infrastructure, in particular the R1 ring road around Antwerp, which has never actually been completed. A shortage of crossings over the Scheldt River adds to the congestion, affecting road safety and quality of life for the local population.

Now a major 11-year infrastructure project aims to address these concerns by constructing the Oosterweel Link and finally bridge the gap in the ring road that was developed back in the 1960s.

The project is being developed by the government-owned entity Lantis and includes a number of measures to improve traffic flow. Among the most high-profile is a 1,800-meter-long tunnel underneath the Scheldt with three lanes in each direction for cars and trucks, as well as a section for cyclists. Further tunnels will connect the ring road to the docks and a new lock will replace the existing Royers shipping lock that was built over 100 years ago.

"This is an exciting project for the global logistics sector, as well as for the residents of Antwerp," says **François Périquet, Regional Head of Energy & Construction, Mediterranean & Africa Region, at AGCS**. "When completed, it should result in a better connected city, with more efficient transportation routes for the many operators coming in and out of the port, while for locals living in the surroundings of the ring road, it will substantially improve the quality of life. There will be less congestion, noise and pollution. While works are underway, considerable efforts will be made to minimize disruption and manage the impact on local neighborhoods."

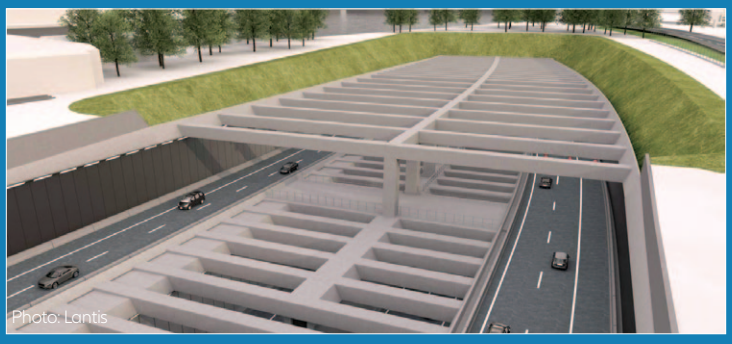


Photo: Lantis

Oosterweel & Antwerp: ringing up the figures

€3.5bn	Estimated total project cost
15km	Length of link on ring road
1,800m	Length of Scheldt Tunnel
12,031,469	Total teu handled in port of Antwerp in 2020
60%	European purchasing power located within a 500km radius of Antwerp
2030	Estimated project completion date Oosterweel Link

With multiple stakeholders involved, and specialist skillsets ranging from tunneling and dredging to hydraulics and hot work, delivering an infrastructure project on this scale entails complex risks over its life cycle. Perils include collapse, fire, flood, and damage to existing properties and surroundings.

AGCS is providing Lantis with Construction All Risks cover. "AGCS Belgium and Allianz Risk Consulting worked with Lantis over 20 months to assess the risks involved," says Périquet. "Over several technical meetings with AGCS underwriters and risk engineers we developed a partnership of trust, which enabled the team to tailor-make strategies for Lantis that will help them mitigate risk over the next 10 years."

OUR EXPERT

François Périquet | francois.periquet@allianz.com

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Checklist: ransomware protection

Ransomware attacks are on the rise

From ransomware identification, user awareness and business continuity planning to backups: What does good IT security look like? AGCS has published a checklist with recommendations for effective cyber risk management.

In around 80% of ransomware incidents losses could have been avoided if the organizations had followed best practices. Regular patching, multi-factor authentication, as well as information security and awareness training and incident response planning are essential to avoiding ransomware attacks and also constitute good cyber hygiene," says **Rishi Baviskar, Global Cyber Experts Leader at AGCS Risk Consulting**. "If companies adhere to best practice recommendations there is a good chance that they will not become ransomware victims. Numerous security gaps can be closed, often with simple measures."

Check out the checklist **Ransomware protection | AGCS (allianz.com)**

Download our new report **Ransomware trends – Risks and Resilience | AGCS (allianz.com)**

Webinar: Maritime Trends to Watch in 2022

What are the latest loss trends and risk challenges for the maritime sector? Watch the new webinar session hosted by AGCS marine underwriters and risk consultants examining the latest developments in the shipping sector and what they mean for the insurance market.

There are two sessions to choose from. The first session focuses on marine hull risks and insurance. The second session focuses on marine cargo risks and insurance. Watch and listen today at **Safety & Shipping | AGCS (allianz.com)**

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- Maritime Trends to Watch in 2022 (hull) – final[4] (Read-Only) (allianz.com)
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