Global Risk Dialogue

Allianz Global Corporate & Specialty

Analysis and insight from the world of corporate risk and insurance

Special Airmic conference issue 2023

Riding the waves of future risks & opportunities

Contents

Have you considered a multinational program for your cross-border exposures?

How you respond after a data breach could make a world of difference

Plastic pile-on: why liability concerns are rising

Case study: D&O Captive for Meta

AGCS is on Twitter and Linkedin
Follow the Twitter handle
@AGCS_Insurance

ESG Focus

Let's start the dialogue

Allianz is delighted to be attending Airmic once again. We are all looking forward to meeting and reconnecting with you, our valued partners across the course of the event. The business landscape for 2023 continues to be challenging, as businesses confront geopolitical uncertainty and economic volatility in all regions. In this special Airmic Conference issue of Global Risk Dialogue, we explore the emerging exposures on the radar of Allianz underwriters, claims experts and risk engineers to help you steer your company through the shocks, disruptions and transformations it could encounter in a changing world.

Thank you for reading.

Nadia Côté
Allianz Commercial Managing Director UK

Global Risk Dialogue
2023 Airmic Edition

Head of Content
Greg Dobie | greg.dobie@allianz.com

Global Risk Dialogue Editor
Helen Saunders | helen.saunders@allianz.com

Contributors
Iryna Bondarenko, Alisha Dewald, Christina Hubmann, Greg Langley, Heidi Polke-Markmann

Publishing House
Larino Design | w.forrester@larinodesign.com

Regional Head of Communications
Ailsa Sayers | ailsa.sayers@allianz.com

Allianz Global Corporate & Specialty SE

June 2023
Cover image: Adobe Stock

News from Allianz

Allianz to serve global commercial insurance segment as one go-to-market business

Allianz to operate its mid-corporate and large corporate insurance businesses under one strategy and market approach

Allianz Group has announced that it will serve the global commercial insurance segment as one go-to-market business under the trading name **Allianz Commercial**, featuring an integrated approach encompassing its Allianz Global Corporate & Specialty (AGCS) business serving large corporate clients and the insurance businesses of Allianz's operating entities serving mid-sized country-based accounts.

The new integrated approach anticipates the increasing globalization of risks, closes internal structural gaps in market reach, and extends Allianz's product offering and delivery at the local level. Clients and distribution partners will experience a consistent underwriting approach and access harmonized insurance solutions that are globally coordinated and locally delivered with one market interface.

"Allianz Commercial allows us to deliver the full value of Allianz's scale and capabilities for the benefit of our customers, brokers and shareholders," said **Chris Townsend, Member of the Allianz SE Board of Management**. "The introduction of Allianz Commercial is a powerful and natural continuation of our existing multi-year strategy to scale and globalize the commercial segment."

The establishment of the Global Commercial Division in 2021 to globally steer Allianz's mid-corporate business in conjunction with Allianz's local operating entities, along with the ongoing improvement of the performance of AGCS, have laid the groundwork for the new model.

Allianz Commercial will feature one single commercial lead in each country or region to represent the Allianz Commercial businesses. Teams currently focused on trading, underwriting, and customer delivery will work closely together under the new operating model. The legal entities conducting the insurance business and their leadership will remain the same.

Joachim Mueller will lead Allianz Commercial as part of his responsibilities as CEO of AGCS SE, and **Dirk Vogler**, previously Member of the Board of Management of Allianz Versicherungs-AG, has been appointed as **Chief MidCorp Transformation Officer**.

"Allianz Commercial is the result of market feedback encouraging us to combine the best of AGCS with the best of local Allianz businesses to serve more clients around the world," said **Mueller**. "The result will be simplicity, clarity and consistency for customers, with a wider range of products, from Allianz Multinational to climate solutions, in a seamless approach that preserves the trusted relationships and local know-how they value."

Leaders for four of the largest markets have already been appointed. These are: **Phuong Ly, Chief General Manager, Australia; Patrick Thiels, Country Managing Director, France; Hans-Joerg Mauthe, Commercial Managing Director, Germany**; and **Nadia Côté, Commercial Managing Director, UK**. The appointment of additional Allianz Commercial regional leaders in other markets globally will follow in due course.

Chris Townsend

Joachim Mueller

Dirk Vogler

Photo: Adobe Stock

DON'T MISS:
Kevin Hegel from Allianz's Multinational team will take part in the panel discussion 'Global programmes' on Wednesday 21 June, 10:45 to 11:45 at the Airmic Conference 2023.

Exposures are increasing in an ever-more connected world

Seven trends in multinational insurance programs

In today's fast-changing world, companies face risks that span borders and regulatory regimes, which is resulting in growing interest in multinational insurance, a fully end-to-end customized service for the cross-border exposures of organizations, including risk transfer and captive services. What are some of the current and future trends in this space?

1 Cross-border exposures have never been more volatile for multinationals. Expect the unexpected

The volatile sociopolitical environment has dramatically impacted the risk landscape, presenting risk managers with the challenge of how best to protect their companies in the face of conflict, political unrest, economic risk, supply chain disruption, increasing cyber threats and climate change. Most experts, including **Allianz Risk Barometer** respondents, predict that businesses will continue to experience significant disruption around the world for some time yet. Scenario planning is vital in order to plan for the growing number of crises, as is ensuring holistic insurance cover is in place.

2 What are some of the current and future trends in this space?

The global programs market is set to grow in 2023 and beyond. It is already estimated to be worth in the region of $50bn according to industry estimates[1]. Anticipated drivers of future growth include: our ever-more interconnected world, a broadening customer footprint as international companies expand, the increasingly complex regulatory, tax and reporting environment around the world, and lower barriers of entry as digital tools and portals help facilitate service improvements. Global programs ensure full insurance coverage and can help prevent any regulatory violations. At the same time, global risk

[1] Swiss Re, 2023 International Programmes Outlook; Insurance ERM, Swiss Re's primary ambition, February 6, 2023; EY Market Perspectives, May 2022

consulting and claims services are becoming increasingly important, given this environment.

3 Digitalization is unlocking real-time data and enabling greater collaboration

Companies have woken up to the power of data in their businesses, and increasingly want to conduct business digitally. When it comes to global programs, firms now expect much faster turnaround times than in the past.

In response, the world's leading insurers are turning to digitalization to improve how they operate global programs, speeding up systems and improving data collection and analytics, including 24/7 accessibility and real-time updates. API (application programming interface) technology is facilitating a more streamlined, real-time exchange of data between stakeholders.

Ultimately, digitalization is helping to deliver a better and deeper understanding of risk. It is making it easier for risk managers to take an active role in risk management, offering increased access to data and greater levels of collaboration with insurers and brokers, both of whom, in turn, can then spend more time on client-focused activities.

4 Growing use of captives alongside global programs

Many multinationals are increasingly using their captives alongside their global programs, either with or without risk transfer or as a full-service captive. Captives are growing in popularity, particularly if there is a lack of capacity in certain areas or effective rate increases on certain lines of business means that for companies either increasing utilization of the captive they have or forming a new captive or cell captive is an attractive option. Financial lines, errors and omissions, directors & officers and cyber have been among the most popular lines of business for multinational captives.

A captive is an invaluable tool when it comes to coordinating the different covers of various subsidiaries around the world and collating risk information on exposures and losses.

5 Post Covid-19, the awareness of the need for greater contract certainty is growing

The pandemic brought some challenges that tested the relationships between risk managers and insurers, particularly around which risks were covered, and which were not. This has led to a greater focus on contract certainty and data analytics, as well as increasing interest in global programs, which can be an important tool for helping multinational companies tackle the ever-evolving risk landscape.

Contract certainty is one of the big insurance lessons learned from the Covid-19 pandemic. It is clear that there needs to be greater clarity around what policy wordings actually mean in order to have a better understanding of what is and what is not covered.

Global programs deliver full transparency over what is covered under a local policy and what is covered under a master. Any potential gaps can therefore be easily identified and addressed as needed, making things easier for all parties.

6 Global programs can help organizations with ESG and emerging risks

Environmental, social, and governance (ESG) issues are increasingly landing on the desks of risk managers. Multinationals face growing interest and increasing scrutiny from regulators, investors, customers, and employees about how they are tackling these topics.

In global programs, ESG is integrated into underwriting via industry leading rules and tools, while technology and data analytics is increasingly delivering better insights into big, emerging risks such as climate change, cyber and global supply chain issues.

7 Don't forget the growing influence of AI and virtual economies

Artificial intelligence (AI) applications bring benefits such as increased efficiencies, new products and fewer repetitive tasks, while the metaverse – the space where interconnected physical and virtual realities converge – has the potential in the long-term to provide experiences not available in the real world, giving rise to a booming virtual economy.

Insights gained from AI-powered analytics and data could expand the boundaries of insurability, extending existing products, as well as giving rise to new risk transfer solutions. However, as with any disruptive technology, usage of AI and engagement with the metaverse will also introduce new risks and potential liability scenarios. To ensure their safe and secure use, both will need rules for users and platform providers and appropriate measures for enforcing them.

A serious breach can have a global impact

Cyber: dealing with a data breach

Data breaches are one of the most significant cyber threats organizations face, but when they occur, many businesses do not respond in a manner that reassures their clients or the regulators. What can companies do to ensure their response is robust in the crucial aftermath of an incident?

Following a cyber breach, there is a critical moment – perhaps only a few minutes or maybe an hour or two at most – when the decisions made will significantly influence the outcome. For this to be minimally damaging, there needs to be a thorough understanding of what is likely to happen and what is at stake.

So advises **Robin Kroha, Chief Information Security Officer & Head of Global Protection and Resilience at Allianz Services**. A company must be meticulously prepared for a serious breach, with a cyber incident response organization and plan in place. This includes exercising critical scenarios in advance and having a trained team who clearly understand their roles and responsibilities.

"Plans are important," **Kroha** acknowledges. "But exercises are critical because even the best plans cannot replace a well-prepared team. Plans must be practiced to ascertain their effectiveness in a real-life incident."

The growing number of cyber incidents remains the most significant concern of companies for a second year in succession, according to the annual **Allianz Risk Barometer**. "In the 2023 report, 34% of the responses from more than 2,700 experts around the world ranked cyber incidents as the greatest risk their companies face[1]," says **Michael Daum, Global Head of Cyber Claims at Allianz Global Corporate & Specialty (AGCS)**. "In particular, we are seeing increasing cases of data breaches, either with ransomware attacks or stand-alone."

According to **Allianz Risk Barometer** respondents, a data breach is the exposure that concerns companies the most (53%). Data privacy and protection is a critical risk that is intensifying – IBM's The Cost of a Data Breach Report states the average cost from such incidents reached an all-time high in 2022 of $4.35mn and is expected to surpass $5mn in 2023.[2]

Regulatory pressure ramps up

Regulators are getting tougher on companies with insufficient security measures to protect data. In 2019, British Airways received a £183mn ($222mn) fine from the UK's Information Commissioner's Office (ICO) after data on 500,000 passengers were stolen. The fine was reduced in 2020 to £20mn[3] on appeal.

Last year, two cases in the US sent a warning to directors and senior executives who fail to deal adequately with cyber breaches. In October, a former chief security officer of a mobility firm was found guilty of trying to cover up a cyber security incident[4]. This is believed to be the first time a US company executive has been criminally prosecuted over a cyber breach. The executive faced a prison sentence of up to eight years for obstruction of justice and deliberate concealment of a felony.

Also in October, the Federal Trade Commission (FTC) announced action against the CEO of an online drinks delivery business over security failures that led to a cyber breach exposing personal information on 2.5mn customers.[5]

With regulators and prosecutors becoming more stringent, large companies are boosting investments in cyber security. Enhanced security is forcing hackers to seek victims in smaller and mid-sized companies, where weaker controls can make them easy targets.

The 1 minute dialogue

- Cyber incidents is the number one business risk for companies around the world, according to the Allianz Risk Barometer 2023, with data breaches the cyber exposure of most concern.
- Regulators are exerting pressure on businesses to tighten data security, with large fines or even prison sentences facing those who fall short.
- Businesses need to draw up, test and practice cyber incident response plans, including consulting specialist third parties.
- Crisis communications should be part of your preparedness, ensuring timely information can be communicated to stakeholders and authorities.

$4.35mn

Average cost of a data breach in 2022, an all-time high

When the unthinkable happens

Once a personal data breach occurs, the clock starts ticking. Under the European General Data Protection Regulation (GDPR), companies must report a breach within 72 hours of becoming aware of it. The ICO imposes the same timeframe in the UK.

In the US, it has been less clearcut with a patchwork of jurisdictions meaning, in some cases, data breaches could be reported within 60 days. However, last year President Biden signed new federal data-breach reporting legislation[6]. This could tighten the notice to report such incidents to the Department of Homeland Security to within 72 hours after one occurs.

The US FTC advises on the critical steps companies should take after discovering a data breach, as does the UK ICO. The EU provides guidelines for who needs to be notified and when, including other affected companies and individuals *[see panel, page 9]*.

[1] Allianz Risk Barometer 2023, January 2023
[2] IBM, The Cost of a Data Breach Report 2022, July 2022
[3] BBC, British Airways fined £20m over data breach, October 2020
[4] The Guardian, Former Uber security chief found guilty of concealing data breach, October 6, 2022
[5] FTC Takes Action Against Drizly and its CEO James Cory Rellas for Security Failures that Exposed Data of 2.5 Million Consumers, October 2022
[6] Security Intelligence, What CISOs should know about CIRCIA incident reporting, December 8, 2022

Crisis communications checklist

As well as your legal reporting requirements, timely and transparent communication with stakeholders after a breach is essential if you want to limit damage to your business activities and reputation.

According to **Haydn Griffiths, Chief Information Security Officer at AGCS**, a crisis communications plan should be part of your cyber incident response plan, comprising a list of contacts, urgent tasks and appointed people to oversee them – including a senior communications spokesperson – with pre-prepared statements drafted (and tested) for several scenarios. Here's a checklist of what to consider when compiling a cyber crisis communications plan:

Who do you need to inform? As well as relevant authorities, this could be your customers, shareholders, employees, external contacts, the public, media, your lawyers, professional organization, insurer. Establish various communications streams to help steer target groups towards regular updates.

What is the purpose of the communication? It could be to provide reassurance, information on remedial measures, an apology, or a statement to pre-empt inaccurate coverage elsewhere.

How can you allay customers' fears? Show victims of the breach empathy and a readiness to offer solutions. When you are able to, communicate mitigation steps you are taking and keep customers informed. Give them guidelines on how they would have been accessed by the breach and what action they can take to protect themselves, such as password changes or checking emails for malware.

How can you reassure employees? Communicate quickly on multiple channels to put their minds at rest and arm them with the actionable information they need. Keep them updated. Similarly, provide any details that might be needed by your suppliers, consultants, investors, and staff representatives or unions.

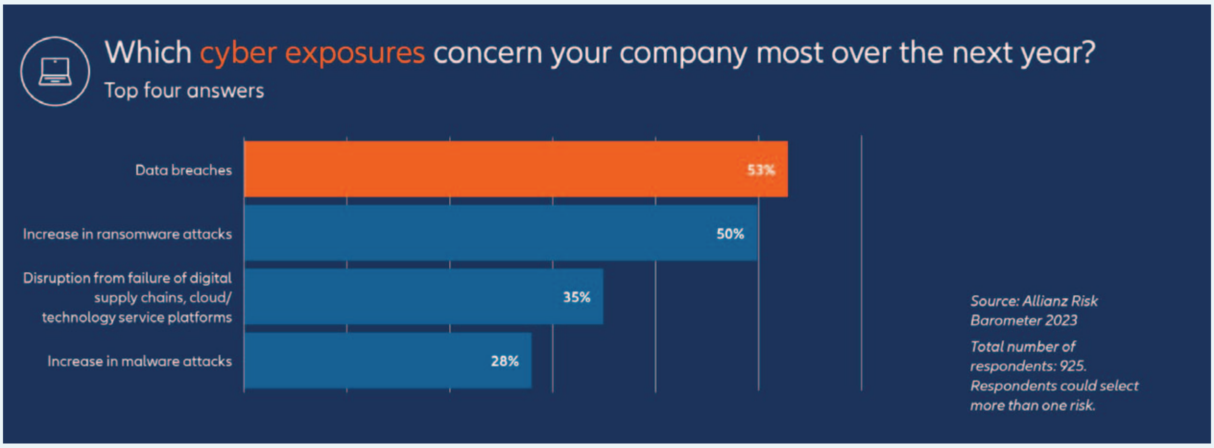
How should you communicate with business partners? Time is of the essence to allow them to take action to protect themselves. This could involve regular calls and updates so partners can ask questions or delve into details. Consider dedicating named staff to critical business partners to ensure they are kept fully informed.

What are the best platforms or channels? Consider the regional, national or international press, trade journals/websites, email, social media, printed letters, webcasts.

Who should the communication come from? It could be the CEO, the chief information officer, chairman, head of IT, or customer services director.

What kind of language should you use? Keep the tone of your notifications friendly, non-alarmist and factual; decide how many languages you need to communicate in.

What will you do if your digital channels are unavailable? Consider keeping pre-prepared materials in cloud-based back-ups or even hard copies of statements.



Further information

- European Commission Newsroom, Guidelines on Personal Data Breach Notification
- Federal Trade Commission, Data Breach Response: A Guide for Business
- The ICO Personal Data Breaches

Mobilize the breach response team

However, within these steps, a flurry of complex actions must be taken. The most critical is to mobilize the cyber incident response plan. "A cyber crisis is one of the toughest incidents to deal with," says **Daum**. "It is not like a natural disaster or when a factory burns down. If you are hit by an encryption and ransomware attack, you can suffer a business interruption that is global. Also, you are dealing with criminals and their specific behavior is hard to predict."

> "If you are hit by an encryption and ransomware attack, you can suffer a business interruption that is global"

The application of double extortion has become widespread, which expands the dimensions of complexity further, adds **Daum**. Double extortion combines the encryption of data, systems, or back-ups with the threat to release sensitive data.

Kroha says one of the most important things a company should do is secure expert assistance – both after and before a cyber attack.

"It is increasingly difficult for companies to have the expertise necessary to handle a cyber crisis in-house," **Kroha** explains. "The shifting nature of the crime creates a dynamic threat environment that can be difficult to stay on top of. While many large and mid-sized companies are often well prepared for traditional risk scenarios, some have never properly thought through a cyber crisis management plan."

A significant breach would mean a company will want to call on their cyber security cover, so insurance contacts should be looped in as soon as possible. External experts can then provide specialist advice depending on the nature of the incident. AGCS has a global network of partners that offer assistance to insureds when a cyber incident occurs. These include incident response services such as IT forensic services, forensic accounting, public relations, crisis communications, response advice on cyber extortion, and breach coach or legal services. A breach coach is typically an attorney who specializes in data privacy and cyber security. Often companies are overwhelmed by the situation, and a breach coach can help steer them through the crisis in a structured manner to limit damage.


Photo: Adobe Stock

Clear communication is key

Rishi Baviskar, Global Head of Cyber Risk Consulting at AGCS, says: "Each cyber attack is unique." According to Baviskar, one essential component a response team must oversee is a comprehensive communications plan that reaches all affected audiences – employees, customers, investors, business partners, and other stakeholders *[see panel, page 24]*. Such a plan needs to anticipate questions people will ask.

"Mishandling communications around a breach can contribute significantly to the reputational fallout around an incident, including a plummeting share price," says **Baviskar**.

Norsk Hydro, one of the world's largest aluminum producers, suffered a cyber attack in March 2019 after ransomware encrypted files stored on all systems. Hackers demanded bitcoins to unlock the data. Yet, despite the severity of the breach, the share price of Norsk Hydro rose in the following weeks as the company battled to rectify the damage.

"Norsk Hydro refused to pay," **Baviskar** explains. "What was appreciated by the market was the transparency and openness of the company because it contrasted starkly with the secretive responses of many companies after being hacked. Trust was maintained, and the share price increased in response to the incident."

Our experts

Rishi Baviskar | rishi.baviskar@allianz.com

Michael Daum | michael.daum@allianz.com

Haydn Griffiths | haydn.griffiths@allianz.com

Robin Kroha | robin.kroha@allianz.de

Photo: AdobeStock

60% of Fortune 500 companies are incorporated in the state of Delaware

D&O case study with Meta

When the US state of Delaware allowed captives to be used to cover certain Side A liabilities in directors & officers insurance, it sparked a collaboration between tech giant Meta, its broker, and Allianz Global Corporate & Specialty (AGCS) that innovated a flexible policy solution.

With long-standing connections to its most famous adopted son, President Joe Biden, Delaware is home to around one million people – just 0.3% of the US population – yet more than 60% of Fortune 500 companies are incorporated in the second smallest state in the union.

Delaware-incorporated companies, which include many global brands, could now have more options when it comes to D&O (directors & officers) insurance, following changes to the state's corporate law in February 2022.

The changes relate to the purchasing and maintaining of Side A D&O insurance, which covers liabilities incurred by an individual in their capacity as director or officer when they cannot be indemnified by their company. With a few caveats for edge cases, such as knowing violations of law or fraud, this can now be purchased by a company's 'captive' – a licensed (re)insurance company that is set up and managed in order to serve the insurance needs of its parent company.

Captives have boomed in recent years, with around 6,000 active globally[1], and they are an increasingly popular option for companies seeking to retain risk and reduce their exposure to rate increases and capacity constraints in the insurance market.

[1] Business Insurance, Captive Insurance Special Report, March 2022. Ranked by the number of captive licenses at year-end 2021. Numbers do not include microcaptives, series captives, or individual cells or cell members in protected cell companies

Photo: AdobeStock

The 1 minute dialogue

- Captives are increasingly popular with companies seeking to retain risk and reduce their exposure to rate increases and capacity constraints in the insurance market.
- A recent change in corporate law now allows Delaware-incorporated companies to cover certain Side A liabilities in directors & officers (D&O) insurance through a captive.
- The new legislation permits captives to cover almost all exposures they normally would with D&O insurance but there are a few exceptions.
- Allianz Global Corporate & Specialty worked closely with Meta and its broker to create a solution to cover gaps created by these edge cases – the "Laser DIC" [difference in conditions].

Adapting to a changing D&O market

In the past, Delaware corporations were not permitted to use their own balance sheet assets to indemnify directors for the settlement of derivative lawsuits. So they bought Side A D&O insurance from commercial insurers to cover their non-indemnifiable exposures. This was relatively inexpensive as it tended to be used only in the case of bankruptcy if a company's balance sheet could not fund a class action settlement. However, in recent years, the plaintiff's bar has raised the stakes when it comes to large derivative settlements, which has significantly increased the costs of Side A insurance for many companies. Corporations are increasingly exploring what other options are available to them.

In Delaware, a number of companies, including Meta, formed a coalition to work towards changing the law and enable captives to self-insure Side A. The change they contributed to bringing about allows Delaware corporations to buy Side A insurance through their captive, including indemnifying D&Os whether or not the corporation itself would have the ability to indemnify them.

"The D&O market was pretty tough for a lot of insureds, and companies that buy large limits had very little negotiating power," said **Janaize Markland, Director of Business Risk and Insurance at Meta**, in a discussion recorded for the Global Captive Podcast. "That put us in a potentially tough position from a coverage sustainability perspective. We had moments in our renewal when we weren't certain we were going to get the coverage we needed, and that made everyone extremely nervous."

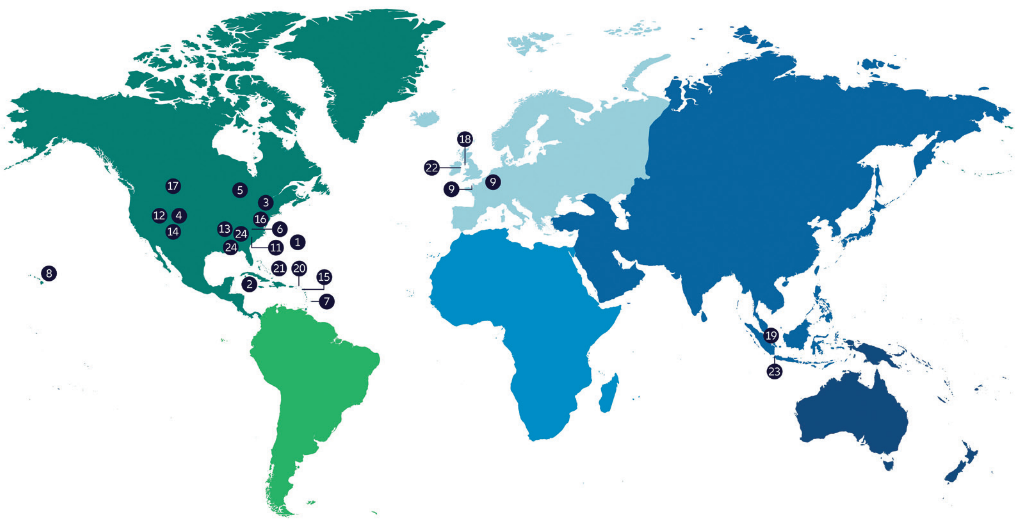
Plugging the coverage gap with a 'Laser DIC'

After the subsequent change in corporate law, **Markland** had to be sure the coverage that was being secured was equivalent to what had previously been sourced from the commercial market. The new legislation permitted captives to cover almost all exposures they normally would with D&O insurance, but there were a few exceptions. Meta and its broker Woodruff Sawyer needed to make use of the commercial market to cover the gaps created by these "remote edge cases", as **Lauri Floresca, Senior Vice President, Management Liability and Cyber Liability, at Woodruff Sawyer**, described the exclusions. **Floresca** named the resulting policy the "Laser DIC" [difference in conditions]: "We really think it accurately reflects the way the policy provides very specific coverage just for those differences," **Floresca** told the podcast.

Meta worked closely with AGCS and its **Manager of Global Captive Fronting, Nick Troxell**, on the Laser DIC solution. "Delivering an innovative solution like this called for

The captive world

This map highlights the locations of 25 of the top domiciles around the globe*



1	**Bermuda**	670* captives
2	**Cayman Islands**	661 captives
3	**Vermont**	620 captives
4	**Utah**	384 captives
5	**Delaware**	313 captives
6	**North Carolina**	257 captives
7	**Barbados**	253 captives
8	**Hawaii**	251 captives
9	**Guernsey**	192 captives
9	**Luxembourg**	192 captives
11	**South Carolina**	183 captives
12	**Nevada**	161 captives
13	**Tennessee**	153 captives
14	**Arizona**	149 captives
15	**Nevis**	122 captives
16	**District of Columbia**	112 captives
17	**Montana**	102 captives
18	**Isle of Man**	99 captives
19	**Singapore**	84 captives
20	**Anguilla**	77 captives
21	**Turks & Caicos Islands**	71 captives
22	**Dublin**	68 captives
23	**Labuan**	63 captives
24	**Alabama**	57 captives
24	**Georgia**	57 captives

*Captive numbers compiled by Business Insurance, Captive Insurance Special Report. March 2022 edition. Ranked by the number of captive licenses at year-end 2021. Numbers do not include microcaptives, series captives, or individual cells or cell members in protected cell companies.

Additional source: Statista

*estimate from Business Insurance

Delaware is one of the top captive domiciles in the world

collaboration between the insured, the broker, and the insurer," **Troxell** tells **Global Risk Dialogue**. "We had a full steering committee working on this project, with in-house experts from claims, legal, financial lines, distribution, and risk consulting. It was vital to establish a strong rapport from the outset so we could respond with agility to the clients' needs and support them through this process."

Troxell was also a guest on the Global Captive Podcast, where he noted that AGCS could be adaptable on policy wording: "We could utilize the Laser DIC product that Woodruff has. We also have our own wording experts because not all Side A policies have the same type of language, so there could be some manuscripting needed. So we can follow on and we just know at the end of the day, providing that equal equivalent coverage through a captive is necessary to make the solution work."

The advantage of cell captives

Meta decided to convert its existing Hawaii captive into a protected cell company, as **Markland** told the podcast: "Creating two cells that were separate, one for D&O and then one for everything else, provided an additional layer of comfort to our directors and officers that if in fact a claim did need to be paid, those assets were ready to be deployed and were for them

6,000

Approximate number of captives active globally

only," said **Markland**. "So that was an important consideration for us and we did that structurally."

Troxell believes similar innovations to the Laser DIC could be tailormade to suit other large corporate companies for whom this type of risk transfer may be appropriate – those that are multinational, well capitalized, and sophisticated in the way they manage risk. "AGCS is an all-in solution for corporate clients with a captive. We can call upon our extensive fronting expertise if required, implement the front end structure, as well as provide the DIC capacity for portions of insurance that the captive cannot cover. We certainly have an appetite to explore this kind of approach further in the future."

Listen to the full Global Captive Podcast here.

Our expert

Nick Troxell | nick.troxell@agcs.allianz.com

Less than 10% of plastic is recycled

Plastic perils mount up

There is now an estimated 30 million tonnes of plastic waste in seas and oceans and 109 million tonnes in rivers. What are the risks associated with plastic production and usage, and how can firms reduce their exposures?

Haul in a fish from the remotest seas, and odds are high you will find plastic in its stomach. The tiny fibers could have come from washing-machine wastewater, personal care items flushed down toilets, or the disintegration of plastic bags and wrapping.

The presence of plastic in fish living in even the deepest, darkest oceans is an indication of how pervasive this human-made material has become. Rising from two million tonnes a year[1] in 1950, annual plastic production rocketed to almost 391mn tonnes in 2021[2] – and only a sliver is recycled.

The first fully synthetic plastic was patented in 1907. Over 100 years later, the substance dominates our world. Our homes and offices are filled with it. We clean our teeth with plastic toothbrushes, drink and eat food from plastic containers, and wear clothes derived from it. Plastic is now so prevalent it has entered the fossil record as a marker of our age.

[1] Our World in Data, Plastic Pollution, April 2022
[2] Statista Research Department, Global Plastic Production 1950-2021, January 25, 2023

But plastic harms our health and the environment. It pollutes our landscapes, oceans, air, and bodies. We ingest or inhale these substances daily. And, increasingly, plastics are a source of litigation.

Plastic-related pollution: a lingering liability

A report by the Minderoo Foundation indicates 2022-2030 is likely to see a wave of plastic-related corporate litigation. This could reach $20bn-plus in the US alone, it estimates[3]. Produced in partnership with Praedicat and law firm Clyde & Co, The Price of Plastic Pollution notes litigation is mainly expected to affect the petrochemical industry. Still, claims could be brought against major consumer companies.

Arthur Lu, Head of Environmental Impairment Liability at Allianz Global Corporate & Specialty (AGCS), says companies must prepare: "Depending on where your company sits on the spectrum of the plastics industry, it could be at risk of claims from human health exposures to chemical additives, environmental damage or human health exposures to 'MNP'." These are microplastics, less than 5mm or one fifth of an inch in length, and nanoplastics, which measure around 1nm to 1mm (4e-8 to 0.04 inches). They can enter the environment through industrial processes, plastic waste, cosmetic products, or degradation.

"Another potential area of legal action lies with directors and officers who 'greenwash' their sustainability claims," adds **Lu**.

The first warning shots have been fired. Last year, an American coffee company settled in the US and Canada with a consumer and regulator respectively, after being challenged on claims about the recyclability of its disposable coffee pods. Earth Island Institute, a California-based environmental group, has also filed three separate lawsuits against producers of plastic goods. It made a name for itself by suing renowned brands for creating a plastic pollution 'nuisance.'[4]

In January this year, three NGOs filed a lawsuit against a food company in France, claiming the firm's failure to set a plastic phaseout strategy goes against France's 2017 corporate duty of vigilance law. The NGOs are not seeking damages but to force the company to assess its plastics use and update its vigilance report with a plastics strategy.

"This is one example of litigation moving from the petrochemical industry to other downstream sectors, such as food and beverage," says **Lu**.

The 1 minute dialogue

- Most plastic ends up in landfill or the environment, where it can take decades or centuries to decompose, causing pollution and potential harm to human and animal health.
- For businesses, risks vary depending on whether they manufacture resins, use plastics on a large scale in their production or supply chains, and how rigorous their risk management is.
- Companies need to identify where the plastics pathways connected to their processes could cause pollution and how these could be eliminated.
- Plastics litigation is on the rise. The petrochemical industry is the main target but other sectors could be impacted. Exposure is likely to depend on the type of plastic and where it is used, with food-contact materials, clothing, cosmetics, and children's toys the most exposed areas.

450

The years a plastic bottle can take to decompose in a marine environment

"There have not yet been any large losses in judgments or payouts. But the risks companies are exposed to will vary depending on if they manufacture resins, use plastics as a large part of their products or packaging of products, how prevalent they are in the consumer supply chain, and how rigorous their risk management is when it comes to reporting, communication, compliance and transparency."

The chemical romance that soured

Before the Second World War, the petroleum and chemical industries began forming alliances driven by the desire to use waste material from processing crude oil and natural gas. During this period, polyethylene (polythene), Teflon and nylon were developed. Nylon stockings sold four million pairs in four days on their release in the US in 1940. But plastic production really ramped up after the war. Malleable plastic began to replace more expensive paper, glass and metal used in throwaway items, such as consumer packaging. Plastic appeared in polythene bags, polystyrene food containers, PET (polyethylene terephthalate) bottles, and toys.

[3] Minderoo Foundation, The Price of Pollution: Social Costs and Corporate Liabilities, 2022
[4] The Guardian, Rush of lawsuits over plastic waste expected after 'historic' deal, March 9, 2022

Andreas Merkl, Senior Advisor to the Minderoo Foundation and a report author, notes the health implications of microplastics in our bodies are not yet fully known.

"Many people noticed the post-war plastic production boom accompanied a parallel rise in human health disorders ranging from autism and ADHD to certain autoimmune diseases, obesity, declining reproductivity success, and development disorders. They wondered, was this correlation or causation?" **Merkl** said at the report's launch.

391mn

Global plastic production (tonnes) in 2021

"The synthesis and analysis we conducted, which involved the review and meta-analysis of thousands of scientific papers, shows the causation link is no longer in doubt. Plastic is contributing significantly to the rise in these human health disorders."

Claudia Donzelmann, Global Head of Regulatory and Public Affairs at Allianz, served on the advisory board for the report. "As an insurer, we take on risks, so we need to understand what risks are emerging and what it means for us, our clients and other stakeholders. What can we do as an insurance company to help solve an important social challenge? There has been a massive voluntary engagement by the insurance industry on net zero, and our interest is how we can achieve the same with plastics." [*See panel.*]

Allianz joins UN finance group to tackle plastic scourge

In March 2022, United Nations member states agreed to negotiate a legally binding global treaty by the end of 2024 to end plastic pollution[7]. Allianz was invited to join the UN Finance Leadership Group on Plastics as a founding participant and its first insurance carrier.

"Along with other leading financial institutions, our participation means Allianz will have a voice in the finance sector to express our expectations of the treaty," says **Arthur Lu, Head of Environmental Impairment Liability at AGCS**. "Our objective is to inspire others in the sector to take action on reducing plastic pollution and production. The group will gather feedback from a range of stakeholders, including governments, the private sector and other parties, to develop a perspective on the future agreement, offering input to the Intergovernmental Negotiation Committee.

"The insurance industry can be one of the influential parties in the group to reduce plastic pollution and move our global economy into a more circular one. Our participation will reinforce Allianz efforts to bring about the changes we all need to end plastic pollution."

Plastic that is not adequately disposed of can find its way into the wider environment. An estimated 30mn tonnes of plastic waste is now in the seas and oceans and 109mn tonnes in rivers[5]. The properties that make plastic so useful and durable also make it difficult to dispose of. A plastic bottle can take 450 years to decompose in a marine environment, a plastic drinks holder with six rings can take 400 years, and a plastic bag 20 years[6]. Some plastics take thousands – even tens of thousands – of years to decompose in landfills. Degradation is also a problem. UV radiation, oxidation and friction break plastic down into microscopic particles that pollute our ocean, air and ecosystems.

The lasting threat of 'forever chemicals'

The chief danger is the chemicals routinely added to ensure plastics remain pliable and strong. Many of the most hazardous chemicals – phthalates, bisphenols, and fluorinated compounds – are found in bottles, food packaging, consumer packaging, wires, cables, tubes, hoses, fabrics, and construction materials.

Exposure to bisphenol A (BPA) and phthalates is linked to potential health impacts, including disruption of human hormones. Then there are PFAS (per- and polyfluoroalkyl substances), or 'forever chemicals'. Not found in nature, PFAS barely degrade in the natural environment.

[5] OECD, Plastic pollution is growing relentlessly as waste management and recycling fall short, February 22, 2022
[6] Our World in Data, Decomposition rates of marine debris items, 2018
[7] United Nations Environment Assembly of the United Nations Environment Programme, Resolution adopted by the United Nations Environment Assembly on 2 March 2022

They have been found in drinking water and the blood and breastmilk of humans and wildlife worldwide.

A 2021 study[8] found PFAS are used in disposable food packaging from takeaway restaurants and supermarkets. They are also found in non-stick cookware, cosmetics, textiles and electronics.

Lu says the sectors most exposed to litigation will vary according to the plastics used. "It could include companies in the consumer goods sector that use chemicals in food-contact materials, clothing, cosmetics or toys," **Lu** explains.

"For MNPs, it could include companies that add microplastics to products, such as personal care products. Other sources of MNPs can arise from the breakdown of macroplastics [larger than 5mm] during use or disposal, such as the wearing down of rubber tires."

Plastic pathways must be identified

Liability risks are likely to be first evident in bodily injury claims sought by workers. Precedents exist in employers' liability litigation, particularly in the US, where public nuisance law could provide a basis for claims, as was seen in recent opioids litigation.

Liability risks are likely to be first evident in bodily injury claims sought by workers

"Plastics are ubiquitous," says **Lu**. "With many companies involved in the production chain, potential implications are high. But identifying source points or responsible parties for alleged damages or injuries will be challenging."

Lu advises companies to protect themselves by identifying how the plastics pathways connected to their processes could cause pollution and how they can be eliminated, including in product design, R&D, waste and chemical management.

"Mitigation should also include looking to transition to sustainable alternatives, particularly for MNPs. For companies involved in the chemical side, it's stopping the use of substances tied to adverse health effects." However, **Lu** adds that substitution with alternative materials could incur higher costs and the possibility of knock-on effects such as higher greenhouse gas emissions, so finding a one-size-fits-all solution is not straightforward.

Photo: Adobe Stock

The toxic truth about plastic production

$600bn	Value of global plastics market
4x	Plastic consumption has quadrupled in the past 30 years
1,254	Additives/processing agents in plastic production identified as of high concern
50%	Plastic waste ends up in landfill
22%	Goes in to uncontrolled dumpsites, is burned in open pits, or ends up in the environment
19%	Plastic waste is incinerated
9%	Plastic waste is recycled
800	Marine and coastal species affected by plastic pollution
2/3	Two thirds of plastic waste is from plastics with lifetimes of under five years
1.8Gt	Greenhouse gas emissions generated by plastics in 2019, 3.4% of global total

Source: Minderoo Foundation, OECD, Secretariat of the Convention on Biological Diversity

Our experts

Claudia Donzelmann | claudia.donzelmann@allianz.com

Arthur Lu | arthur.lu@agcs.allianz.com

[8] CHEM Trust, PFAS in food packaging: New European wide investigation, May 20, 2021

Spending on the energy transition has surpassed $1trn in 2022

4 questions for...

Anthony Vassallo, Global Product Leader – Energy and Head of Energy & Construction, UK and Nordics, at Allianz Global Corporate & Specialty (AGCS)

Anthony Vassallo discusses the ongoing impacts of the global energy crisis and its galvanizing effect on the net-zero transition.

What are the long-standing consequences of the global energy crisis and how has this impacted the green transformation?

We recently published our annual **Allianz Risk Barometer** survey in which the energy crisis appeared for the first time[1]. The overreliance of major European economies on cheap Russian gas had been credited with fueling economic growth for years, but Russia's invasion of Ukraine created economic and political shockwaves that will take years to subside.

Coinciding with French nuclear reactor maintenance, droughts in Europe affecting hydropower, and the Nord Stream gas pipelines attack, it is clear why energy costs rocketed in 2022.

Supply chains looked fragile. Loss situations that used to be addressed in six to 12 months have taken 50% to 100% longer due to shortages of components and supplies. Replacement costs have increased at rates not seen in decades.

On the risk side, as businesses seek an alternative to gas, there are hazards associated with reactivating or upgrading redundancy systems that have been unused for a while, carrying out delayed maintenance, or running plants harder after a couple of 'slow' years.

Nonetheless, we are presented with an opportunity: the acceleration of the energy transition. Legacy energy players and new entrants are driving investment, with spending on the global net-zero transition surpassing $1trn in 2022[2].

The winter of 2022-2023 was mild in Europe, with reduced heating requirements. Liquefied natural gas (LNG) import facilities were built across Europe, there were favorable conditions for wind and hydro power, and French nuclear plants came back online.

Energy prices are returning to levels last seen before summer 2022, but are still above long-term averages. As economic growth materializes, industrial energy demand will rise. The switch to renewable energy needs to accelerate, or even with near-full storage facilities Europe could be short if there is a bad winter in 2023-2024.

AGCS is already an established insurer of wind and solar energy. What trends and developments are you watching in the renewables space?

Insurance has a key role to play in supporting the growth of renewables through both risk transfer and unlocking access to finance. We are seeing opportunities materialize in terms of energy storage, hydrogen and carbon capture

[1] Allianz Risk Barometer, January 2023
[2] BloombergNEF, Global low-carbon energy technology investment surges past $1 trillion for the first time, January 26, 2023

projects. We expect this trend to continue and, indeed, accelerate. A recent example involves the construction of one of the world's largest renewable energy hubs, to produce, store, and deliver hydrogen in the US.

The attention placed on energy security in recent months has raised the profile of energy storage. The demand and supply of energy have to be balanced, and as renewable power sources expand, so, too, will the need for energy storage. The intermittent nature of some renewables such as wind and solar also fuels this need. Future energy-storage systems are likely to be varied and complex, calling for proactive risk management and diversification. We regard optimized energy storage as an essential element of the energy transition.

The significant investments in transition technologies and infrastructure, boosted by the energy crisis, will come to fruition much earlier than could have been foreseen. We are watching the expansion of green hydrogen closely. It is made using renewable energy so it has great potential to decarbonize high-emitting industries if deployed at commercial scale and we expect production to ramp up significantly in the medium term. Hydrogen is also showing promise as an energy-storage solution if it is converted from intermittent renewable sources. Also promising are battery energy-storage systems using lithium-ion batteries, if fire safety concerns can be overcome.

What are the emerging risks associated with the energy transition?

Risks vary with the technology deployed. The vulnerability of solar PV (photovoltaic) to natural catastrophes is evidenced by recent loss activity. Europe endured a year of unprecedented hailstorms in 2022, with France suffering record insured losses of almost $5bn[3]. These risks could be heightened by climate change.

Offshore wind is challenged by the risks of ever-larger turbines, as well as the hazards of natural environments such as the North Sea. Maintenance is complex and can be dangerous. Emerging technologies can bring significant benefits but also new risks, such as floating wind power, which has exposures connected to mooring and cabling.

Hydrogen production uses technology our engineers are already familiar with, but presents challenges from the rapid expansion of the market and newcomers within it, as well as risks from leaks and fires.

Energy storage using lithium-ion batteries has raised concerns about the dangers of 'thermal runaway', a phenomenon that has been implicated in several serious fires in recent years.

How is AGCS supporting customers in the drive to decarbonize?

We are committed to integrating net-zero targets into our insurance and investment activities, so we can support clients in adapting to low-carbon business models. We have the capacity, engineering expertise and underwriting experience to apply to transition activities and green energy projects. We are proactively looking to engage with clients, both existing and future, on how we can achieve mutual objectives. It is really about a partnership approach to transitioning to net zero together.

AGCS has implemented a market-leading oil and gas policy that gives us a platform to have these conversations with our customers, enabling us to better understand their plans and ensure they align with our objectives.

Roughly half the capex going into the green/renewables space originates from legacy energy players. We have seen how many insurers (including Allianz) have addressed the coal issue. There were doubts around the efficacy of adopting such policies but we have seen their positive impact on the market environment.

Our Allianz Risk Consulting team can provide risk expertise around electricity transmission, solar, offshore wind or hydrogen operations. We can allocate our capital to the exposure and provide the risk transfer solutions clients need to facilitate ongoing investments.

We are mindful that at a portfolio level we need the capacity we deploy to generate returns for our shareholders. This will require careful underwriting and understanding of the exposures we take on. Data, information and a willing client base that wants to partner with us will go a long way to achieving this.

Biography

Anthony Vassallo joined AGCS straight after completing an economics degree at Durham University and has enjoyed a varied career over 20 years with the firm, working across Europe, Asia and South America. A rugby fan and foodie, he was an "unsuccessful" contestant on the reality TV show *Masterchef.*

[3] Swiss Re, Severe 2022 hail damage in France sets new benchmarks, underscores shift of risk and calls for pricing adjustments, November 15, 2022

A single rotation of a Haliade-X turbine blade can power one UK home for more than two days

Dogger Bank – a sea change in offshore wind

The largest multi-field offshore wind farm in the world, Dogger Bank Wind Farm is moving closer towards generating 'first power' this year, with the capacity to supply 5% of the UK's electricity demand by the time it is completed in 2026. Allianz Global Corporate & Specialty (AGCS) has been on board as lead insurer since its early stages.

Summer 2023 in the UK is expected to see the first phase of the Dogger Bank Wind Farm come into operation, a milestone moment for this immense development under construction off the coast of north-east England.

Situated on a sandbank in the North Sea, Dogger Bank is being built in three phases – A, B and C – and, when completed in 2026, will be the largest offshore wind farm in the world, generating enough electricity to power six million UK homes.

The location for the Dogger Bank Offshore Development Zone extends over 8,660km^2 (5,380 square miles) with water depths ranging from 18m to 63m (59-207 feet), making it ideal for fixed-bottom turbine installations. Power will be generated by 277 of one of the world's most powerful wind turbines, the GE's Haliade-X, and transmitted to shore via subsea cables. Each turbine blade measures 107m long (350 feet), or twice the wingspan of the Angel of the North, the towering contemporary statue that is a familiar sight to anyone traveling by road or rail in this part of the world. A single rotation can power one UK home for more than two days.

A joint venture between SSE Renewables, Equinor and Vårgrønn, the wind farm will have

Monuments in size and scale

Since 2000, the capacity of offshore wind turbines has increased from 2MW to 14MW, with the size of turbines scaling up to dizzy heights and diameters. Recent announcements suggest that 18MW turbines will soon be in production. Components for the Haliade-X wind turbines used at Dogger Bank will be loaded on to the world's largest specialist heavy-lifting jack-up vessel, the Voltaire, and shipped to the wind farm for installation and commissioning. With a lifting capacity of over 3,000 tonnes and a height of 325m (1,066 feet) at its highest extended point, the Voltaire is one meter, or three feet, taller than the Eiffel Tower, while the Haliade-X is nearly three times taller than the Statue of Liberty.

Source: Dogger Bank Wind Farm

an installed capacity of 3.6GW. First power is expected in summer 2023 and summer 2024 for Dogger Bank A and B respectively, with commercial operations following around six months later, while turbine installation for Dogger Bank C will begin in 2025. AGCS has been lead insurer on Dogger Bank A and B since the projects were placed in late 2020 and also successfully secured the lead position on Dogger Bank C when it was placed in 2022.

Dogger Bank D proposal

Recently an exciting new fourth phase of development for the project was proposed by Equinor and SSE Renewables. Early scoping work is exploring two options for Dogger Bank D.

Under proposed plans, the first option would see power connected to an onshore grid connection in Lincolnshire, on England's east coast, where new network infrastructure is being installed in response to the UK government's plans to generate 50GW of offshore wind by 2030. The second option would use the electricity produced to generate green hydrogen at an electrolysis facility in the Humber – the UK's most carbon-intensive industrial region. If permissions are granted, this could become the country's largest green hydrogen development. The proposal could add 1.32GW in fixed-bottom offshore wind capacity to the wind farm.

"AGCS is a market-leading insurer of global offshore wind projects and our long-standing relationship with the Dogger Bank development demonstrates our support of strategic assets that facilitate the energy transition," says **Adam Reed, Global Leader – Offshore Renewables and Upstream Energy, Energy & Construction, at AGCS**. "As part of our commitment to supporting the world's climate targets through expert underwriting and dedicated specialist risk engineering focused on ESG [environmental, social, and governance] concerns, we are working in close collaboration with our energy clients as we all transition towards net zero. Green hydrogen has exciting potential to propel us on this journey because it is created using renewable energy and produces only water when burned. It therefore represents a possible solution for decarbonizing 'hard-to-abate' carbon-intensive sectors like heavy industry and transport. We are eagerly awaiting the outcome of these latest proposals for Dogger Bank D."

Our expert

Adam Reed | adam.reed@allianz.com

The journey to sustainable aviation

The industry has pledged, like most, to reach net zero by 2050. But what does the flight path to a greener future look like for the industry? And how realistic are the lofty goals that have been set?

From the International Air Transport Association (IATA) commitment to 'Fly Net Zero'[1], to the declaration from the International Aviation Climate Ambition Coalition at COP 26[2] the air transport industry is not short of promises to dramatically reduce its carbon footprint.

Compared with some other sectors, aviation is a relatively small contributor to global greenhouse gas emissions – in 2019 it was estimated to account for around 2.5% of the world's CO2 emissions[3]. However, it is also one of the fastest growing, and there is little doubt that every major airline and aerospace manufacturer in the world now has its environmental impact front and center, a topic that is not creeping but is vertiginously ascending the corporate priority ladder. So what have companies got in the pipeline to make good on their promises and what are some of the innovative air travel technologies taking flight?

The first, and most obvious, conclusion is that there is no silver bullet. Potential solutions abound but there is no answer likely to single-handedly push aviation to net zero. The second is that, pressure groups and activists aside, intermediate decarbonization goals are linked to commercial

[1] IATA, Our Commitment to Fly Net Zero by 2050
[2] COP26 declaration: International Aviation Climate Ambition Coalition, December 16, 2022
[3] BBC, The fastest way aviation could cut its carbon emissions, May 26, 2021

Airbus hopes to develop the world's first zero-emission aircraft by 2035

The 1 minute dialogue

- Sustainable Aviation Fuels can result in an 80% reduction of lifecycle emissions, but significant capital expenditure and government incentives will be required to ramp up production.
- The electric and hybrid aircraft revolution is underway but technological maturity remains a challenge. A wholesale shift from regulators and companies is needed to embrace a new safety environment.
- Operational and design efficiencies and innovative technologies such as AI can also deliver gains in the short term for the aviation industry.
- Insurers have a key role to play in supporting the de-risking of the transition.

aims – stating the obvious, the more efficiently an aircraft burns fuel, the better for all concerned. Longer term, however, the aviation industry may need assistance from both its insurance, and other financial, partners in de-risking the transition as the costs associated with change are a significant, but not insurmountable, barrier to progress.

Clearing the runway for Sustainable Aviation Fuels

The sector certainly abounds with initiatives to aid the transition. The first likely to have a tangible effect is Sustainable Aviation Fuels (SAFs), with many airlines looking to increase their usage (10% is a commonly selected target). As part of the Fit for 55[4] package, which sets out an initial target of a reduction in emissions by 55% in 2030 (compared with the level of 1990), the EU will require every flight leaving its airports to carry a minimum amount of SAF (2% in 2025 and 5% by 2030). Meanwhile, the US wants to increase the production of SAFs to three billion gallons per year by 2030. While these commitments and progress are welcome, the production of these alternative fuels remains small.

SAFs can be split into three buckets – those recycled from waste products (for example, from used cooking oil), those created directly from crops, and synthetic fuels (created by processing recovered carbon dioxide with green electricity). With the commercial aviation world requiring approximately 95 billion gallons of traditional kerosene aviation fuel in 2019, according to IATA[5], the recycled or grown SAFs suffer from a lack of available resources (short of diverting all global agriculture towards the endeavor) while large-scale production of synthetic fuels will require cheap, high-volume green electricity.

The price of SAFs is double that of fossil fuels today, so the dramatic ramp up of SAF production will require significant capital expenditure, and initially government incentives are likely to be required to offset the price premium. It will be worth the time, cost and effort. SAFs can result in an 80% reduction of lifecycle emissions (as the only true emissions come from processing steps). The technology is proven and certified (having already been used on over 200,000 flights) and no changes are required to existing aircraft – SAFs can be used interchangeably with kerosene.

"There is also a key role for insurers to play in helping their clients de-risk the transition to SAFs – supporting the construction of new infrastructure and the adoption of different fuels," says **Tom Fadden, Global Head of Aviation at Allianz Global Corporate & Specialty (AGCS)**. "For example, insuring the construction of SAF manufacturing facilities, or the installation of SAF refueling infrastructure at airports. Insurers may even be able to assist their clients with hedging to allow airlines to protect themselves against SAF price fluctuation in future."

[4] EASA, Fit for 55 and ReFuelEU Aviation
[5] Euronews, World's first commercial plant making clean jet fuel has opened in Germany, says NGO, October 4, 2021

Photo: ©Airbus SAS 2022 Hervé Goussé - Master Films

Destination Net Zero

The aviation industry accounts for around **2.5% of the world's CO2 emissions**

In 2019, commercial aviation required approximately **95 billion gallons** of traditional kerosene fuel

Every flight leaving airports in the EU will carry a minimum amount of sustainable aviation fuel in future **(2% in 2025 and 5% by 2030)**

The US aims to increase sustainable aviation fuel production to **three billion gallons** per year by 2030

More than **200 global companies** are currently developing electric aircraft concepts

Hydrogen propulsion could enable the development of the world's first zero-emission commercial aircraft **by 2035**

Photo: AdobeStock

Source: BBC, IATA, EASA, Airlines for America, Airbus

Ready for take-off? Electric and hybrid aircraft

While SAFs will be the short- to medium-term workhorse, perhaps the more exciting future developments are the new air travel technologies that remain nascent but capture the imagination more than a simple fuel switch. The electric aircraft revolution is firmly underway with more than 200 global companies developing concepts. Several have even completed test flights and the appeal is obvious: electric aircraft have no climate impact during operations. They are a thrilling proposition.

However, the biggest issue remains technological maturity – in particular, battery density and the associated range. Batteries will need to be at least five times denser than current lithium-ion batteries and it is not currently thought true electric aircraft will ever have a range greater than 500 to 1,000km (310 to 621 miles) – although it is estimated half of all global flights are shorter than 800km or 500 miles. They also remain relatively far off, with 2040 probably a realistic date for entry into service. There will be an arduous process of certification of such new types of aircraft, with regulators (quite rightly) needing to know the new technology is safe before allowing consumer usage.

200k+

Number of flights that have been made using sustainable aviation fuels

So what for long haul? The answer may rest with hybrid aircraft. A concept familiar with road vehicles, but likely to be a blend of electric technology and hydrogen propulsion rather than involving traditional fossil fuels. This is certainly the approach being taken by Airbus, which hopes to develop the world's first zero-emission aircraft by 2035, with its three ZEROe concepts[6]. The aircraft are powered by hydrogen combustion through modified gas turbine engines. In addition, hydrogen fuel cells create electrical power that complements the gas turbine, resulting in a highly efficient hybrid-electric propulsion system. While not as efficient as pure electric aircraft, hybrid aircraft will be able to provide a range out of reach of electric alone. They will also be able to carry greater number of passengers and offer a realistic alternative to kerosene-powered long-haul routes.

Such hybrid aircraft may seem like the nirvana, but they are not without drawbacks. Hydrogen storage and usage of course brings safety concerns. While hydrogen processing has been used for years in oil refineries and the fertilizer industry, aviation represents a new road to travel. Happily for its passengers, the aviation world is safety obsessed. All parts of the industry (transport, storage, usage etc.) must pass rigorous safety tests. Current aviation protocol is based on the fossil fuel powered jet engine – a technology that has been around for decades. There will need to be a wholesale shift from regulators and companies to embrace a new safety environment.

[6] Airbus, ZEROe Towards the world's first zero-emission commercial aircraft

"Insurers can of course help by providing cover for new and test products and assisting their clients in de-risking the evolution to new technology," says **Adam Tozzi, Head of Underwriting Global Tasks and Processes, Aviation at AGCS**. "This could include insuring electric and hybrid aircraft types through their testing phases and as they move into service or creating an insurance safety net for a company's R&D operations. Such a technological leap is not without risk and companies (both manufacturers and end users) will hugely benefit from the support of their trusted partners as they adapt for the future."

> "Insurers can assist their clients in de-risking the evolution to new technology"

Don't forget about marginal gains and design efficiencies

While they are the future, both electric and hybrid technologies will not be available tomorrow and, along with SAFs, there are shorter-term, more mundane, gains to be made by the aviation industry. One of the key areas for such gains is operational efficiency and there is nothing to stop all aircraft operators looking at this side of their business and making changes now. A combination of operational levers can drive emission reductions at scale. Examples can include pre-flight via mission tailoring and fuel planning (i.e. ensuring the right aircraft is being used for the right flight); on the ground via traffic management (to reduce the time engines are in traffic); during approach and descent via better air traffic management (to reduce holding time) and adapting climb and descent procedures (to spend longer at optimal cruise altitude); during cruise via dynamic routing (responding to changing weather patterns); and after flight via preventative maintenance and cleaning.

There are plenty of airlines already embracing these marginal gains. Over 40 airlines have partnered with Sky Breathe[7] – big data technology that uses artificial intelligence (AI) to analyze billions of data records from all types of data sources, including flight data recorders, operational flight plans and Aircraft Communications Addressing and Reporting Systems (ACARS). This is then combined with environmental data from actual flight conditions (such as payload, weather conditions, Air Traffic Control, or ATC, constraints, etc.). The technology

The industry will need to embrace a new safety environment

identifies the most relevant saving opportunities and provides a series of recommended actions which it claims can reduce total fuel consumption by up to 5%.

There are also improvements that can be made to existing aircraft design to drive fleet efficiencies. This mostly comes through the incremental introduction of enhancements (for example, wingtip, blended winglets, or increased wingspan) and improvements to engine efficiency.

"None of these improvements will drive the industry to net zero, but they will all play a vital role in reducing emissions intensity of the aircraft and inch aviation further on its journey towards a more environmentally friendly future," says **Tozzi**.

This is the broader picture in a nutshell. There are many exciting developments each with a part to play. Some will grab the headlines and appear to be futuristic leaps; others will go unremarked but are just as important.

"No one development can help the industry single-handedly. Instead aviation will look at multiple solutions and there are risks and barriers with each. Given the uncertainty, there has never been a more important time for insurers and other financial partners to support their clients as they take the steps necessary for a net zero future," **Fadden** concludes.

Our experts

Tom Fadden | tom.fadden@allianz.com

Adam Tozzi | adam.tozzi@allianz.com

[7] OpenAirlines, SkyBreathe Analytics


Allianz
Allianz Global
Corporate & Specialty
Ready
Your speed.
Our risk consulting.
Working in partnership.
Ready.
agcs.allianz.com/ARC