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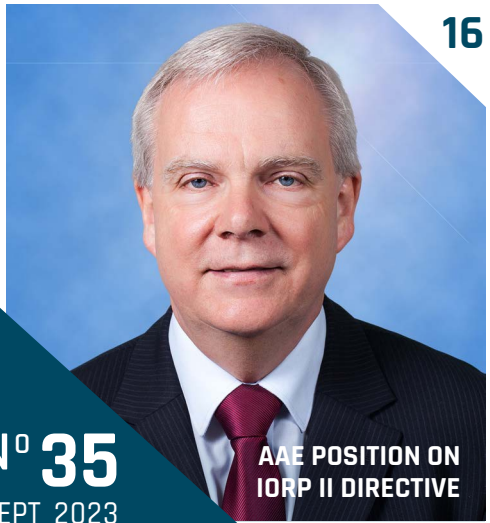
THEME
CATASTROPHE RISKS



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INTERVIEW

DEVELOPING STRATEGIES FOR NATURAL CATASTROPHES

INTERVIEW BY **JENNIFER BAKER**

Can you explain what the goals are of the EIOPA Expert Network on Catastrophe Risk? How does the network intend to achieve these goals?

'Firstly, the network is composed of experts on natural catastrophes from industry, model vendors, academics and also other EU institutions. And the main goal of this network is to contribute to the EIOPA initiative regarding modelling and mitigation of natural catastrophe risks, as well as climate change. The network also helps us with supporting

collection analysis of data for the calibration of these risks for EIOPA. So we meet regularly to discuss shared technical expertise on different areas, and of course, also on climate change. And we really use this work for our ongoing work on sustainable finance.

For example, in 2021 we published a methodological paper to include climate change in the NatCat standard formula. We use the network to better understand the impact of climate change in Europe and see the latest scientific evidence. Another example we will also discuss later, is the dashboard that we have developed on the insurance protection gap for natural catastrophes – to understand the protection gap, we need to first know, what is the earthquake risk in Europe or what is the flood risk in Europe. And the network helped us to assess this risk for the dashboard. So to conclude, this is an extremely important network for our work at EIOPA.'

So, what are the main challenges for the insurance sector related to climate change – we've seen for example wildfires were particularly widespread this summer?

'We have been working on this question for a couple of years now, and we really see that the main challenges are the insurability of this risk and the pricing of climate related risks. We expect growths in physical risks, and therefore insurance claims are expected to grow as they are risk based. And this could lead to mid-term or long-term unaffordability. (Re)insurance companies may also decide not to make this type of insurance coverage available anymore for policyholders. So this is an issue that we are concerned about. In addition, we also see changes in patterns of extreme events that will make it more and more difficult for insurers to actually price this type of insurance product. To price insurance products, historical data are typically used. But now with climate change changing patterns, I think this will be more and more difficult to continue to do it like that. We need to have more innovative solutions to address these issues.'

Well, let's come back to one of those points, affordability. EIOPA encourages insurers to include financial incentives to take prevention measures. This is not always desirable from a customer perspective. In some cases preventive measures can be expensive and only the insured that can afford the preventive measures are rewarded. That is not desirable from a social perspective. How can insurers find the right balance?

'First, we are really convinced at EIOPA that the insurers have the right experience to help to manage catastrophic risks, I mean, they have gathered that over many, many years. For example, they provide risk engineering services, where risk engineers go on industrial sites, and help policyholders to take risk mitigation measures. This can be reflected in the premium. Another very simple example is wildfires, where there could be measures taken, such as how far a tree should be from your house and which vegetation to plant. These are examples of risk mitigation measures that might not be that expensive.

Raising awareness about how to behave during and after a catastrophe could also help to reduce loss of life and properties. But indeed, you're right, some mitigation measures, for example, retrofitting a house, could be quite expensive. But what we would really like to see is the consumer being informed about their risk. What are the possible prevention measures? How much would >

> ***What we are working towards with our key messages is increasing risk awareness and increasing awareness about prevention measures***

it cost? And also, how would the premium look with and without prevention, so that the consumer really can make more informed decisions.
What we are working towards with our key messages is increasing risk awareness and increasing awareness about prevention measures. In addition, we also want to see insurers have a clear role to work closely with governments. If there are new adaptation measures such as new flood defences that could be taken, they should work together so that these types of measures can be then reflected in the risk-based premium for the benefit of consumers.'

Climate change is expected to lead to an increase in both severity and frequency of catastrophes for many perils. However, the current Standard Formula model only really focuses on severity. The same holds for the recalibration proposals. Could you comment on how we bring in this frequency as well as severity?

'So the proposed approach that we are taking to include climate change in the standard formula, is actually to perform a more regular reassessment. The idea behind that is to make sure that we include the latest model updates in the parameters of the standard formula, and also the scientific evidence.'
What is important with this exercise is that it will have two steps. First, we will do the reassessment: analysing the changes in these parameters, and then only propose a recalibration if the changes are material. During the reassessment, we would also start reassessing what we call the country factor.

To derive the country factor, we need to know the 250-year return period losses that we obtain from catastrophe models. This return period loss gives us two pieces of information: one piece on the amount of the losses and one on the probability. And, as you said, climate change will change both frequency and intensity. So if we look at frequencies, maybe we have a 100-year event that could become twice as likely now, as it has been seen in the past, coming maybe now every 50 years on average, rather than every 100 years. The estimated 250 year RPL would be impacted by changes of event frequencies. But indeed, in the future we could also look at the standard formula and additionally incorporate the number of events in each scenario to reflect the changes in frequencies.'

You mentioned right at the beginning, this dashboard that EIOPA produces. Tell us a bit more about that, who are the intended readers and what is the project all about?

'The dashboard that we developed on the insurance protection for natural catastrophes covers 30 European countries and looks at five different perils – earthquake, flood, wildfire, coastal flood and windstorm. And we really wanted to look at each peril individually because often the protection for natural catastrophes looks at all perils together. But we know in Europe, the situation for windstorms is very different from the situation for earthquakes or floods. >

MARIE SCHOLER is chairman of the NatCat Expert Network since 2019. She has written consultation papers on sustainability. She has also developed the **Protection Gap Dashboard** of EIOPA and is also currently (re) assessing the parameters of the standard formula for NatCat.

The main purpose of the dashboard is to monitor the insurance protection gap. The idea was to increase awareness about the protection gap. We also want to follow a science-based approach to help to identify the risk regions. Our idea with a European dashboard is to also look at potential synergies between different national policies to increase the protection against natural catastrophes across borders, because natural catastrophes don't stop at borders. But the way NatCat is insured in Europe is extremely different from one country to another.

If you want to have policy measures, you look at a current view of the protection gap. We complement the current view with a historical view. There we use historical loss, data insured and economic loss data, and look at the historical protection gap in the past. In addition, what was also important for us, was to provide what we call a country insurance view – information about how natural catastrophes are covered in each country. As I mentioned before, it's extremely diverse. Some countries in Europe have public private partnerships, in others, it's only the private sector.

The dashboard is currently used by different stakeholders, including the ECB. There is a recent paper published by the ECB and EIOPA on policy measures to address the protection gap. The European Commission also uses the dashboard for the country report for the EU semester. And we know that there are also many discussions at national level, so it's quite dynamic.' >

What does EIOPA expect from insurers with respect to the protection gap?

'In order to address the protection gap EIOPA has identified different measures. The first one is that we need to be able to understand and measure the protection gap because if we want to develop any policy measures, we need to know what we are talking about. We just spoke about the dashboard. This is only one example of an initiative that uses a specific type of dashboard, data and models. Insurers can help to get access to more relevant data to measure the protection gap.

Secondly, to address the protection gap, the insurance sector has the possibility to not only cover risks through insurance products, but also to contribute to climate change mitigation and adaptation. This is our concept of impact underwriting and engagement with public authorities to really push for more adaptation measures.

A third point would also be the work we have been doing on the consumer side to understand why consumers do not purchase insurance cover. We recently published a report on that aspect. We researched consumer behaviour and looked at the barriers, why people do not take more NatCat insurance products, and found certain points like perceived unaffordability or a perceived lack of clarity in the conditions of the insurance contract, negative experience in the past with insurance claims or the misperception of the risks. So solutions could be more standardisation in insurance products or make them simpler, and also to improve the purchasing process. We also need more public private partnerships in the future to really ensure that we can continue to insure this risk.'

Some stakeholders criticise the data used for the protection gap. Could these issues be solved? And what role do you see for actuaries in helping to address challenges related to the protection gap and climate change?

'Firstly the dashboard. This is the first European dashboard that was developed on the protection gap. And the idea we had in mind was really to have one methodology and common data for 30 countries. Of course, this brings challenges. For example, bigger countries with a high insurance penetration, might have more data. But in looking at the protection gap we also want to have data on countries which might have low insurance penetration. So this was a very difficult task. But we also work with partners, like all European insurance supervisors, and also with the NatCat Expert Network to develop the dashboard. We have committed to regularly update the dashboard and we are in continuous discussion with different stakeholders to see how we can do so.

I'm also convinced that actuaries are extremely important people with the quantitative background to actually help to address these challenges. For example, we talk a lot about models and actuaries with the quantitative background. They have the right skills to understand and think about how climate change risks should be reflected in these models in the short term as well as in the long term. In addition, actuaries also create insurance products – they define the pricing and can therefore potentially reflect adaptation measures in risk-based premiums.
They can share the expertise in the monitoring within the insurance companies, but also with external people, government and encourage more proactive risk management in climate change. I think these are extremely important skills that are needed not only in the insurance sector, but also when we talk with the public sector.' <

BRIDGING THE INSURANCE GAP
A GLOBAL CHALLENGE FOR FINANCIAL RESILIENCE

BY **MONIKA LIS**

The insurance industry plays a crucial role in safeguarding individuals, businesses, and economies against unforeseen risks. However, despite the widespread availability of insurance products, a significant portion of the global population remains exposed to financial vulnerabilities due to the insurance gap. The insurance gap refers to the disparity between the actual insurance protection in place and the level of coverage needed to mitigate risks effectively. This article explores the multifaceted nature of the insurance gap, its impact on global economies, and the efforts to bridge this critical financial divide.

UNDERSTANDING THE INSURANCE GAP

At its core, the insurance gap refers to the lack of sufficient coverage or financial protection that leaves individuals and communities vulnerable to unexpected expenses. It is measured by comparing the level of insurance coverage to the actual risks faced by individuals and societies. Swiss Re Institute, a leading authority in risk research, has developed indices to estimate the insurance gap worldwide, including the SRI Insurance Resilience Index (I-RI), SRI Health Resilience Index, SRI Mortality Resilience Index, and SRI Natural Catastrophe Resilience Index.

The global insurance gap was estimated at a staggering $1,420 billion in 2021. The SRI Insurance Resilience Index, which measures overall insurance protection, was calculated to be 54.3%. This means that on a global scale, only just over half of the exposure of life, health, and property to catastrophic damage is covered by insurance.

CHALLENGES IN HEALTHCARE COVERAGE

One of the most significant insurance gaps exists in the health sector. Surprisingly, the SRI Health Resilience Index is high at 92.5%, indicating that 92.5% of health risks worldwide are covered by health insurance. Despite this seemingly high resilience index, the health insurance gap amounts to $737 billion. This discrepancy highlights that while most health risks are insured, there are still substantial healthcare expenses that individuals must bear out-of-pocket.

The insurance gap in the health sector exhibits regional disparities. In the EMEA (Europe, Middle East, and Africa) region, the lack of healthcare coverage stands at 5.3%, resulting in a gap of $108 billion. In contrast, emerging markets experience a much higher insurance gap of 11.9%, leading to a gap of $60 billion. This significant difference means that obtaining health coverage in mature economies is four times costlier than in emerging markets. >

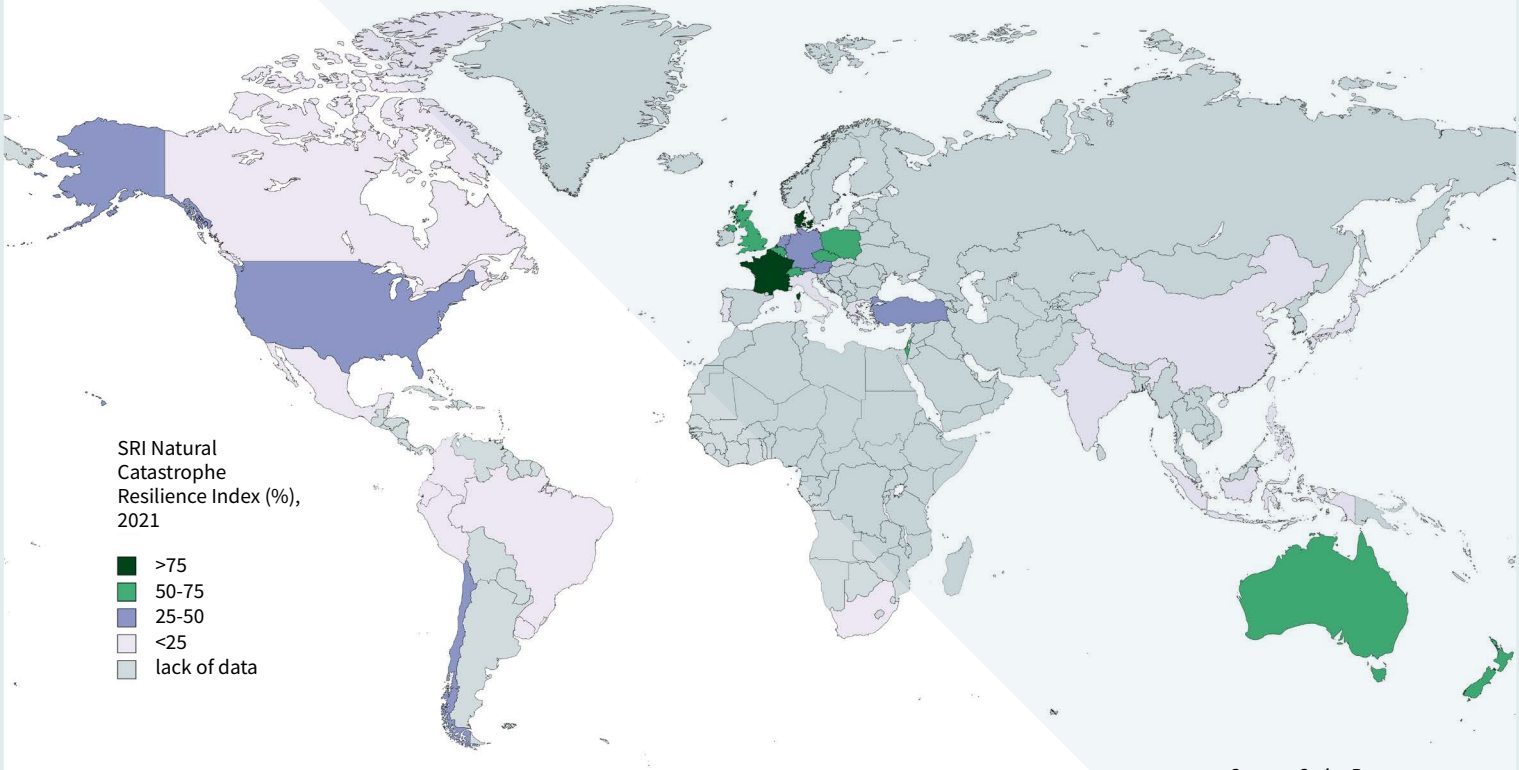
However, it is important to note that this calculated value considers only those direct household expenses that are considered to be a significant burden on the budget, augmented by the health debt indicator, which represents unrealized expenditures due to limitations in the public healthcare system. Therefore, it does not directly correlate with the level of healthcare accessibility and quality in each country. Instead, this indicator primarily reflects the level of access to any form of healthcare rather than a guarantee of receiving high-quality healthcare services promptly, ensuring the fastest possible recovery.

The insurance gap is projected to be even more significant, potentially five to six times larger, if funds are appropriately directed towards improving preventive measures, healthcare services, diagnostics, and early-stage treatments.

CATASTROPHIC RISKS

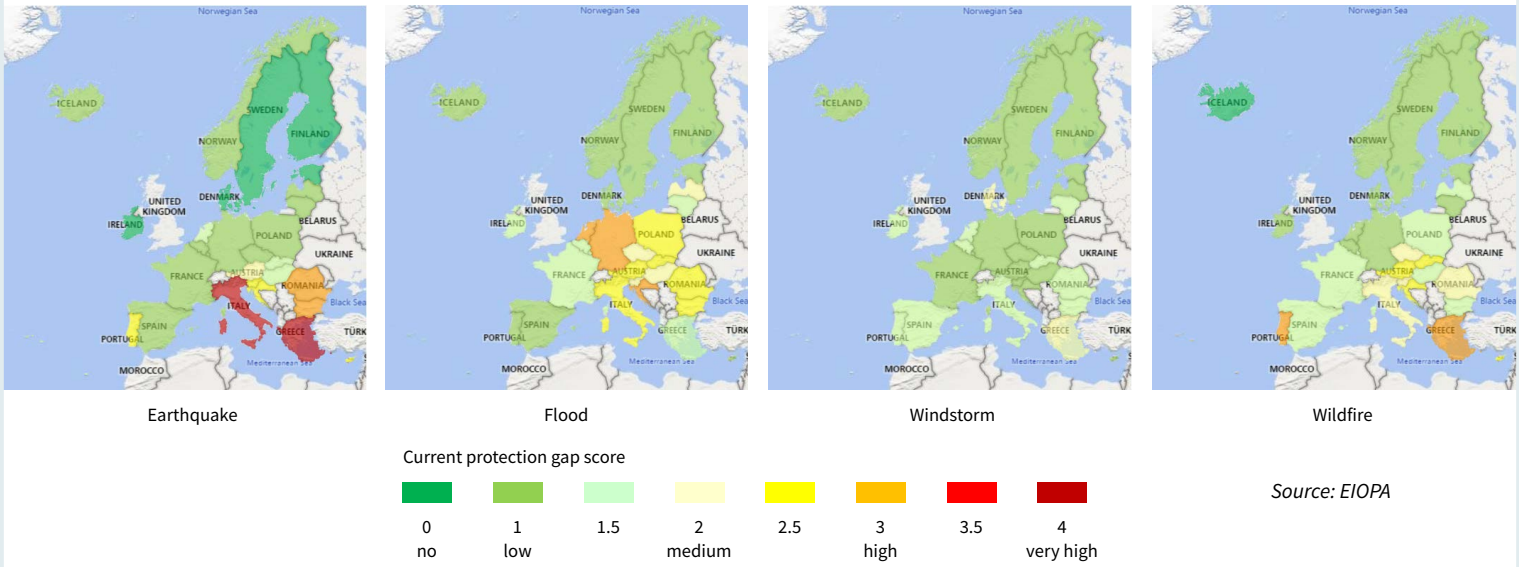
The insurance gap in the realm of asset protection mainly revolves around the occurrence of natural disasters. An estimate suggests that the global insurance shortfall for this category amounts to a huge $251 billion. According to the SRI Natural Catastrophe Resilience Index, only 24.6% of the world's assets are insured against the consequences of natural calamities.
The Swiss Re Institute's sigma report No. 1/2023 on natural disasters released in early 2023 reveals varying estimates of the insurance gap for catastrophic damages. The report indicates a lower insurance gap of $151 billion, resulting in a combined coverage of 46.48%. In 2022, the world witnessed 285 major catastrophic events, claiming over 35,000 lives (including those reported missing). The economic losses due to these events amounted to $284 billion in 2022 (compared to an average of $220 billion over the last decade), of which $132 billion were insured: $125 billion for natural catastrophes and $7 billion for human-induced catastrophic damages. >

FIGURE 1: SRI NATURAL CATASTROPHE RESILIENCE INDEX



Source: Swiss Re

FIGURE 2: THE DASHBOARD ON INSURANCE PROTECTION GAP FOR NATURAL CATASTROPHES IN A NUTSHELL



EIOPA'S DASHBOARD INITIATIVE

The European Insurance and Occupational Pensions Authority (EIOPA) introduced a pilot program of catastrophe risk presentation in the form of a dashboard in 2020. This dashboard rates risk on a scale from 0 to 4 (0 being the lowest risk and 4 the highest). The dashboard focuses on the private sector and displays historical and current catastrophic risk data. It also considers potential risks that have not occurred in the past but may arise in the future.

THE EUROPEAN ENVIRONMENT AGENCY'S INSIGHT

The European Environment Agency (EEA) provides valuable insights into the growing impact of extreme weather events on society and the government. Their data reveals an alarming trend, with the average annual losses caused by these events (€14.5 billion in the last 10 years compared to €9.5 billion annual average losses in the years 1981-1990). This upward trajectory in average annual losses points to the escalating impact of extreme weather events on economies and societies across Europe. Furthermore, the EEA data highlights that a mere 22.4% of the total losses caused by extreme weather events between 1980 and 2020 were covered by insurance, leaving a significant insurance gap.

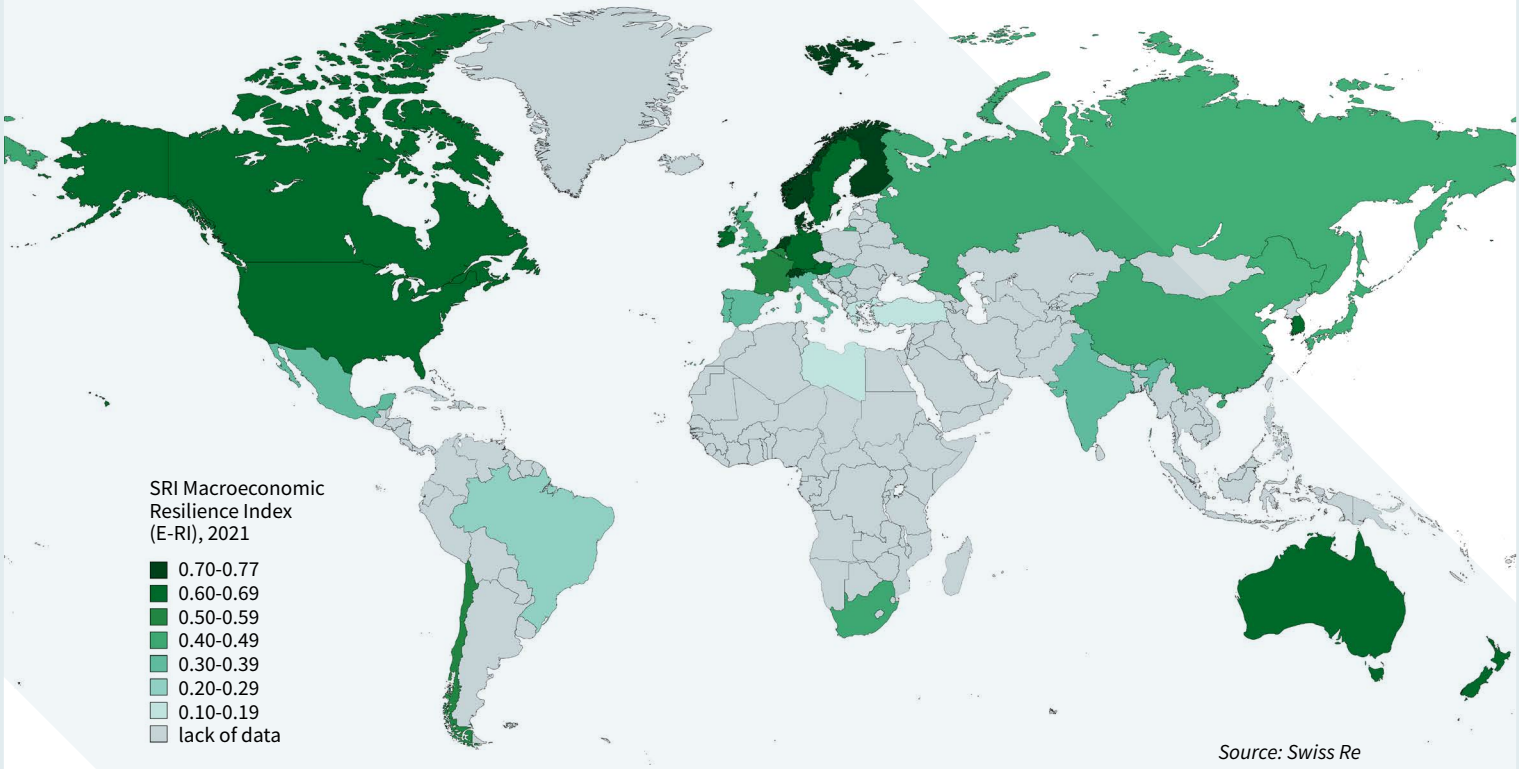
FACTORS CONTRIBUTING TO THE INSURANCE GAP

Several factors contribute to the insurance gap. In mature economies, insurance products can be costly and complex, deterring some individuals from purchasing coverage. Moreover, the lack of awareness and understanding of insurance products and their benefits also contributes to the insurance gap, particularly in emerging markets. In some cases, individuals and businesses may underestimate the potential risks they face, leading to inadequate insurance coverage. In addition, there are cultural factors that can influence the way people engage with insurance.

EXAMINING THE ROLE OF INSURANCE RESILIENCE INDICES

Insurance resilience indices, like the E-RI (SRI LSE Macroeconomic Resilience Index) have been created to evaluate the resilience of economies. The E-RI index considers aspects such as monetary policy, development of markets, efficiency of labour markets and insurance coverage. These indices offer insights into the level of insurance coverage and economic resilience across countries and regions. They can help pinpoint gaps in insurance penetration and highlight areas that need improvement. Furthermore, they can aid in developing policies to bridge these gaps. >

FIGURE 3: SRI MACROECONOMIC RESILIENCE INDEX



Source: Swiss Re

CLOSING THE GAP: A JOINT RESPONSIBILITY

Investing in infrastructure and incentivizing participation in insurance play a role in reducing damages and safeguarding lives during extreme weather events. Implementing early warning systems also enhance disaster preparedness and mitigation efforts. Advancements in climate science research and risk modelling are essential for creating insurance solutions that address the gap associated with weather events.

The existence of an insurance gap poses a challenge as it affects financial resilience while leaving millions vulnerable to potentially devastating risks. To bridge this gap, it is crucial for governments, insurance companies and international organizations, to work together. They need to focus on promoting knowledge and creating insurance plans that are affordable, as well as increasing awareness about the significance of having insurance coverage.
By doing so we can strengthen our economies and ensure the protection of individuals and communities around the world. <

MONIKA LIS IS MANAGER AT MILLIMAN, WARSAW, POLAND

SOME THOUGHTS **ON NAT CAT AND** INSURANCE POLICIES

BY **MICHAEL SCHÜTE** AND **DOROTHEA DIERS**

When we talk about climate change we have to consider that climate change will have an impact on the frequency and the severity of significant Nat Cat events. A rising temperature has an effect on the possibility of storing and transporting water in the sky. A change in the classical streams can induce stable weather situations with steady rain over several days. In combination with a drought period before that event such weather situations can have an effect on the storage of water in the soil. A very solid soil leads to a low reception and therefore to an extreme quick draining of the water. This year for example during the months May and June, we had a period of more than a month without any rain. This period ended with a significant thunderstorm with heavy rain. We have seen lots of damage: roads full of water and fallen trees, cars swimming in the streets like boats, damaged buildings caused by hail and storm, water in buildings due to heavy rain …

And if you remember July 2021 the Nat Cat event Bernd will get into your mind. In that summer we had a stable weather situation with continuous rain over some days resulting in some of the worst flooding in Europe and particularly in Germany for decades. The flood disaster caused enormous devastation. Many dams overflowed, more than 180 people lost their lives. With estimated losses of 33 billion euros for Germany alone, of which approximately 8.5 billion euros were insured, Bernd was the most expensive catastrophe in Germany to date.

In Germany, insurance for buildings has two different aspects. First, we can insure buildings against the perils fire, water and storm. Normally insurance against these classical perils is considered as the basic product. But do our customers have in mind that this basic product isn't sufficient at all? Let us have a look at the perils storm and water. Insurance against storm covers losses caused by events in combination with hail or >

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heavy windstorm. The latter means if included in the contract that all losses are covered if the storm has a magnitude above a certain value according to the Beaufort scale. Especially flood due to heavy rain isn't included. A water cover doesn't include flood, too. A cover against water means that only water is considered which goes into and runs out of the building through tubes. And water from heavy rain normally doesn't use a way into a building via tubes except for backwater which means that the draining away isn't possible because of overloaded drainpipes. Second, there exists no cover for flood in the basic product of building insurance.

A homeowner should be aware that an insurance only against the perils fire, water and storm isn't sufficient in order to have a protection of his/her home against losses from flood or heavy rain. As a consequence of the climate change and the possible rising number and severity of Nat Cat events a homeowner needs a special addition to the basic insurance which we call in Germany 'Elementarschaden-versicherung'. But this is a problem for the insurance industry if such covers must be offered to all customers. As you can see by looking in the year 2021 Nat Cat events have cumulative effects: a large number of claims and a very high loss amount. If you take a look at the region with the normally small rivers Ahr or Erft in 2021 you will see that there were lots of totally destroyed buildings.

A loss distribution should reflect the fact that Nat Cat events with flood and heavy rain can come along with a large number of large loss claims. In contrast to flood, Nat Cat events with claims due to storm or hail are numerous too, but the loss distribution is typically different to the loss distribution for flood claims. An effective insurance cover against flood or heavy rain can lead to enormous insured losses which might exceed any capital buffer. So compulsory insurance cover for Nat Cat with flood can work only with risk mitigation methods (e.g. reinsurance solutions or state protection for cumulative losses).

In insurance industry integrate insights from climate models to understand how impacts of climate change influence the risk landscape become indispensable. Forward-looking perspectives with integrated stress tests are essential to manage long-term strategies. Product strategies have to consider emerging customer needs.

But there is not only work to do for the insurance industry but also for homeowners (reflections about the way to protect their homes by themselves) and the government (not allowing to build houses in problematic zones).

Turning back to fact that climate change exists and has an impact on frequency and severity of the Nat Cat events we see that there is still a lot of discussion about the way to cope with all the open questions. <

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works as an actuary for Helvetia Schweizerische Versicherungsgesellschaft AG and is member of the German Association of Actuaries (DAV) since 2004. He chairs the DAV working group on Climate Change. Furthermore, he is a lecturer for insurance mathematics at the University of Marburg, Philipps-Universität.

WHY NATURAL CATASTROPHE FREQUENCY-SEVERITY ADJUSTMENTS UNDERESTIMATE TAIL RISKS FROM CLIMATE CHANGE

BY **CAMERON RYE**

Climate scenario analysis has advanced significantly in recent years, with many insurers now adjusting natural catastrophe models to explore how physical risks could change over the coming decades. Extreme weather events – such as windstorms, floods, and wildfires – are projected to become more frequent and severe in many parts of the world. As a result, actuaries, catastrophe modellers, and regulators have focused their attention on methods for modifying frequency-severity relationships.

While these adjustments have provided valuable insights, there has been insufficient attention placed on scenario completeness, particularly in the tail of the distribution where some of the most severe impacts are expected to materialise. With the Institute and Faculty of Actuaries recently publishing a paper on how climate scenarios currently used in financial services could be significantly underestimating the risk[1], it is time to place increased focus on whether the adjustments we are making are consistent with expectations.

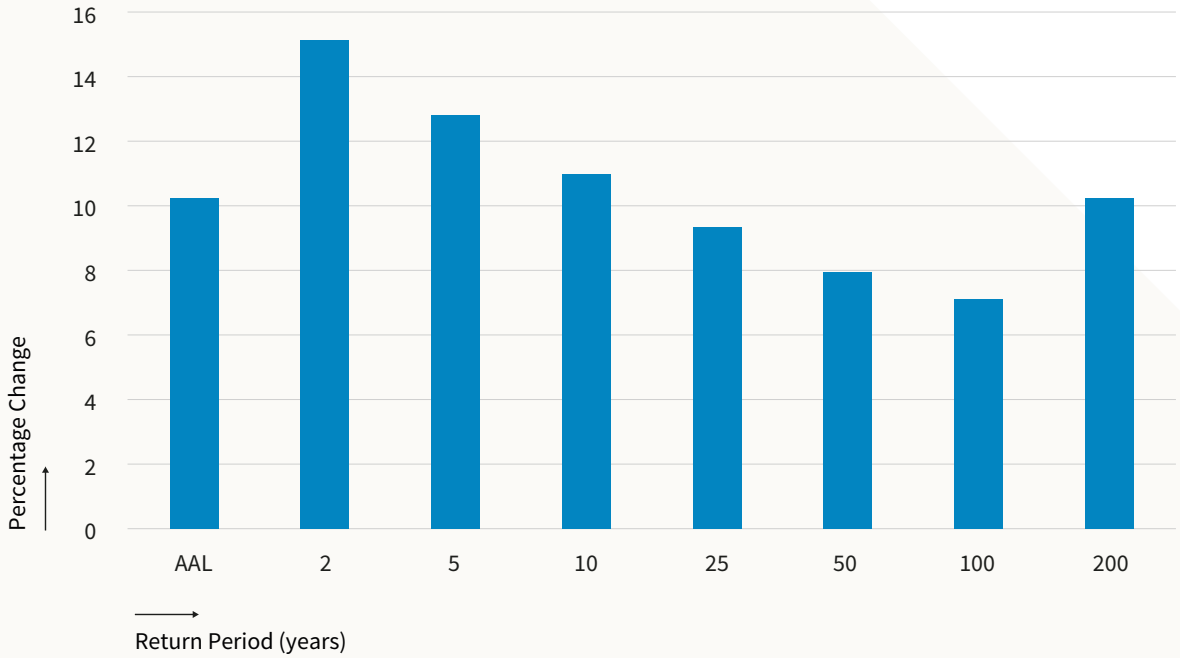
LARGER INCREASES AT SHORTER RETURN PERIODS

Tropical cyclones are one of the largest loss drivers for the insurance sector globally. Building scenarios to understand how the risk from these storms may evolve in the future is therefore important for informing decision-making, risk management, and resilience.

Most insurers currently base their tropical cyclone scenarios on a research paper by Knutson *et al.* (2020), which presented a synthesis of the expected changes in global tropical cyclone activity for a 2°C warming[2]. One of the key outcomes of this paper is that the frequency of very intense cyclones (Category 4-5) is expected to increase. This and other findings from Knutson et al. have been utilised by insurers to resample catastrophe model event sets.

As an example, *Figure 1* shows the impact of a hypothetical 20% increase in the number of Category 4 and 5 landfalling storms in a U.S. tropical cyclone model. The largest effect is seen near the bottom of the exceedance probability curve, with a 15% increase at the 1-in-2-year return period loss. In comparison, tail losses around the 1-in-200-year return period increase by 5.5%. >

FIGURE 1: The percentage change in losses for a hypothetical 20% increase in the number of Category 4 and 5 landfalling hurricanes in a U.S. tropical cyclone model. Selected return periods and the Average Annual Loss (AAL) are shown. The adjustment was applied by randomly resampling a 100,000-year simulation, based on the storm intensity at landfall.



The larger increase at shorter return periods seems counterintuitive at first. This is because many of us associate an increase in severe tropical cyclones with an increase in tail risk from events like Hurricane Andrew, which hit Miami in 1992. If a Category 5 storm made landfall in Miami today, the insured loss would likely be in the region of $150 billion. But there are many strong storms that also occur at shorter return periods. For example, in 2018 Hurricane Michael made landfall as a Category 5 storm on the Florida panhandle, resulting in only around $10 billion in insured losses at the time.

In the historical record, the annual rate of a Category 4-5 landfalling storm in the U.S. is 0.24. In a 100,000-year simulation, we would therefore expect approximately 24,000 Category 4-5 events. Given that the tail of the distribution beyond the 1-in-200-year return period accounts for just 500 years of the simulation, the vast majority of these storms will occur at shorter return periods. This means that when an event set is resampled to include more Category 4 and 5 hurricanes, the number of small and mid-sized losses will be increased the most, which pushes shorter return periods up higher percentage-wise than the tail.

This is surprising given that the tail of the distribution is expected to contain some of the most severe physical effects of climate change, particularly under higher emission scenarios. As a result, we must ask, *'Where is the tail risk from climate change?'*.

UNQUANTIFIED TAIL RISKS

Traditional models do not handle fat-tailed events well, as Nassim Taleb has written about in relation to financial markets[3]. This means that crucial aspects of the risk are likely to be overlooked. The same is true for traditional catastrophe models in terms of climate change: while frequency-severity distributions can be conditioned for various climate states, they underestimate the true tail risk because a number of direct and indirect effects are missing. >

For example, there is the possibility that climate change could result in an increase in serial clustering for some perils, which is when multiple events impact a region in close succession. This would mean that we witness more instances as in 2017, when three hurricanes - Irma, Jose, and Katia - threatened land concurrently in the North Atlantic. An increase in event clustering would lead to an increase in tail losses. But most scenarios do not consider this possibility, with insurers often assuming that historical clustering behaviour is unchanged in the future.

Another important example is climate tipping points, which many insurers exclude from their thinking because they view such outcomes as far-off problems. However, there is growing evidence that some tipping points, for example, the rapid collapse of ice sheets or the melting of Arctic permafrost, may be triggered once we pass 1.5°C of warming. The world is expected to reach 1.5°C at some point in the 2030s, meaning some of these fat tail consequences could be closer than many realise.

In addition to direct physical risks, there are multiple indirect effects that are frequently overlooked, including supply chain disruption, food insecurity, geopolitical conflict, and infrastructure failure. All of these have the potential to manifest as systemic risks, increasing the tail of the loss distribution.

SCENARIO COMPLETENESS

This is not to discount the value of catastrophe models. They bring together detailed information on hazard, vulnerability, and exposures in ways that other tools, such as climate models, cannot. However, just as insurers analyse and quantify non-modelled risks today (for example, under Solvency II), they must apply the same thinking and techniques to climate change adjustments and scenarios.

The breadth and complexity of climate change tail risks mean that careful consideration is required when incorporating them into our modelling. In some situations, it will be possible to explicitly simulate the effects – such as serial clustering – within existing modelling frameworks. But it will be more challenging for other risks, particularly those with socio-economic and systemic components. These more intricate risks may require tail loadings, similar to how post-event loss amplification is applied today to account for difficult-to-model factors such as demand surge and mass evacuations.

All of this means that when you next think about building or updating your climate change scenarios, it is vital to consider not only how to best adjust frequencies and severities, but also how comprehensive and complete your risk assessment is. <

CAMERON RYE is Head of Modelling Research and Innovation within the WTW Research Network.

[1] Trust, S *et al.*, *The Emperor's New Climate Scenarios: Limitations and assumptions of commonly used climate-change scenarios in financial services*, The Institute and Faculty of Actuaries (2023).

[2] Knutson T. et al, *Tropical cyclones and climate change assessment: Part II: projected response to anthropogenic warming*, BAMS 101(3):E303–E322 (2020).

[3] Taleb, N., Statistical Consequences of Fat Tails: *Real World Preasymptotics, Epistemology, and Applications (Technical Incerto)*, STEM Academic Press, ISBN-10 1544508050 (2022).

AAE POSITION ON **IORP II DIRECTIVE**

BY **TATIANA BITUNSKA** AND **PHILIP SHIER**

TATIANA BITUNSKA
is Chair of the Pension Committee.

AAE is a professional association of actuaries who are well known as financial architects of society because their combination of analytical and business skills is used to address a growing variety of financial and social challenges worldwide. Actuaries are expected to provide decision-makers with valuable information to assist them to take long-term strategic decisions, as well as providing practical solutions to problems involving the possible consequences of future uncertain events.

There are many challenges to be addressed: demographic risks related to ageing population, changing balance between working population and retired people, how to prevent (mitigate) the poverty risk or to assess intergenerational fairness, how to support wellbeing of societies in the low real interest rate environment, and last but not least – how to deal with the issues of sustainability and climate change to protect our future. All mentioned above requires active and conscious attitude from all of us. >

PHILIP SHIER
is Chair of the
TF review IORP2.

AAE believes that actuaries can play a key role at both national and European level in solving different type of problems related to the provision of adequate and secure pensions.

The AAE Pension Committee established a special taskforce to develop a submission to the EIOPA consultation process related to ongoing review of the IORP II Directive. The key issues on which the AAE commented included:

1. **Movement of DB to DC plans is a big challenge as risk is transferred to individual members.** Regulation needs to ensure balance between the interests of the different stakeholders, recognizing that members ultimately bear the risk. We support the proposal that members should be provided with long term risk assessments, which actuaries are ideally placed to provide.

2. **Effective risk management in IORPs is essential to protect the interests of all members and beneficiaries, as well as the IORP itself.** Our position is that the actuaries with their expertise are able to provide valuable input in different areas including the own risk assessment, benefits projections provided in the Pensions Benefit Statement, asset liability matching (including liability driven investment strategies) as well as the responsibilities of the actuarial function for defined benefit plans as set out in Article 48. That is why we consider also the role of actuaries in risk management for IORPs.

3. **Governance and Prudential requirements.** AAE believes that proportionality should be taken into account in regulation and supervision. However, our view is that the criteria should be more risk based rather than based on the size of the IORP and that risk should be considered from both the IORP perspective and the beneficiary perspective. We are aware that the national legislation varies a lot and therefore the landscape of IORPs in different countries as well. A set of 'risk assessment guidelines' with formula/ methods for how the different risks can be assessed (developed by EIOPA) would be considered as useful, with a requirement on the IORP to comply with the guidelines or explain why if it has not done so. The actuary could provide assistance with this aspect. Risk tolerance level (defined by the management) should be included in the ORA process. >

4. **Information provided to members and cost disclosure.** AAE believes that members of IORPs should be provided with clear and value-adding information on the benefits they may expect to receive on retirement, and on the costs and charges incurred.
Cost transparency and reliable information provided to the members can help them to manage in more efficient way their future pension benefits.
AAE highlighted three particular issues in our submission:
   - Members should not be provided with too much information; the key information which will help the member to understand the benefits they may receive, the level of risk being taken (where members bear investment risk) and the charges incurred should be highlighted with more detail and other information (e.g. on sustainability) made available. A digital approach, with layered information available by clicking on links, would facilitate this approach, although provision will also need to be made for members who require paper copies of the PBS;
   - Projections based on a 'favourable' scenario should be shown on the PBS in addition to the current 'best estimate' and 'unfavourable' ones to provide members with a balanced understanding of the potential risks and rewards;
   - Care should be taken to ensure that information on costs and charges provides sufficient detail on the breadth and quality of services provided so that the member can make an informed decision on value-for-money.

Protection of purchasing power of pensions benefits is another point. AAE recognizes as an important issue the lack of mechanism for protecting pensions against inflation.

5. **The importance of the Own Risk Assessment (ORA).** It is important to note that this is a minimum harmonisation Directive and that national legislation determines the solvency requirements for IORPs within the very high-level provisions in the Directive. Accordingly the ORA does not directly address solvency (as in the ORSA under Solvency II) but the findings of the ORA will enable Boards and supervisors to ensure that the IORP has adequate funding to provide the benefits promised to members. For different pension schemes biometric or investment risks can be shared between the IORPs, sponsors and members of IORPs in different ways. In some cases these risks could be shifted by the IORPs to other ultimate risk takers. It is important that the ORA considers the impact on members and beneficiaries where members bear risks. Shifting the biometrical and investment risks to other stakeholders has significant implications on investment behaviour and investment choices made by IORPs. The analysis of such investment choices may include the impact on the real economy but the primary objective should be to provide adequate and secure income for people after retiring. <

EAD 2023

A SUCCESSFUL EUROPEAN ACTUARIAL DAY WITH OPPORTUNITIES FOR IMPROVEMENT

BY **EAD 2023 ORGANISING TEAM**

The European Actuarial Day (EAD), held on 27 June 2023, proved to be a remarkable success, attracting a large number of registrations and receiving positive feedback from participants. The event witnessed high engagement during sessions and received excellent ratings in the participant survey. This article summarizes the key highlights of EAD 2023 and presents ideas for future editions.

REGISTRATIONS AND SESSION ENGAGEMENT

EAD 2023 garnered an impressive number of registrations, with a total of 1,042 individuals signing up for the event. Out of these registrants, 741 participants logged into the event platform and joined the event reflecting a commendable participation rate of 71.1%. Furthermore, 634 attendees engaged with sessions for more than five minutes, indicating a strong interest and active involvement from the participants. The top sessions that attracted the most viewers included both plenary sessions, dealing with central topics such as the current state of affairs from the European parliament´s point of view, recent developments in Artifical Intelligence as well as ESG reporting, whereas the latter was discussed in a panel with representatives of the European Commission and the European industry. From the concurrent sessions, the talks on cyber and catastrophic risks were favoured most.

EVENT SURVEY RESULTS

The preliminary event survey results revealed high levels of satisfaction among the participants. An overwhelming majority of 91 % rated the event as good or excellent, with an average rating of 4.33 out of 5. These positive ratings validate the conference's efficacy in delivering valuable content and engaging sessions. >

CONTENTS

The contents were very interesting. In fact, the theme of EAD 2023 was very stimulating, opening new horizons to the activities of actuaries. Many speeches concerned new challenges inside traditional fields (insurance, pensions) to be further developed, but many others instead explored new areas and fields. Specific topics, such as artificial intelligence and sustainability, were covered as well, with wide-ranging discussions. Also, AAE stakeholders actively participated in the event; their speeches made a great contribution and highlighted the involvement of actuaries in supporting more and more politicians and decisionmakers in managing risks.

CONCLUSION

EAD 2023 emerged as a resounding success, attracting a significant number of registrations and garnering positive feedback from participants. The valuable insights shared by the Communication Panel and other groups within AAE regarding communication strategy and stakeholder engagement will serve as guiding principles for future events. So, the next European Actuarial Day in 2024 holds tremendous potential for further success, offering an enhanced experience for participants and stakeholders alike. <

ECA2024

COLUMN

CATASTROPHE - an event causing great and sudden damage or suffering. This can be the loss of a loved one on a personal level or a fire, flood, or earthquake impacting an entire community.

Catastrophes happen to "other people". It's a movie theme like The Day After Tomorrow, or something we read about in newspapers. Nobody likes to contemplate the possibility of a catastrophe affecting them, which often leads to inadequate preparation. The corona pandemic managed to shake humanity from this sleepwalk for several months. Ironically, human behavior following a catastrophe often results in short-term thinking and living for the moment rather than preparing for future incidents.

The summer of 2023 delivered another wake-up call with climate events being reported nearly every day: wildfires across Southern Europe and Canada, a hurricane in California, local wind storms, heat records across southern Europe followed with hail and flooding in multiple locations. It's been hard to distinguish extreme event from potential catastrophe or actual catastrophe.

The wildfire in Hawaii is an undeniable catastrophe. A combination of climate and human behaviour factors resulted in lives lost and homes destroyed overnight. Intense cyclonic winds and tinder dry forests exacerbated by global warming. On the human side errors such as not activating warning sirens and failing to disconnect electricity lines during intense winds. While insurance and government support can aid in rebuilding Laihana, the loss of life and culturally significant heritage is irreparable and recovery will take long.

Climate change is shifting the parameters of potential catastrophe scenarios. Historic data and insurance models used to mitigate financial damage and human behavioral shortcomings are becoming less effective in this evolving landscape. Climate models are clear however. The trend of summer 2023 will continue and escalate by 2024 due to the intensification of the current El Nino (ENSO Southern Oscillation). So clear that it evokes the same human tendency — short-term thinking. As actuaries continue to grapple with adapting models to assess financial implications of climate risk, criticisms regarding economic interpretations are on the rise. Critiques include the IPCC and NGFS not accounting for climate tipping points inherent in these climate models. The core principle of risk diversification in insurance also faces challenges when numerous events occur in various locations.

How can we, as an industry and as actuarial professionals, contribute substantial societal value?

1. Effective behavioral and financial risk management to reduce the impact of disasters. This involves both future fit modeling and encouraging societal risk readiness.

2. Enhancing communication and setting professional standards. Realistic, objective language is pivotal in conveying the extent of risks and uncertainties to community leaders, politicians, and CFOs/CROs of insurers and corporations.

Let's proactively prepare for potential catastrophes in 2024 and beyond by acknowledging causes, communicating the risks, normalizing behavioral risk management, supporting climate mitigation as well as adaptation projects, and establishing financial safeguards including insurance and capital market structures for the residual risk.

Loudina Eramus

COLOPHON

The European Actuary (TEA) is the quarterly magazine about international actuarial developments. TEA is written for European actuaries, financial specialists and board members. It will be released primarily as e-mail newsletter. The views and opinions expressed in TEA are those of the authors and do not necessarily reflect the official policy or position of the Editorial Board and/or the AAE. The Editorial Board welcomes comments and reactions on this edition under info@theeuropeanactuary.org.

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NEXT ISSUE

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Suggestions can be e-mailed to info@theeuropeanactuary.org
The deadline is 1 November 2023.

EUROPEAN AGENDA

Please check
http://actuary.eu/event-calendar/
for the most actual forthcoming events.

ADVERTISING IN THE EUROPEAN ACTUARY

The European Actuary (TEA) is sent as an online magazine to 25,000 actuaries and financial professionals throughout Europe. An advertisement in TEA, size 210 x 145 mm (half A4 and seen as full-screen), costs 3,500 euros. Information on info@theeuropeanactuary.org