



Institute
and Faculty
of Actuaries

IFoA GIRO Conference

Workshop A2: Climate change: The Bigger Picture

Alex Marcuson, Lara Palmer, Martin Massey, Camilla Bennett and Elliot Orenstein

IN MEMORY OF
THE MILLIONS OF AFRICAN MEN
WOMEN, CHILDREN AND THEIR
DESCENDANTS WHO WERE
ENSLAVED AND TRAFFICKED
IN THE PERIOD OF THE
TRANSATLANTIC SLAVE TRADE
AS THE GLOBAL CENTRE FOR
MARINE INSURANCE
LLOYD'S PLAYED A
SIGNIFICANT ROLE
IN ENABLING THE BUSINESS
OF ENSLAVEMENT

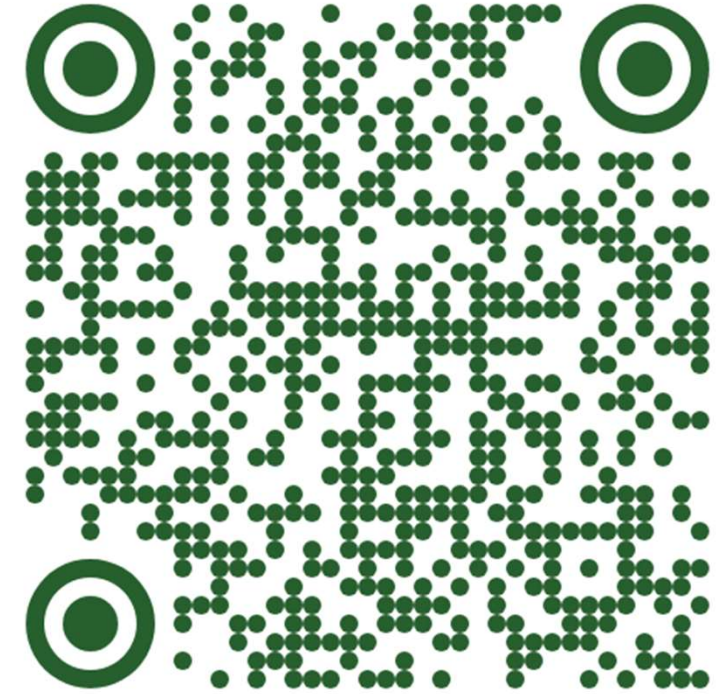
WE ARE
DEEPLY SORRY
FOR THIS PERIOD IN OUR HISTORY
AND THE ENORMOUS SUFFERING
CAUSED BY SLAVERY AND ARE
STRIVING TO CREATE A FAIRER AND
MORE EQUAL SOCIETY TODAY
ONE BUILT ON THE COMMON BONDS
OF
HUMANITY THAT UNITE US ALL

Photo: Dr Steven Fisher FIA,
with consent

Climate Change: The Bigger Picture

Agenda

1. Background and aims of the working party.
2. The Bigger Picture:
 - Responding to regulatory developments.
 - Strategic Roles for Actuaries.
 - Challenges surrounding external models.
3. Where next and Q&A.



Climate Change Working Party 2025 members

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Josie Currie *

Dhrubajyoti Banerjee

Camilla Bennett

Amit Bhadula

Nikhil Bhatia

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Tom Steeley

Kelly Tarrant

Lucy Thomas

Aashish Verma

Paul Wee

Matthew Wilmot

Charlie Winnan


* Co-chairs

Speakers in bold

Working Party Background

Output from the working party

As the Climate Change Reserving Working Party we have produced a range of outputs.



Institute and Faculty of Actuaries

Reserving for climate change

2023 Working Party Update:
Litigation, Wordings and Qualitative Tools

General Insurance Climate Change Reserving Working Party

"To avoid giving false comfort, without causing undue alarm"

Litigation Update Climate change and insurance

- Steadfast Insurance Co. vs. AES Corp. (2008 – 2012)
 - Exclusion of intentional acts.
 - No accident or occurrence.
- Arkema chemical factory explosion (2017)
 - Cause was flooding of site following Hurricane Harvey.
 - Flood risks identified by insurer's inspection report but not acted upon.
- Aloha Petroleum, Inc. vs. NUFIC and American Home (Ongoing)
 - Linked to Honolulu/Sunoco case
 - Existence, timing and effectiveness of pollution exclusions; alleged "bad faith" denial of claims.



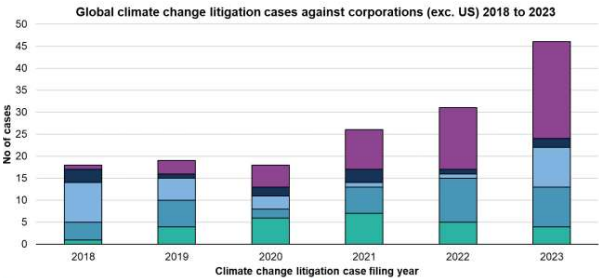
Honolulu by Jack Youngson CC BY-SA 3.0 Alpha Stock Images

How to approach reserve setting for climate change

At the moment, the best thing to do is a qualitative assessment of your lines of business and exposures that may impact your book. The best way we found to do this is to split climate change into different categories of risk and then consider the impact of each on each LoB.



Key findings – Cases split by filing year



- Increasing trend in climate related litigation cases against corporations.
- Misleading information / greenwashing cases were the largest. Trigger (E) for cases filed in 2022 & 2023.
- Cases filed for failure to adapt are the 2nd largest Trigger (B).
- Climate inaction / past emitter cases reducing over time – Trigger (A)

Briefing your Board – Writing your Report Framing uncertainty in your reserving report

General uncertainties:

- Future climate pathways, and impact on your insureds and/or those suing them.
- Adaptation, mitigation and other costs.
- Attribution of responsibility (including changing social and legal attitudes).
- Defence costs.
- Policy and insurer identification.

Specific uncertainties:

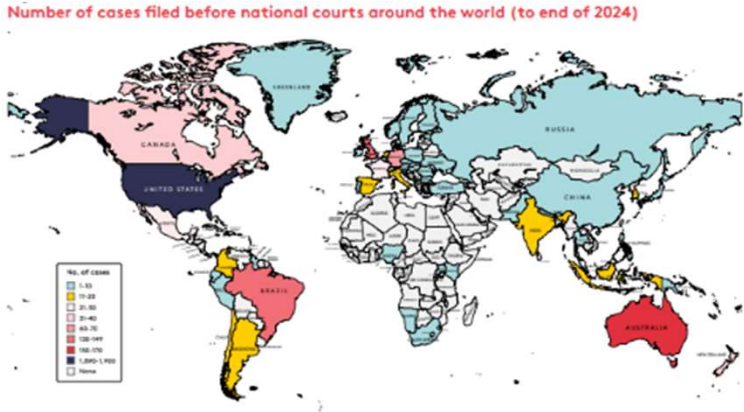
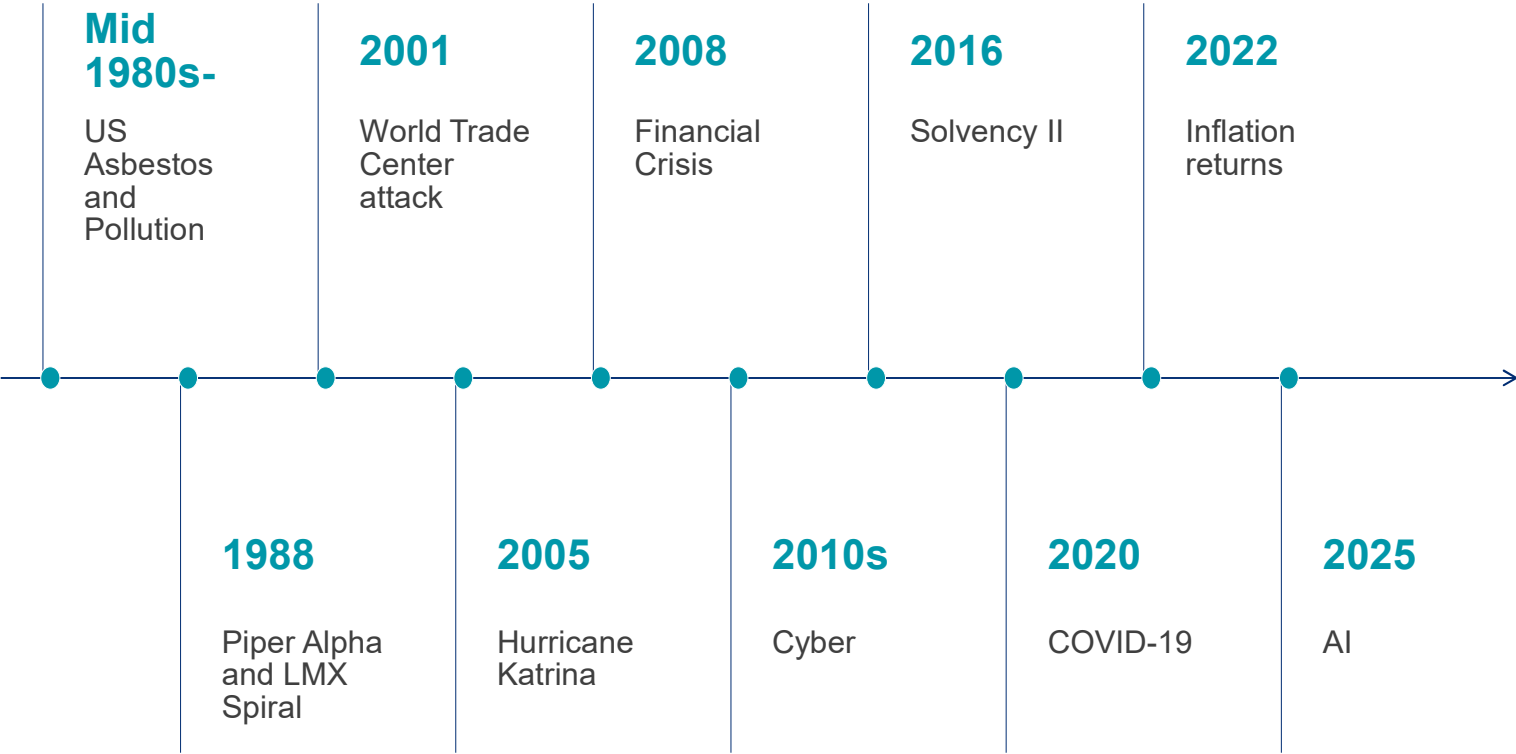
- Who and what lines of business have you insured in the past?
- What coverage wordings, exclusions and write-backs did you have in place?
- Where are climate claims emerging? How easily can you identify them?

But we were asked by the GI Board to widen our scope!

A New Problem Statement

Insurance challenges we have addressed

The evolution of risk is nothing new – so why might Climate Change be different?



https://en.wikipedia.org/wiki/File:Irma_and_Andrew_comparison.jpg NOAA GOES satellite, image recreated by NBC – Wikimedia Commons
Global trends in climate change litigation: 2025 snapshot. J. Setzer and C Higham, LSE, Grantham Research Institute on Climate Change and the Environment, Columbia Law School/Sabin Center for Climate Change Law. – CC BY-NC 4.0 Creative Commons

Working Party Aims

Aims of the GI Climate Change Working Party



DEFENSE

1. Research and understand the problem.
2. Raise profile of the issue.
3. Avoid false comfort, but don't cause undue alarm.

OFFENSE

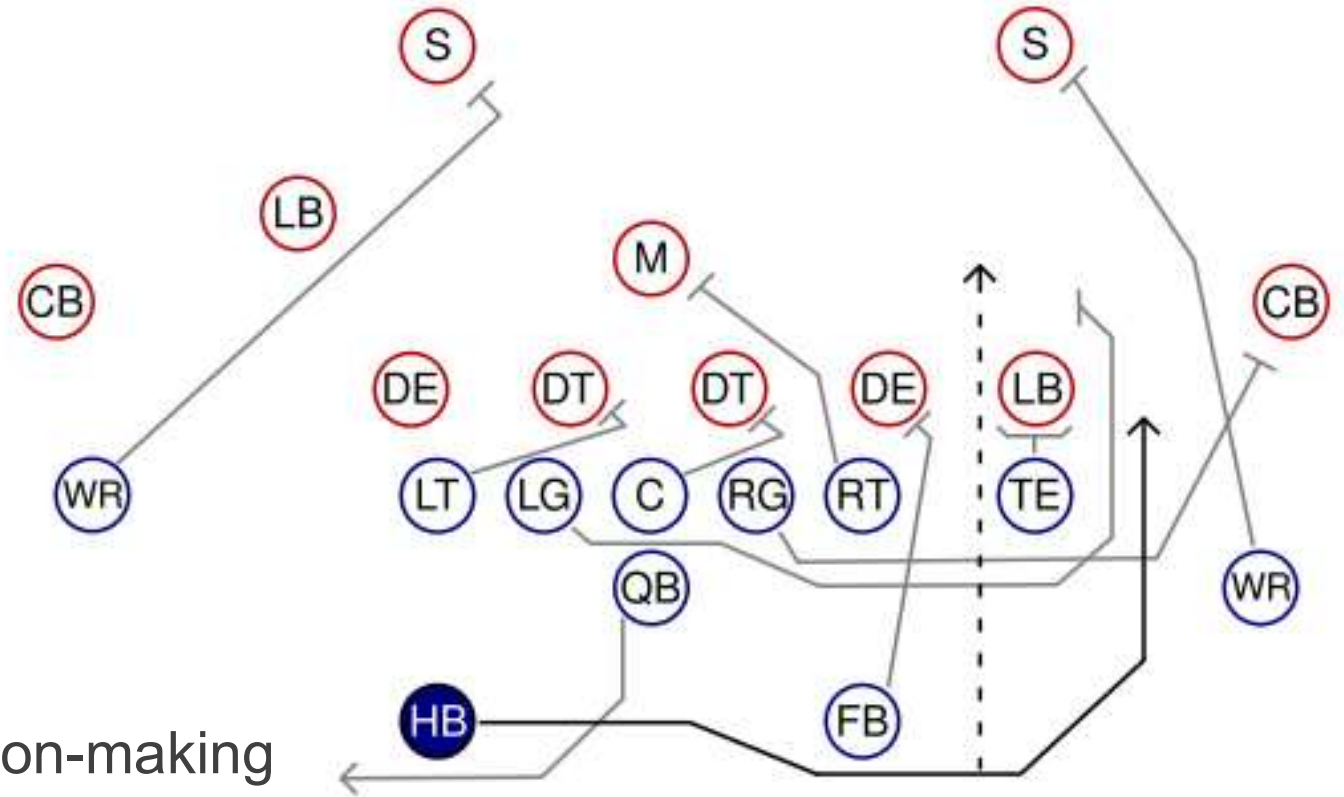
1. Provide industry thought leadership.
2. Establish strategic importance of general insurance actuarial skills in navigating issues.

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What is the play?

Our four workstreams:

1. Ground-up line of business analysis.
2. How actuaries can support strategic decision-making around climate change.
3. How to allow for climate change when using external models.
4. Litigation – monitoring trends and developing qualitative scenario frameworks.



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Climate Change – The Bigger Picture

Responding to Regulatory Developments

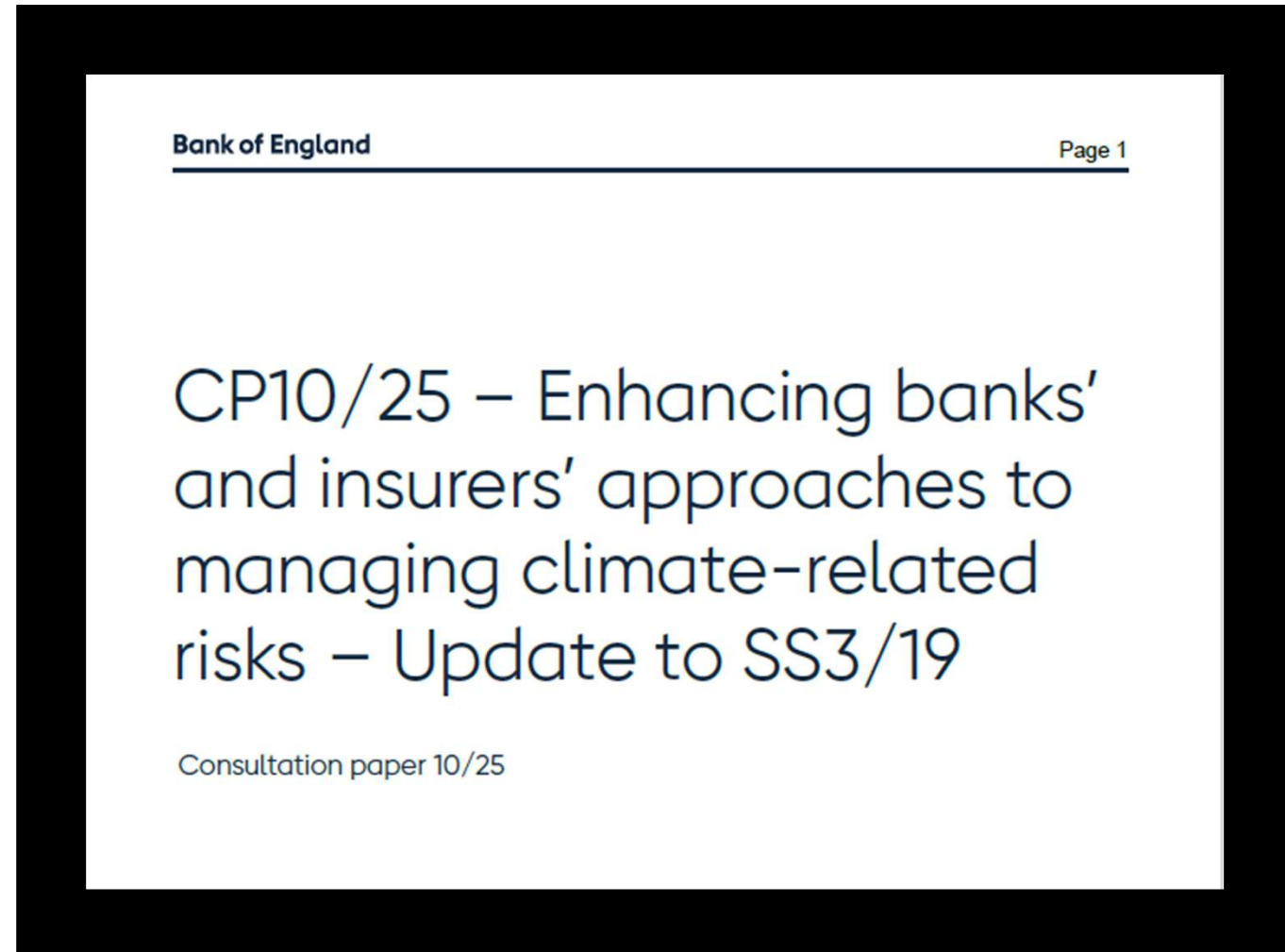
Regulatory Developments – CP10/25

Responding on behalf of the Profession

- Thoughtful progression of UK regulatory expectations (update to SS3/19).
- Key challenges for firms surrounding:
 - Development of science-based climate scenarios.
 - Gathering data to enable meaningful analysis.
- Implementation in 2026?

BUT

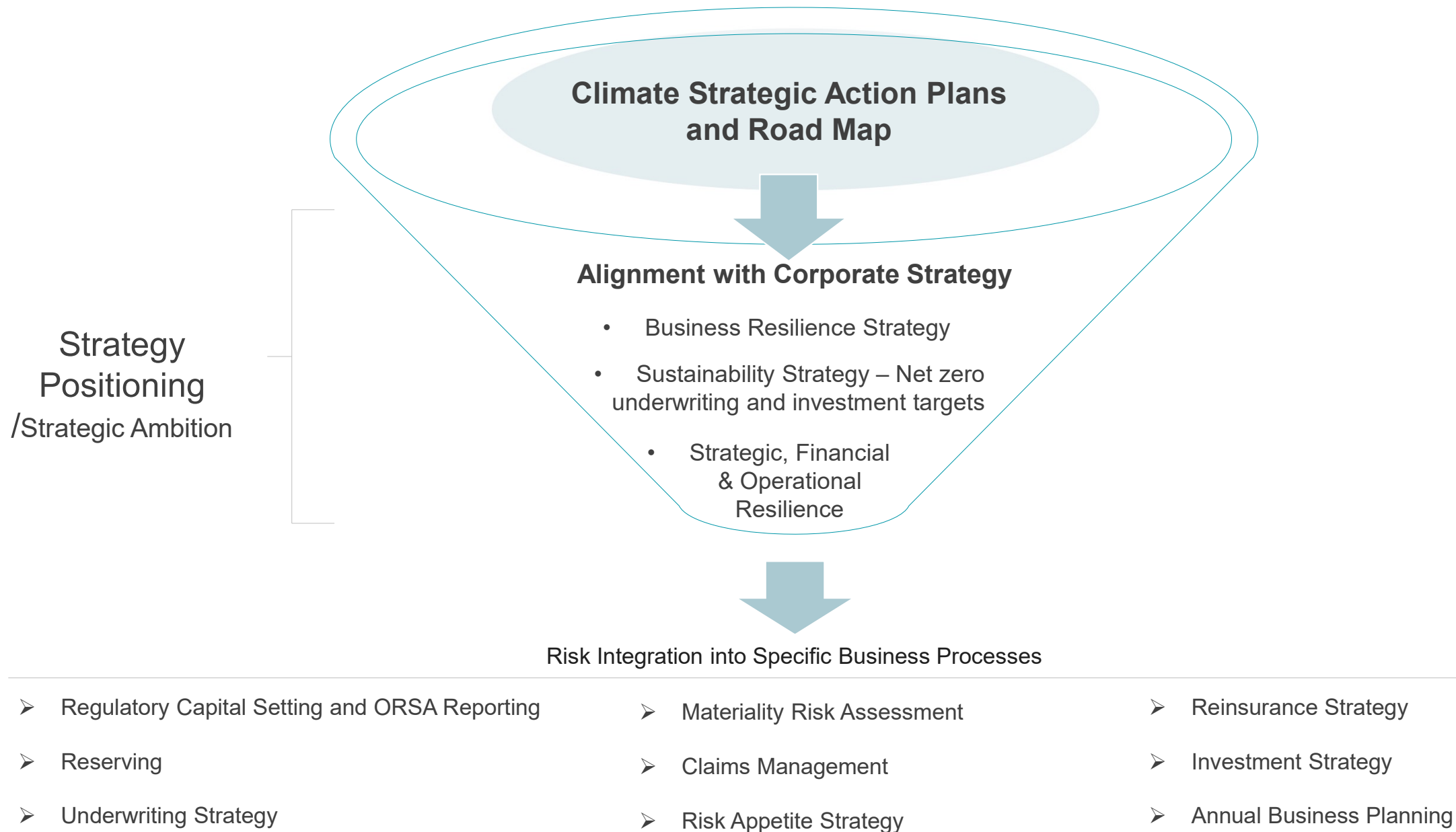
- Material oversight in CP arising from treatment of climate liability and climate litigation risks.



Climate Change – The Bigger Picture

Strategic Roles for Actuaries

Climate Strategy and how it impacts Actuaries



Alignment To Meeting Regulatory Expectations

New PRA – CP10/25 Proposals (Following SS3/19)

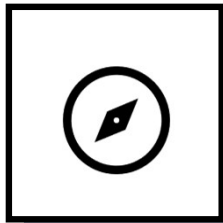
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Governance

The board to set and own the overall business risk appetite.

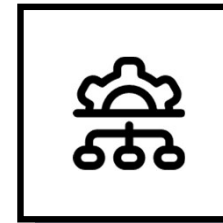
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Risk Management

Structured Approach to Risk Identification and Assessment.

03



Scenario Analysis

Use of both central and “extreme but plausible” stress scenarios.

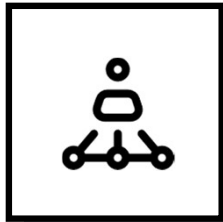
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Data

Given persistent data challenges, firms should outline how they identify and address data gaps

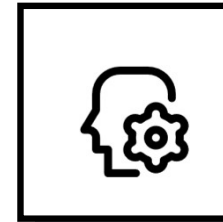
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Disclosures

Evolve Reporting and use ISSB Standards that have replaced TCFD.

06



Insurance Specific Issues

Integrate within ERM Frameworks and SCRs.

Climate Strategy and Ambition

Goals and Targets - Climate-Related Financial Disclosures

Goals



- Net Zero company by 2040
- 60% reduction in the Scope 1 and Scope 2 economic carbon intensity by year-end 2029 from a 2019 baseline
- Help the markets we operate in (UK, Ireland and Canada) become climate ready

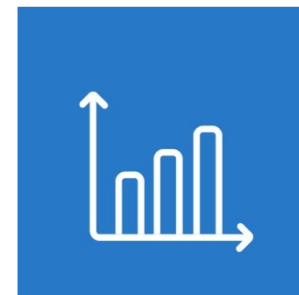


KPIs

- Aviva's climate KPIs are centred on operational emissions, supplier engagement, and investment portfolio targets, all aligned with its commitment to become Net Zero by 2040



- AXA is committed to transitioning its insurance, reinsurance and investment portfolios to net-zero greenhouse gas (GHG) emissions by 2050
- Strategy includes initiatives on: Investment, Insurance, Operations, Thought leadership, Biodiversity



As an investor

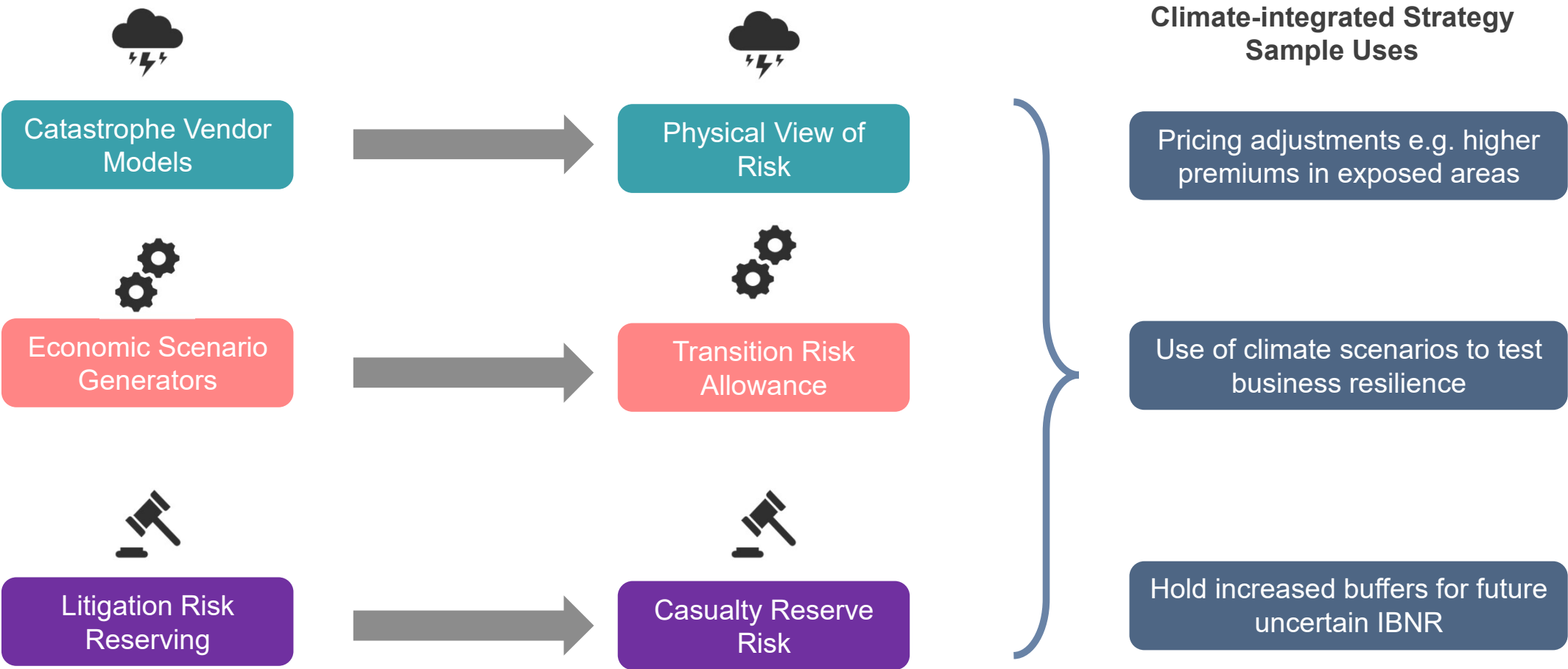
- Reduce by 50%* the carbon intensity of AXA's investment portfolio (General Account assets) by 2030

As an insurer

- Reduce by 30%* in absolute terms Insurance-Associated Emissions for AXA's largest corporate clients by 2030

Climate View of Risk – Outputs from Lloyd’s Market Survey

How Climate Risk is captured in Actuarial Models and Business Processes.



Case Study – Climate Stress Tests for ORSA Reporting

The Problem & Challenge

- To develop climate physical risk stress tests scenarios for a global insurer aligned to regulatory requirements to support the annual ORSA report.

Project Methodology

- Natural catastrophe model outputs were used across specific country and regions associated with each legal entity and extrapolated for alternative discrete scenarios for both alternative climate pathways and time horizons.

Impact on Strategy and Role of the Actuarial Team

- Support capital requirements of the legal entities.
- Set risk appetite climate-related metric for Nat Cat exposures.
- Review the quality, availability and level of reinsurance requirements.

Illustrative Model Outputs – Gross OEP : Net OEP Base Line 1 in 200 return period

Discrete Climate Pathway Scenarios Assumptions	Description of Global Actions taken to mitigate climate change	Short-term 2022	Medium-term 2030	Long-term 2050
1.5°C - 2°C (by 2100)	Early Policy Action	40 : 20	45 : 25	55 : 30
>2°C (by 2100)	Late and Disorderly Policy Action	40 : 20	50 : 30	65 : 35

Case Study – Closing The Climate Change Data Gap

Problem and Challenge

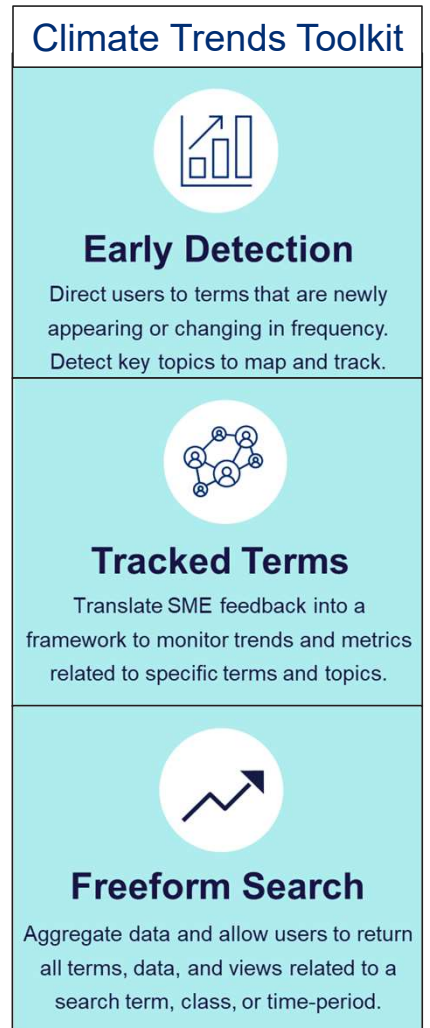
- Data limitations makes it difficult to quantify all climate-related claims trends.
- Insurers unable to appropriately account for climate change.

Potential Solution

- A suite of AI-assisted tools to categorise claims using metadata.
- Create dashboards for tracking climate change related claims across the business:
 - View specific claim types (e.g. heat stress, climate litigation, business interruption).
 - Filter all non-cat ‘extreme weather’.
 - Curate a transition risk dashboard (i.e. consisting of contingent losses, stranded assets, product liability, etc.)

Impacts on Strategy

- Strengthen feedback loops to underwriters and product teams.
- Reduce blind spots of climate change risks underwritten.



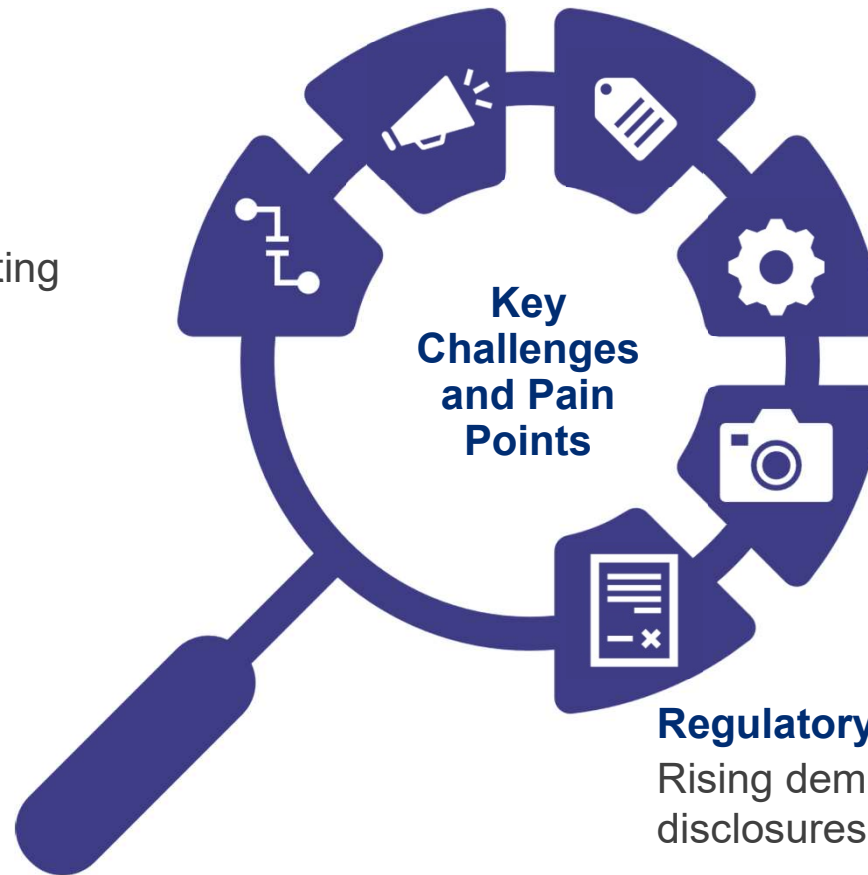
Summary of Key Challenges for Actuaries of Incorporating Climate Change Risk

Data Gaps

Limited, inconsistent data - especially for emerging perils and distant time horizons.

Model Risk and Uncertainty

Traditional models struggle to capture new extremes and shifting climate patterns.



Coverage Pressure

Affordability and insurability gaps are widening, testing business models.

Governance Disconnect

Climate risk often sits outside mainstream actuarial and capital processes.

Scenario & Time Horizon Mismatch

Short-term actuarial horizons clash with long-term climate realities.

Regulatory Expectations

Rising demand for credible, decision-useful disclosures and stress testing.

Climate Change – The Bigger Picture

Challenges surrounding external models

Improving Transparency & Consistency in Actuaries' use of External Models

- Actuaries increasingly rely on external models for a wide variety of purposes, particularly when considering climate change.
- Eg cat modelling, asset modelling, capital, pricing, business planning, risk appetite, scenarios.

Examples

- Language/terminology
- Reference models/scenarios
- Calibration & modelling approaches
- Scope inclusions / exclusions
- How actuaries can/should be using these models and how to allow for non-modelled climate effects

Risks

- Unclear what is (and isn't) modelled
- Under- or over- confidence
- Outputs may be used inappropriately
- Hard to compare/combine results across models
- Mis-estimate risks -> strategic decision-making

Our approach

Model scope &
consistency

Methodology &
assumptions

Frequency /
severity

Baseline &
scenarios

Underlying
pathways/
narratives

Intended use
cases

Secondary perils /
indirect effects

Validation

Where next?

Where next?

If you want more today:

“GIRO After Hours” session straight after today’s research update:

- Climate litigation – “a drop in the ocean”?
- Ground-up analysis and modelling.

If you want more after today:

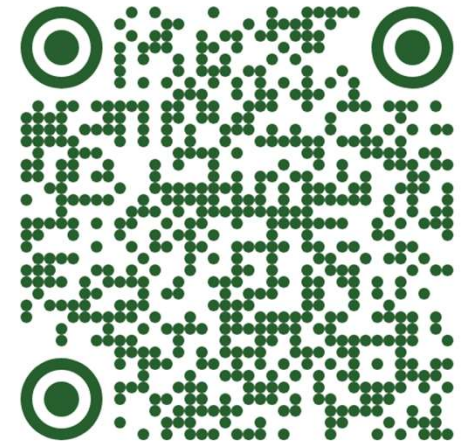
Visit our VLE site:

<https://vle.actuaries.org.uk/course/view.php?id=1684>

Contact a working party member.



Stock image



Q&A



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Thank you

For more information, contact:

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Josie Durley: jdurley@nephilasyndicate.co.uk

What does the future hold?

Now, Next and Beyond for Climate Change Working Party

Now

- GIRO A2.
- GIRO After Hours.
- Ongoing Research.

Next

- Aiming to present a paper to GIRO in 2026.
- Engage with UK and overseas industry stakeholders.

Beyond

- To be decided...