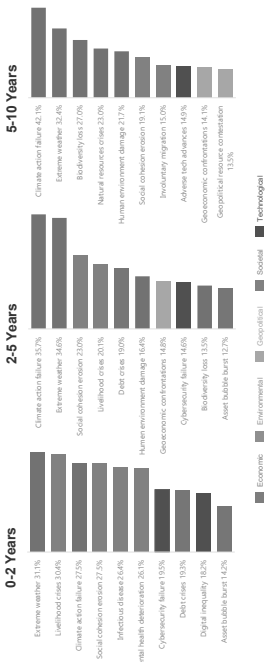


Environment Concerns Increase over a longer time period

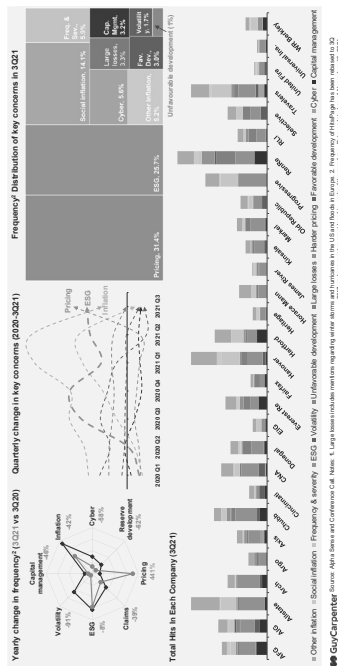


ESG Overview

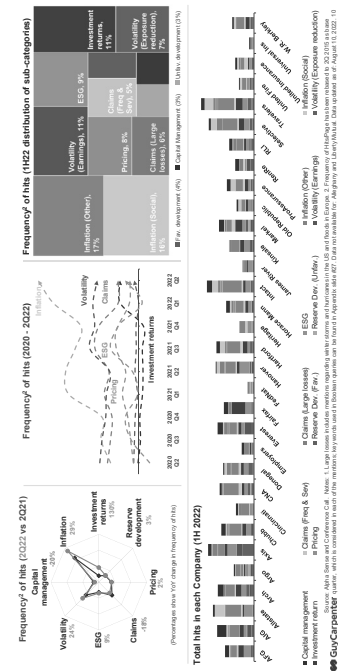


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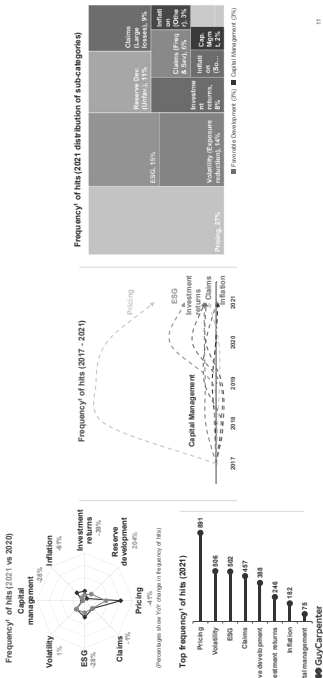
In 2021, ESG was a growing concern for Insurers



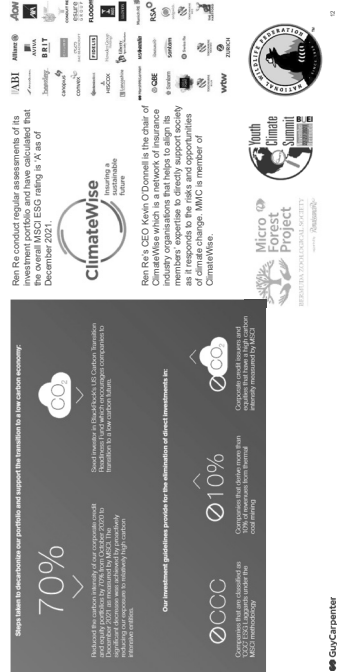
In 2022, Inflationary Concerns Dominate Earnings Calls



Pricing Issues Are a Key Concern in TW Insurers Earnings Calls



Renaissance Re



Environmental Social Governance (ESG) Overview

What is ESG?

Environmental, Social and Governance (ESG) provides an umbrella framework to consider a company's impact and dependencies on the environment and society as well as the quality of its corporate governance. The concept of sustainability and corporate social responsibility (CSR) has been around for decades and ESG is the latest evolution.

Drivers of the recent rise

Concerns surrounding climate change, social inequality and increased pressures from various stakeholders, including investors, have led to a growing demand for companies to report on their sustainability. This has further encouraged companies to rethink their ESG value proposition.

Reinsurance sector impact

Many companies have pledged to be carbon-neutral by 2050 and are looking at ways to invest in 'green' infrastructure and limit their investments in non-renewable resources.

Principles for Sustainable Insurance

PSI has 477 member insurers (as of August 31, 2020) that aspire to uphold principles about embedding ESG in insurance business and to provide regular public disclosures on their ESG policies. Company disclosures can be found here.

ESG Ratings

ESG Rating Organizations help investors identify green companies. ESG rating organizations include MSCI, Sustainalytics, S&P and Moody's. ESG is now included in the ratings criteria by AM Best, S&P, Moody's and Fitch.

Greening the Financial System

Launched December 12, 2017, the Greening the Financial System (NGFS), is a group of Central Banks and Supervisors sharing best practices and contributing to the development of environment and climate risk management in the financial sector. Hong Kong Monetary Authority, the Monetary Authority of Singapore and Japan's FSA are members.



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ESG Issues

Environmental

- Climate change
- Greenhouse gas emissions
- Air and water pollution
- Deforestation
- Land-use and land change
- Biodiversity
- Energy efficiency
- Waste management
- Water scarcity
- Responsible investing

Social

- Customer satisfaction
- Data protection and privacy
- Community engagement
- Human rights
- Diversity and inclusion
- Gender equality
- Labor standards
- Employee compensation and benefits
- Employee engagement
- Employee turnover

Governance

- Board composition
- Corporate governance
- Reporting and transparency
- Bribery and corruption
- Executive compensation
- Lobbying
- Political contributions

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Drivers of Recent Rise in ESG Reporting

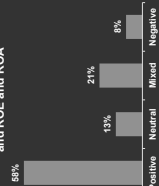
- ✓ Many stock exchanges, including HKEX and SGX, require annual sustainability reports for listed companies.
- ✓ Growing number of investors focused on socially conscious companies that are environmental responsible.
- ✓ Insurance regulator reporting requirements.
- ✓ Rating agencies now including ESG in their evaluation of (re)insure
- ✓ Increasing number of ESG rating organization to help investors identify green companies

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ESG and Investing



Relationship between ESG and ROE and ROA



- NYU Stern Center for Sustainable Business and Research has analyzed the relationship between ESG and financial performance in more than 1,000 companies from 2009 to 2018. The results showed that 58% showed a positive relation between ESG and return on equity and assets while only 8% showed a negative relationship.

Source: MSCI

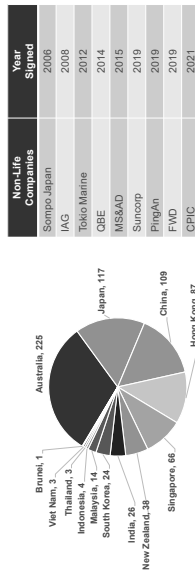
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19

Principles for Responsible Investing (PRI)



- PRI has over 5,144 signatories (As of August 31, 2022). **More than half joined since January 2020 compared to prior 14 years.** As signatories, companies publicly commit to adopt and implement the six Principles for Responsible Investing, which include the following three:
 - **Incorporating ESG issues into investment analysis and decision-making processes.**
 - Seeking appropriate disclosure on ESG issues by the entities in which they invest.
- Number of signatories in APAC and some non-life insurance companies that have signed are shown below.



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Principles for Sustainable Insurance (PSI)



- **PSI has 127 member (as of August 31, 2022)** that aspire to uphold the following principles:
 - Embodied in our decision-making ESG issues relevant to our insurance business.
 - Work with the company's clients and business partners to raise awareness of ESG issues and develop solutions.
 - Work with governments and regulators to promote action across society on ESG issues.
- **Regular public disclosure** of the companies progress in implementing the Principles.
- Some sample disclosures can be found here [Tokio Marine PSI disclosure #6](#) and [Peak Re disclosure #7](#).
- Member companies in APAC include:

Country	Companies (working, Life)
Australia	IAG, QBE, Suncorp, TAL
China & HK	AIA, CPIC, PingAn, PeakRe
Japan	MS&AD, Tokio Marine, Sampo
Singapore	Great Eastern, Singapore Life
South Korea	DB, KB, Nonghyup, Samsung, Hanwha Life, Kyobo Life, Nonghyup Life, Samsung Life, Shinhan Life

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Tokio Marine ESG's Reporting Example

Perspectives	Material Issues	Sustainable Development Goals	17 SDG goals
Environment	Combat climate change	Climate Change	13
	Improve disaster resilience	Disaster Resilience	11
	Protect the natural environment	Nature Conservation	15
Social	Facilitate and foster innovation through digitalisation	Digitalisation	9
	Support people's healthy and enriching lives	Health and Well-being	3
	Promote and support diversity and inclusion	Diversity and Inclusion	10
Governance	Provide education to children	Education	4
	Disclose highly transparent and timely information	Transparency	17

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MSCI ESG Rating Criteria for Non-Life Insurance Industry

3 Years	10 Themes	31 ESG Issues
Environmental (19.4%)	Climate Change Impact (19.2%)	Reducing Environmental Impact
	Carbon Emissions	Product Carbon Footprint
	Water Stress	New Material Sourcing
Social (47.1%)	Pollution & Waste	Electronic Waste
	Environmental Opportunities	Opportunities in Renewable Energy
	Human Capital (18.8%)	Product Safety and Quality
Governance (33.4%)	Product Liability (21.3)	Supply Chain Labor Standards
	Responsible Investing (13.8%)	Chemical Safety
	Stakeholder Opportunity	Insurance Health and Demographic Risk (5.4%)
Governance (33.4%)	Board Composition	Access to Health Care
	Corporate Governance	Pay
	Corporate Behavior	Business Ethics

The percentages represent the weighting applied for the property and casualty insurance industry.

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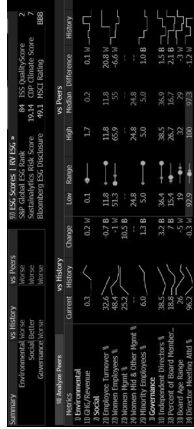
ESG Rating Organizations

- Institutional Shareholder Services (ISS), MSCI, Sustainalytics (a Morningstar Company), S&P, CDP, Bloomberg and Moody's all provided ESG ratings.
- However, these ratings can vary a lot for any particular company
- MSCI has rated 26 non-life insurers and the companies in APAC ESG ratings are:

Sompo Holdings	AAA
MS&AD Insurance Group	AA
IAG	AA
Fubon Financial Holdings	AA
KB Financial	AA
Tokio Marine Holdings	A
Piling An	BBB
OBE	BBB
China Pacific Insurance	BB
China Life Insurance Group	BB

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ESG Scoring Criteria – Bloomberg Example



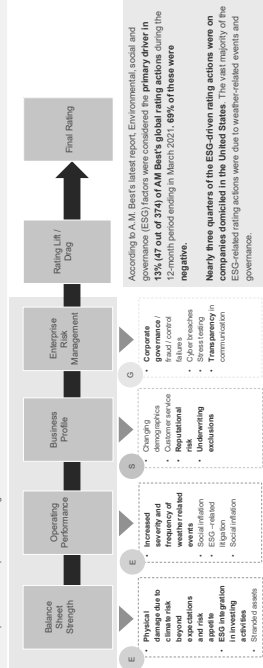
Metrics
Environmental
Greenhouse Gas (GHG) Revenue
Employee Turnover %
Women Employees %
Women Management %
Minority Employees %
Minority Management %
Governance
Independent Directors %
Percent of Board Members that are Women
Director Meeting Atd %
Total CEO Compensation

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ESG Factors in A.M. Best's Credit Ratings

Application of ESG within the rating process

A.M. Best's analysis identifies key ESG risks through its standard in-depth review of the rating 'building blocks': balance sheet strength, operating performance, business profile and enterprise risk management.



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ESG Rating Chaos?

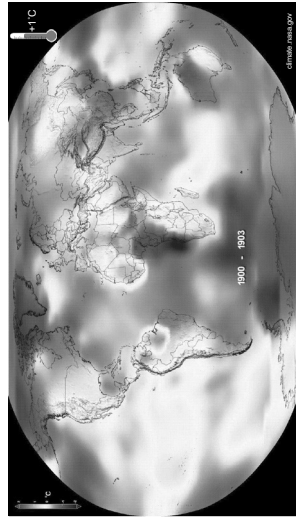


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Timeline on Climate Change Targets

2

Climate Change The greenhouse effects

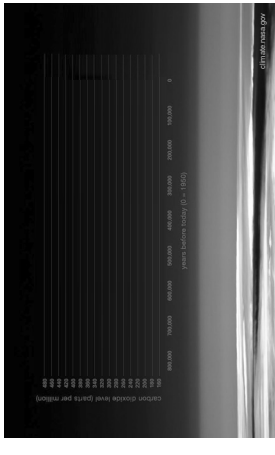


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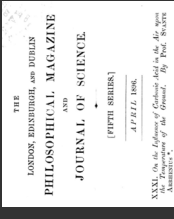
CO₂ Levels in the Atmosphere

In parts per million (ppm)
The atmospheric concentration of CO₂ has been on the rise since the 1950s.



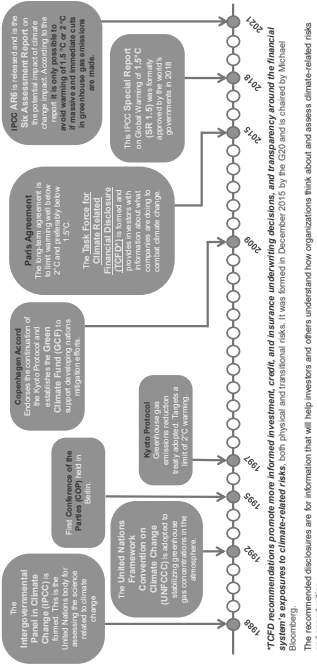
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"On the influence of carbonic acid in the air upon the temperature of the ground"
Arrhenius, 1896
In 1917, global warming hit 1°C above pre-industrial times (1850-1900).



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Timeline on Climate Change Targets



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Paris Agreement

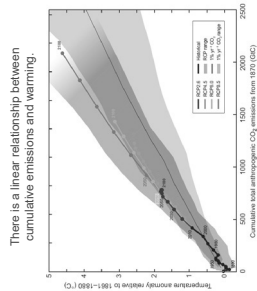
The Paris Agreement was a historic step in global efforts to combat climate change. Countries agreed to take action to hold global mean temperature increase well **below 2 °C and pursue efforts to limit warming to 1.5 °C**.

The Paris Agreement requires all parties to put forward their best efforts through “**Nationally Determined Contributions**” (NDCs). This includes requirements that all Parties report regularly on their emissions and on their implementation efforts.

The Representative Concentration Pathway (RCP) and corresponding temperature targets and emission trends are:

RCP	Temperature Target	Emission Trend
1.9	~1.5°C	Very strongly declining emissions
2.6	~2.0°C	Strongly declining emissions
4.5	~2.4°C	Slowly declining emissions
6.0	~2.8°C	Stabilizing emissions
8.5	~4.3°C	Rising emissions

Source: Guy Carpenter

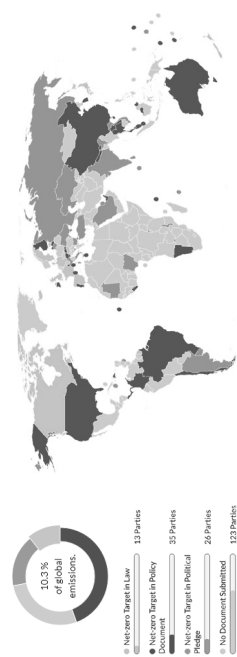


There is a linear relationship between cumulative emissions and warming.

29

How many Parties (and countries) have communicated net-zero targets?

> 74 Parties, representing 81 countries and 73.8% of global GHG emissions, have communicated net-zero targets.



Source: Guy Carpenter

TCFD - Key climate-related financial disclosure

TCFD recommends delivering granular data on informed investment, credit, and insurance underwriting decisions, and transparency around the financial system's exposures to climate-related risks, both physical and transitional risks. It was formed in December 2015 by the G20 and is chaired by Michael Bloomberg.

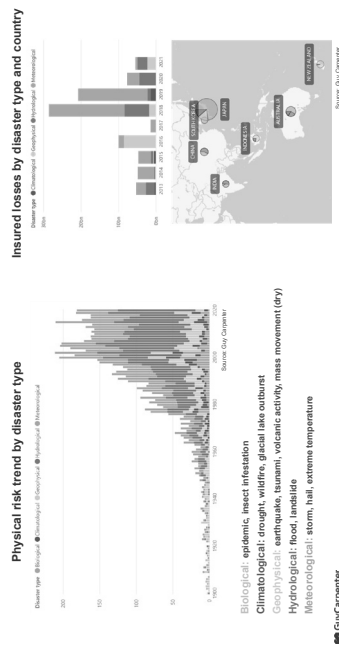
The recommended disclosures are for information that will help investors and others understand how organizations think about and assess climate-related risks and opportunities.

Governance	Strategy	Risk Management	Metrics and Targets
a) Describe the board's oversight of climate-related risks and opportunities, including climate-related risks and opportunities.	a) Describe the climate-related risks and opportunities the organization has identified over short, medium, and long term.	a) Describe the organization's processes for identifying climate-related risks and opportunities, including climate-related risks.	a) Disclose the metrics used to assess climate-related risks and opportunities in line with the organization's risk management process.
b) Describe management's assessment of climate-related risks and opportunities, including climate-related risks and opportunities.	b) Describe the impact of climate-related risks and opportunities on the organization's business, strategy, and financial performance.	b) Describe the organization's processes for identifying climate-related risks and opportunities, including climate-related risks.	b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 emissions, and the related risks.
c) Describe the organization's climate-related risks and opportunities, including climate-related risks and opportunities.	c) Describe the organization's climate-related risks and opportunities, including climate-related risks and opportunities.	c) Describe the organization's processes for identifying climate-related risks and opportunities, including climate-related risks.	c) Describe the targets used by the organization to manage climate-related risks and opportunities, including climate-related risks and opportunities.

Source: Guy Carpenter

Source: TCFD Final report, Recommendations of the Task Force on Climate-related Financial Disclosures, June 2017

Evolving Physical Risk in Asia-Pac Region



Source: Guy Carpenter

Transition risk arises from disruptions and shifts associated with the transition to a low-carbon economy, which may affect the value of assets or the costs of doing business for firms.

Transition risks may be motivated by policy changes, market dynamics, technological innovation, or reputational factors.



In December 2019, the Bank of England published a discussion paper, which sets out its proposed framework for the 2021 Biennial Exploratory Scenario (BES) exercise.

Climate risk variables		Macroeconomic variables	
Physical variables	<ul style="list-style-type: none"> • Global and regional temperature • Carbon price • Pathways • Frequency and severity of specific climate events in regions with material exposure (including air food, water, and land resources) • Longevity 	Transition variables	<ul style="list-style-type: none"> • Carbon price • Pathways • Frequency and severity of specific climate events in regions with material exposure (including energy prices) • Longevity
		Financial market variables	<ul style="list-style-type: none"> • Government bond yields for major economies • Corporate bond yields for major economies • Equity indices (S&P 500, Nikkei, etc.) • Credit spreads (AAA, BBB, etc.) • Exchange rates • Bank fails

[illegible]

Singapore Monetary Authority of Singapore

Severe Flood Scenario

In this scenario, an island-wide storm (extreme rainfall) has resulted in severe flooding in various parts of Singapore, with an average flood depth of 600mm. It is assumed that the application of this stress scenario is at the start of 2019.

- The Public Utilities Board (PUB) publishes a list of flood-prone areas/hotspots and the insurers are expected to assess their accumulations in those areas, then pick the top 10
- Determination of the PML is up to the insurer but they need to provide a description of the methodology used – MAS may further question them if the methodology / rationale is deemed inadequate
- The impact of the top 10 losses will then need to flow through the financial statements all the way to the Capital Adequacy Ratio

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US NAIC

The NAIC Climate Risk Disclosure Survey was created in 2009–10, to determine whether insurers were incorporating climate change into their risk management and investment strategies.

The NAIC Climate Risk Disclosure Survey continues on an annual basis with the participating states. Additionally, the NAIC has a Climate Change and Global Warming Working Group that is tasked with the following:

- Review the enterprise risk management efforts by carriers and how they may be affected by climate change and global warming;
- Investigate and receive information regarding the use of modelling by carriers and their reinsurers concerning climate change and global warming;
- Review the impact of climate change and global warming on insurers through presentations by interested parties;
- Investigate sustainability issues and solutions related to the insurance industry;
- Review innovative insurer solutions to climate change, including new insurance products through presentations by interested parties.

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US California Department of Insurance

In January 2016, recognizing the potential financial risks to insurer investments in thermal coal, oil, gas and utilities that rely on coal, oil and gas, California Insurance Commissioner launched the Climate Risk Carbon Initiative (CRCI). The CRCI has two main components.

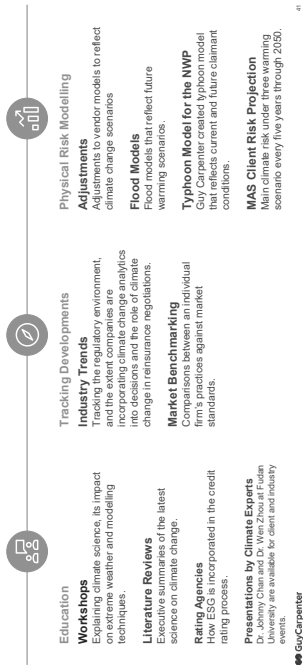
- A request that California-licensed insurers voluntarily divest from thermal coal enterprises, applicable to all California-licensed insurers (CDI Thermal Coal Divestment Request)
- Required financial disclosures by insurers of their investments in fossil fuel (thermal coal, oil, gas, and utilities) enterprises through a survey or "data call", which is applicable to California-licensed insurers with 2015 direct written premiums equal to or greater than US\$100m nationwide ("CDI Fossil Fuel Data Call")

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How Guy Carpenter Can Help

4

Climate Change Overview of our Offering



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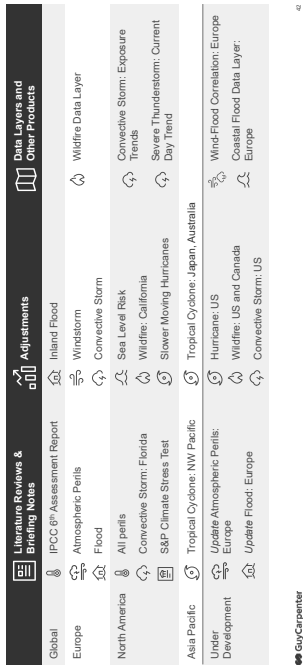
41

Research and Publications



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Climate Change Product Roadmap

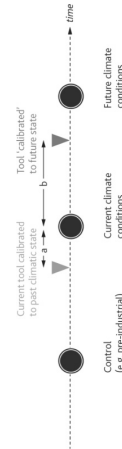


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Are catastrophe models reflecting the current risk?

Models are calibrated to the longest available observational time series in order to capture extremes. This assumption of non-stationarity may not reflect the current risk.



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UK PRA

PRA suggested two ways to adjust the model to reflect a future climate:

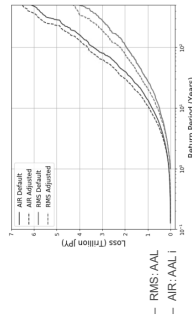
1. Rebuilding the model
 - A catastrophe model can be completely or partially rebuilt to reflect an adjusted climate, using different input variables and parameters.
2. Adjusting model outputs
 - Catastrophe model outputs such as the event loss table (which includes event losses and rates) for events and years in a model can be adjusted without having to rebuild the model.

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Adjustment Impact – Japan Typhoon

- Adjustment factors are applied to the AIR & RMS IED to give the following loss changes:



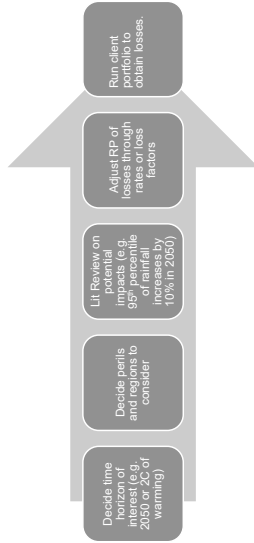
– RMS /AIR

– AIR /AIR

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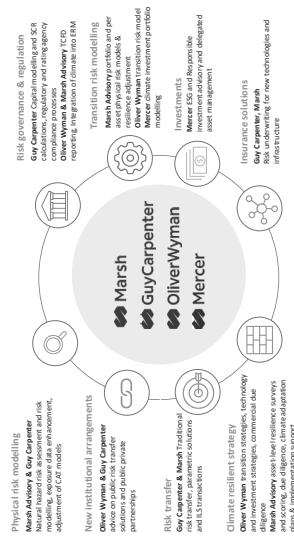
Model adjustment workflow for users rather than vendors



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The Broader Marsh McLennan Offering

A Full Spectrum of ESG-related Capabilities



Guy Carpenter

Research and Publication

Additional reports from across MMC on climate change.

Environmental, Social, and Governance Factors — A Rapidly Evolving Landscape

<https://www.mmc.com/investor-relations/publications/2020-climate-resilience-handbook>

2020 CLIMATE RESILIENCE HANDBOOK

<https://www.mmc.com/investor-relations/publications/2020-climate-resilience-handbook>

CHANGING NATURE UP RISK

<https://www.mmc.com/investor-relations/publications/2020-climate-resilience-handbook>

CLIMATE CHANGE: MANAGING A NEW FRANCHISE RISK

<https://www.mmc.com/investor-relations/publications/2020-climate-resilience-handbook>

UNDERSTANDING WHAT YOUR BUSINESS CAN DO FOR YOUR BUSINESS

<https://www.mmc.com/investor-relations/publications/2020-climate-resilience-handbook>

DRIVING ESG INVESTING IN ASIA

<https://www.mmc.com/investor-relations/publications/2020-climate-resilience-handbook>

CLIMATE CHANGE: THE ECONOMIC IMPACTS OF CLIMATE CHANGE

<https://www.mmc.com/investor-relations/publications/2020-climate-resilience-handbook>

SUNK COSTS: THE ECONOMIC IMPACTS OF CLIMATE CHANGE

<https://www.mmc.com/investor-relations/publications/2020-climate-resilience-handbook>

A business of Marsh McLennan

QUESTIONS?

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