

What does ESG mean for Underwriting and Insurance?

May 2022



Agenda for Today's Discussion

1. ESG overview and implications for key industries
2. Overview of relevant regulatory / industry bodies in relation to Net Zero underwriting
3. Quantifying emissions for insurance products
4. Design of ESG products and Net Zero insurance considerations
5. What does this mean for actuaries and what is our role?

Our ESG team members with you today



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ESG and climate change overview



The three pillars of ESG

For many people, ESG brings to mind environmental issues like climate change and resource scarcity. These form an important element of ESG, but the term means much more. It also covers social and governance issues.



Environmental

Climate change	Natural resources	Pollution & waste	Environmental opportunities
Carbon emissions	Water stress	Toxic emissions & Waste	Opportunities in clean tech
Product carbon footprint	Biodiversity & land use	Packaging material & waste	Opportunities in green building
Financing environmental impact	Raw material sourcing	Electronic waste	Opportunities in renewable energy
Climate change vulnerability			



Social

Human capital	Product liability	Stakeholder opposition	Social opportunities
Labor management	Product safety & quality	Controversial sourcing	Access to communication
Health & safety	Chemical safety	Community relations	Access to finance
Human capital development	Consumer financial protection		Access to health care
Supply chain labor standards	Privacy & data security		Opportunities in nutrition & health
	Responsible Investment		
	Health & Demographic Risk		



Governance

Corporate governance	Corporate behavior
Board	Business ethics
Pay	Tax transparency
Ownership	
Accounting	

Source: [MSCI ESG ratings key issue framework](#)

Social issues in insurance underwriting

Although the primary focus and main activities within ESG is within the environment pillar, there are significant social issues which should be considering within insurance underwriting. Specifically, emerging issues should be considered in products and services offered by insurers, in addition to considerations related to workforce culture, inclusion and diversity.

Proxy Discrimination

Insurance companies increasingly access greater data and rating information about potential customers in order to appropriately segment the market, charge a fair price for risk and remain competitive. The risk rating process has expanded significantly to include multiple different rating factors to assess risk, ranging from location and occupation through to income and credit scores. Factors to consider include:

- Identification of target markets for a product or service
- Underwriting and risk classification
- Pricing
- Zip codes or other geofactors
- Credit scores
- Education and occupation

Bias in Insurance Product Value Chains

The insurance value chain includes: product conceptualization, target market identification, pricing, underwriting, sales, marketing and distribution, claims management, inforce management, and operations. There is a significant protection gap for insurance in the US today, especially for vulnerable communities who likely need such protection the most. Factors to consider include:

- Systemic bias in the market segmentation/target market identification process
- Prevalence of diverse representation in distributions channels, e.g., agents and brokers
- Cultural barriers that make insurance less attractive to some groups, e.g., focus on funding college rather than paying a benefit
- Key challenges that need to be addressed to overcome systemic bias within the insurance value chain

Climate Change Impact on Demographic Groups

The impact of climate change will likely not be felt equally among various demographic groups. Impacting the health, longevity, and property of different groups unequally. Factors to consider include:

- Impact on mortality based on changes in the frequency of severity of extreme weather events
- Impact on morbidity based on changes in air quality due to higher temperatures / increasing frequency of wildfires
- Impact on mortality and morbidity based on changes in customer behavior - e.g. increased walking rather than driving / dietary changes to reduce environmental impact
- Impact on pension or wealth portfolios of individuals who are invested in industries potentially impacted by climate change

Overview of climate risks and opportunities

Climate changes risks and opportunities are typically considered across the following categories:

Transition & liability risks as a result of transition to a low carbon economy

Policy and legal

- Increased carbon policy/pricing of GHG emissions
- Enhanced emissions-reporting obligations
- Mandates on and regulation of existing products and services
- Exposure to litigation

Technology

- Substitution of existing products and services with lower emissions options
- Unsuccessful investment in new technologies
- Costs to transition to lower emissions technology

Market

- Changing customer behavior
- Uncertainty in market signals Increased cost of raw materials

Reputation

- Shifts in consumer preferences
- Stigmatization of sector
- Increased stakeholder concern or negative stakeholder feedback

Physical risks resulting from changes in the climate

Acute

- Increased severity of extreme weather events, e.g.
 - Floods
 - Wind storm
 - Storms and cyclones
 - Wildfire
 - Storm surge
 - Hail

Chronic

- Changes in precipitation patterns
- Changes in extreme variability in weather patterns
- Rising mean temperatures
- Rising sea levels

Opportunities

Resource efficiency

- More efficient resource use
- Move to more efficient buildings and modes of transport

Energy source

- Use of lower emission energy sources
- Use of supportive policy structures
- Use of new technologies
- Participation in carbon markets

Products and services

- Development/expansion of low emission goods and services
- Climate adaptation and insurance risk services

Markets

- Access to new markets
- Use of public sector incentives

Resilience

- Resource substitution/diversification
- Renewable energy programs, efficiency initiatives



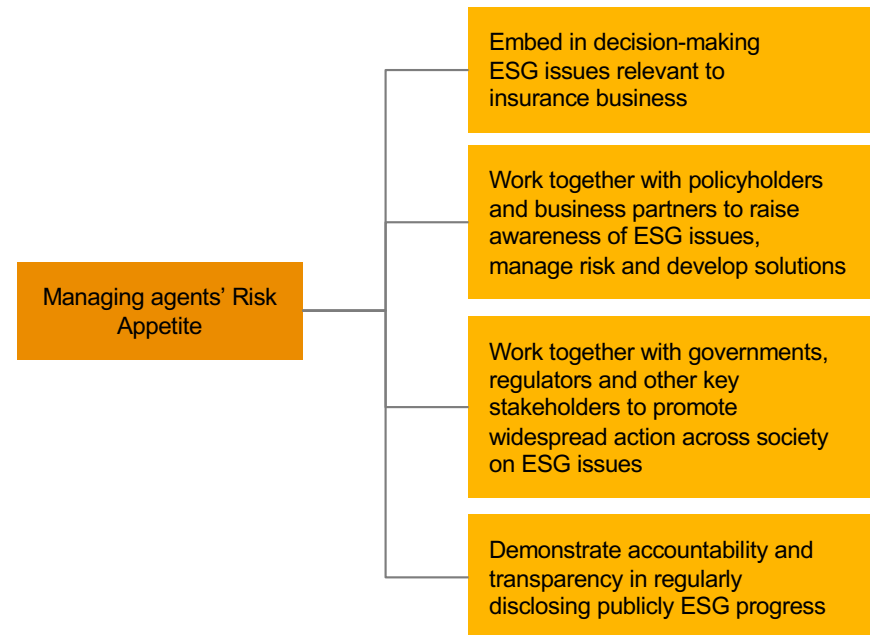
Overview of relevant regulatory / industry bodies in relation to Net Zero underwriting



Lloyd's approach to ESG and sustainable underwriting guidance

Lloyd's of London ("Lloyd's") joined the Net Zero Insurance Alliance in 2021 and has committed to transition all of its operational and attributable greenhouse gas emissions to net-zero by 2050. To achieve this target [Lloyd's expects managing agents](#) to incorporate ESG factors into their underwriting strategy and approach documents and play an active role in improving policyholder ESG performance.

- In line with the Paris Climate Agreement, Lloyd's of London has committed to be net-zero in the Corporation and market by 2050.
- Managing agents are expected create ESG frameworks throughout 2022 and begin embedding these frameworks in governance and incorporating into investment and underwriting policy in 2023.
- Embedding ESG framework can enable insurers to make robust decisions about their strategy and approach to driving sustainability across all business activities. Lloyd's sees this as a way for insurers extend their understanding of risks and seize potential business opportunities, bringing benefits to customers and other stakeholders.
- It is important for all insurers to consider their own risk appetite in the context of regulatory requirements and their own ESG ambitions. Identifying ESG related risks that are most material to the individual business can help set ESG risk appetites.
- A significant focus is also placed on partnerships with direct and indirect policyholders, to support them with their approach in transitioning from operations/activities that present the most material ESG risks to their business and to their insurer.

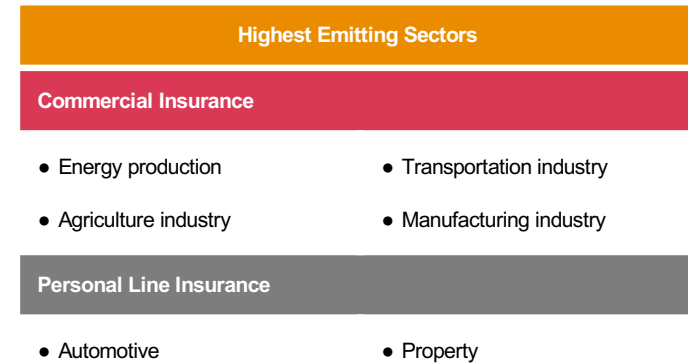


Source: (UNEP FI Principles for Sustainable Insurance)

The CRO Forum tested methodology for quantifying portfolio emissions

In 2020, The CRO Forum, a group of primarily European insurers aiming to advance risk management practice in the insurance industry, published *Carbon Footprinting Methodology for Underwriting Portfolios* in response to increasing legislative requirements and stakeholder demand for the quantification of carbon emissions in (re)insurance portfolios. This report explored methodology by line of business (LOB) and sector.

- The CRO Forum's report was the first industry-wide effort to discuss different carbon footprinting methodologies that may be applied to underwriting portfolios
- Methodology focuses around calculating the weighted average carbon intensity (WACI) of a portfolio expressed in tons CO₂ equivalent / \$M revenue.
- While obtaining quality emissions data on the insured can be challenging, The CRO Forum outlines potential data sources, gaps, and generally accepted country- or industry-level assumptions for areas where it is unlikely that more precise data will be consistently available or where the insurer has low exposure.
- This initial report recommends mapping premium volumes per sector and using that information to gain insight into how much insurance premium is exposed to the most carbon intensive sectors. Once this initial assessment is complete, The CRO Forum recommends a deep dive into the most carbon intensive sectors where there is the most significant exposure in the underwriting portfolio.



$$\sum_n^i \frac{\text{gross written premium of insurance transaction}(i)}{\text{total GWP volume of insurance portfolio}} * \frac{\text{insured's Scope 1 and Scope 2 GHG emissions } (i)}{\text{insured's \$M revenue } (i)}$$

Source (The CRO Forum, 2020)

Net-Zero Insurance Alliance (NZIA) brings insurers together around climate goals

The **NZIA** was convened by the UN Environment Programme's Principles for Sustainable Insurance Initiative (PSI) and is made up of a group of over 20 leading insurers which have committed to transitioning their insurance and reinsurance underwriting portfolios to net-zero emissions by 2050 (in line with the Paris Agreement to keep global average temperature increase below 2°C).

- Collectively, NZIA members represent more than 11% of world premium volume and over \$7 trillion in assets under management.
- There are several components to the NZIA's work: metrics and targets; policy and regulatory engagement; life and health insurance implications; methodology development.
- The NZIA recognized that in order to set meaningful net-zero targets and measure progress, standard (re)insurance portfolio emissions will need to have a consistent quantification methodology.
- To address this emissions quantification methodology gap, NZIA is collaborating with the Partnership for Carbon Accounting Financials (PCAF) to develop the first global standard to measure and disclose emissions attributable to insurance underwriting portfolios, or "insurance-associated emissions."



Current NZIA members as at April 2022

The NZIA released a whitepaper in April 2022 describing the insurance role in the net zero transition

The whitepaper, *“Insuring the net-zero transition”* set out how the insurance industry could play a role in the transition to net zero, including how insurers can think about metrics to use, and also what type of targets they can set and how these should be reported on externally.

The NZIA sets out five categories of targets for insurers to consider:

- **Emissions reduction targets:** Targets can be set on the GHG emissions from an underwriting portfolio, either on absolute or intensity-based metrics. In order to report and compare emission volumes associated to insurance underwriting portfolios, an absolute emissions metric is needed.
- **Portfolio coverage targets:** Targets could be set on the proportion of commercial clients that have set their own science-based targets, and the proportion of personal lines insurance that is written on “green assets” as defined by various taxonomies (e.g. EU Sustainable Finance Taxonomy). This has strong alignment with client engagement but does require consideration of client exclusion as a last resort
- **Sub-portfolio coverage targets:** Targets which refer to the amount of insurance coverage for specific industry sectors. Similar to portfolio coverage targets, this has a strong alignment with client engagement and can encourage solution development for new technologies needed for the economic transition to net zero.
- **Engagement targets:** Targets set on the level of engagement achieved with the most GHG-intensive clients, attempting to work with clients to reduce their emissions. For commercial lines insurance business, there are communication channels through brokers and risk management advisers who can facilitate this engagement, even though the insurance buyers might not be the strategic decision-makers. However, on personal lines insurance, there is often less direct interaction with customers due to the intermediated nature of sales (except direct online transactions), and insurers will need to develop innovative ways to work with clients to reduce their GHG emissions.
- **“Insuring the transition” target:** Targets set on the amount of insurance (e.g. gross written premium) being sold to companies who would represent 1.5°C and net-zero aligned portfolios, who are aligned with a green taxonomy (e.g. EU Sustainable Finance Taxonomy), and/or who are responsible for driving the transition. As multiple taxonomies develop in different markets, insurers should think about how to bring alignment across these frameworks

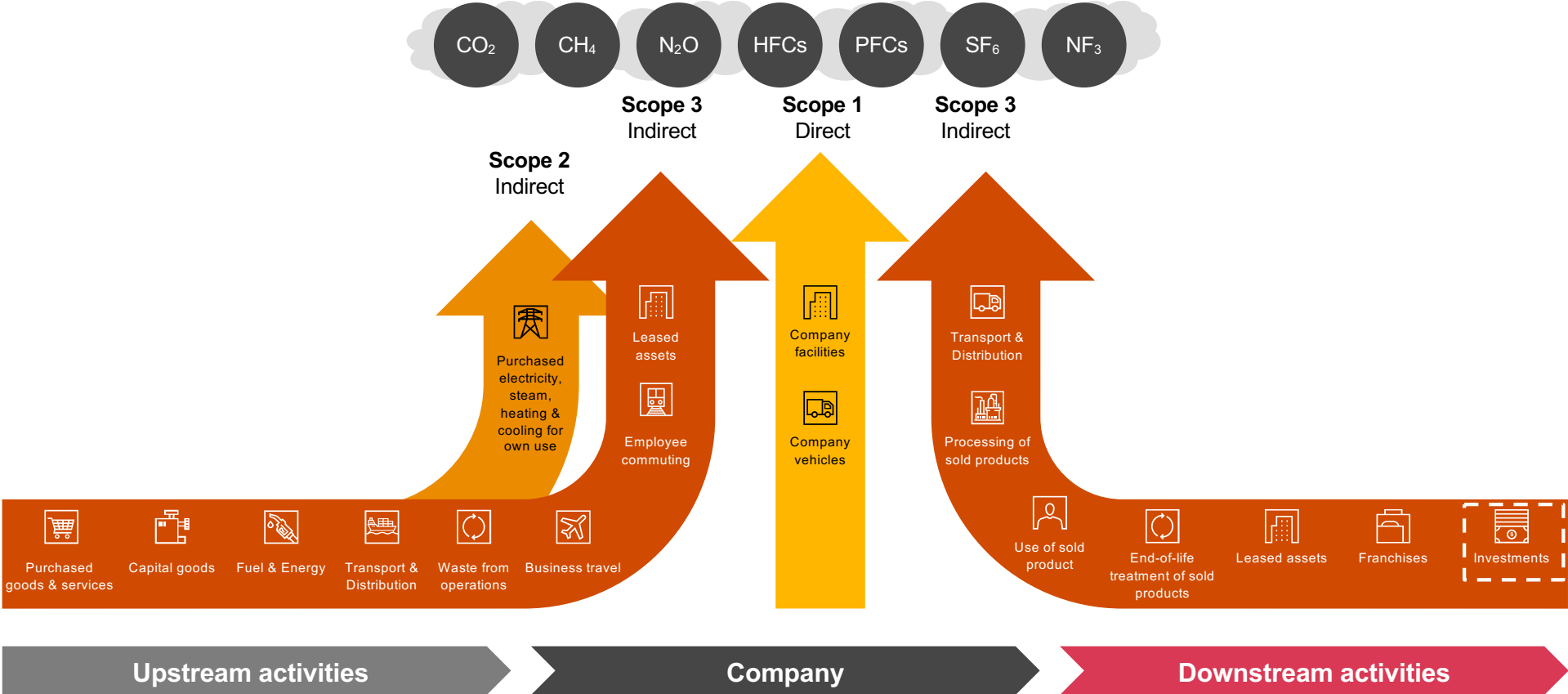
Insurers are recommended to set targets across all five categories for maximum impact.



Quantifying emissions for insurance products



Scope 1, 2 & 3 emissions overview



Developing PCAF emissions quantification methodology for insurance contracts

In March 2022 PCAF released a [scoping document](#) for quantifying insurance-associated emissions in collaboration with NZIA, a first step towards creating a global standard to measure and disclose insured emissions. A working group consisting of 16 insurers and other industry players were involved in developing this initial document.

- The 2022 PCAF document highlights the important role the insurance industry has to play in the transition to a low carbon economy, by first helping (re)insurers understand the climate impact of their underwriting decisions, laying the foundation to support the independent decarbonize insurance and reinsurance portfolios.
- The focus for the first methodology is on commercial lines insurance and personal motor lines covered by the (re)insurance business.
- While the work of The CRO Forum focused on WACI, initial PCAF guidance has focused on absolute portfolio emissions, with the option to expand into WACI if valuable.
- Methodology outlined in the 2022 scoping document draws heavily on the better- established methodology for calculation “financed emissions,” or the emissions associated with an investment portfolio, and takes on key challenges specific to quantifying insurance-associated emissions. One challenge is the issue of attribution, or the amount of insured emissions the insurance company should account for.



Measuring insurance-associated emissions: Attribution

Financed emissions associated with an investment portfolio are calculated using the capital interest held in the company; however, because a (re)insurer holds no capital interest in the client operations and no financial or direct operational control is exerted it is more challenging to attribute the percent of emissions that can be attributed to the insured's coverage.

$$\text{Financed emissions} = \text{Emissions of the issuer} \times \frac{\text{Invested amount}}{\text{Enterprise value}}$$

$$\text{Insured emissions} = \text{Emissions of insured client or asset} \times \text{Attribution factor}$$

Proposed attribution factors		
	Numerator	Denominator
Premium-based	Premium	Revenue
	Technical Premium	Annualized Enterprise Value (EV) Asset Value
Contract limit-based	Limit of liability	Revenue Enterprise Value (EV)
	Insured Value	Retention + Limit of Insured Total value of assets
Capital-based	Capital allocated to contract	Enterprise Value (EV)

Measuring insurance-associated emissions: Limitations

Initial PCAF documentation outlines a phased approach, which moves methodology and disclosure forward while acknowledging current limitations. Major limitations identified by PCAF are outlined below.



Data Availability

- While (re)insurers have access to their own share of premium or limits per customer, it is not feasible to get comprehensive figures of a company's total insurance spend. PCAF acknowledges these limitations and has developed a database of emission factors for physical activity-based emissions and economic activity-based emissions.
- In general, Scope 3 emission reporting is less advanced, with larger variability of availability and quality. Initial calculations of insurance-associated emissions should focus on the client's Scope 1 & 2 emissions. PCAF anticipates phasing in Scope 3 emissions as the methods advance and emissions data availability continues to improve.
- Collecting emissions data for personal lines insurance, outside of motor insurance, is challenging as there is very little standardization for personal emissions accounting and privacy concerns complicate data collection.



Double Counting

- The complex system of insurance, reinsurance and retrocession can lead to double counting.
- Double counting is a challenge that is inherent to emissions accounting. For example, a supplier's Scope 1 emissions are the purchasing company's Scope 3 emissions.
- PCAF emphasizes that the main goal of developing insurance-associated emissions are to increase transparency and develop a consistent and comparable way to measure emissions rather than to develop a global carbon balance sheet.



Communicating Results

In disclosing insurance associated emissions PCAF suggests highlighting the relevant information to ensure correct interpretation:

- Double counting or under counting of emissions should be avoided as much as possible among insurers and reinsurers as it can prevent the calculation of a meaningful industry total.
- It is more important that emissions reporting provides a baseline, on which relative Paris-aligned decarbonization trajectories can be reported over time. The base number is not necessarily important as insurance-associated emissions or financed emissions will not add up to a global carbon balance sheet.
- Insurance-associated emissions cannot be compared or added up with financed emissions, even within the same company, and need to be reported separately



Design of ESG products and insurance Net Zero considerations



Incorporating the net-zero transition into underwriting



Analyze sector impacts

Consider and understand the impacts that a net zero transition would have on sectors which you underwrite. Potential drivers may include:

- Financing of new green investments
- Asset Management & Operation under changing climate conditions
- New Development & Retrofitting of existing building and equipment
- Tax and compliance implications due to new law



Understand insurance implications

Use quantitative modeling resources to develop an understanding about how decarbonization will impact the insurance industry, for example:

- Shifts in energy demand patterns and resulting disruption
- Costs associated with complying with national and regional emissions reduction goals
- Potential failure of attempts to substitute high emitting materials and resulting financial losses



Implications for existing products

Apply insights gained to understand what this may mean for the company and existing products:

- Claims frequency and severity impacts
- New claim types emerging (e.g. latent liability climate change skills)
- Change in premium volumes written due to changing demands for products
- Changing regulations relating to existing product underwriting



Design new insurance products

Using underwriting expertise and company-specific knowledge consider potential for new insurance products such as:

- Underwriting low emission technology
- Risk advisory services
- Sustainable claims services
- Promoting behavior change amongst existing policyholders

Climate risk implications for key industries

Real Estate

Policy and Legal

- Stranding risk for buildings which do not comply with energy efficiency and emissions standards
- Costs associated with carbon taxes, energy carriers and increased reporting
- Higher probability of litigation linked to inaction in relation to carbon emissions

Technology

- High costs of transitioning to lower emission / more efficient building standards and cost of retrofitting current building stock
- Risk of adopting inadequate technology or failing solutions, leading to sunk costs

Market and Reputation

- Falling relative assets values if equivalent buildings transition faster and more effectively
- Opportunity to yield higher returns with “best in class” buildings being perceived as a competitive advantage

Physical

- More frequent and severe extreme weather events cause damage to buildings

Construction

Policy and Legal

- Costs associated with carbon taxes and increased reporting
- Higher probability of litigation linked to construction of buildings which are too carbon intensive / non compliant

Technology

- High costs of transitioning to lower emission / more efficient construction methods
- Potential failure of attempts to substitute high emitting materials, e.g. concrete
- High costs of investing in electric vehicles / machinery

Market and Reputation

- Falling relative assets values if equivalent building transition faster and more effectively

Physical

- Increasing frequency and severity of extreme weather events disrupt activities or shift new construction to new geographic regions
- Additional requirements to make buildings more resilient to the physical impacts of climate change

Energy

Policy and Legal

- Costs associated with complying with national and regional emissions reduction goals
- Higher probability of litigation related to sector's climate change impacts

Technology

- High costs of transitioning to lower emission / renewable / more efficient energy generation technologies

Market and Reputation

- Shifts in energy demand patterns as a result of changing climate, energy efficiency measures, and end user preferences
- Opportunity to help meet increased demand for electricity through the transition to a low carbon economy

Physical

- Perils such as sea level rise, heatwaves, worsening storms, or wildfire threaten existing infrastructure and energy resource supply

Illustrative impact on insurance from climate transition in Real Estate

Class		Large commercial property	Construction	Management liability	Professional Indemnity	Environmental liability
Transition drivers	New building materials and techniques	Unmodelled new construction materials & techniques, with increased propensity for hazardous materials on sites (e.g. lithium batteries). Increased building density resulting in increased aggregations.		Litigation linked to failure of building construction or maintenance to meet environmental standards	Professionals such as architects, engineers and civil engineers can face liability claims where they fail to take climate risks into account in their designs if foreseeable damage to buildings occurs in extreme weather events.	New building materials and techniques failing to provide environmental security.
	Net zero legislation & commitments	Litigation linked to non-compliant building materials or failure to adhere to more stringent planning requirements.	Litigation linked to failures to build to agreed standards (e.g. in accordance with net zero commitments).	Litigation linked to failures to accurately disclose climate-related information.	Negligent interpretation of climate-related legislation and regulatory guidance. Errors in EPC assessment impacting building valuation.	Claims frequency and severity rising with lower regulatory tolerance (e.g. rising clean-up and legal costs).
	Disposal, retrofit and resale changes	Different frequency and severity of losses during retrofitting.	Untested retrofit construction techniques.	Litigation linked to failures to follow revised disposal and retrofit standards.	Negligent interpretation of compliant disposal and retrofit guidelines.	Increased decommissioning and disposal exposures.
Opportunities		Increased premium to cover climate change exposures, or parametric covers in Property (e.g. covering reduce crop yields. Insuring policyholders against events of a set magnitude instead of insuring the value of losses.	New covers specifically for disposal and retrofit phases.	Innovative products to address climate-commitment related litigation.	Products specifically targeted at ESG professionals. More exposure / risk (premium) for professional advisors.	Risk management / prevention advice focused on the Real Estate industry and its environmental impact.



What does this mean for actuaries and what is our role?



Developing a sustainable underwriting approach - the role of the actuary

There are a number of ways that actuaries can be involved in the development of a sustainable underwriting approach, including establishing new processes and augmenting existing activities.

Client onboarding and distribution

- Additional ESG data required and sources of data, including validation
- New metrics and scoring derivation, and methodologies for their validation

Business planning, portfolio steering, and management information

- Setting appropriate ESG targets
- Considerations related to management information required for monitoring of ESG targets
- Additional qualitative ESG considerations as part of business planning

Underwriting and new product development

- Considerations of how underwriting processes and portfolio management factors can be updated to include ESG factors
- Considerations of how existing business strategies can be updated to incorporate ESG factors
- Additional focus on ESG and product innovation through new business
- Underwriting integration (including exclusions and / or road map to future exclusion)
- Updating existing underwriting standards to include ESG factors
- Monitoring of existing and new relationships to be improved to reduce ESG related risks
- Feedback loops to claims management of ESG factors and experience

Claims management

- Consideration of ESG factors as part of claims analytics process, to understand how new ESG-related risks are emerging
- Alignment of the claims journey with new ESG products and customers

Risk management

- Validation of ESG integration into underwriting models, and or consideration of new modeling exercises in relation to ESG factors
- Reinsurance coverage evaluation



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