



# Climate Risk Management in the Insurance Industry: Setting a Foundation

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This publication is sponsored by the members of the North American CRO Council. Council members represent Chief Risk Officers of leading insurers based in North America, who as a group, aim to provide thought leadership and direction on the advancement of risk management, and risk-based solvency and liquidity assessments. The content of this publication reflects the views of the majority of the Council, and not necessarily the opinion of every member.

## Introduction

Climate change is a reality that the world is responding to and has the potential to impact broad aspects of insurance business models over time. As Chief Risk Officers of the largest life and property and casualty (P&C) insurers in North America, it is important for us to provide guidance on how climate risks may impact the risks we underwrite and the approaches that should be employed for exploring which climate risks may impact the probability distributions of potential outcomes. In parallel with consideration of the risks, it is important to also explore the potential underwriting and investment opportunities that climate risks may give rise to. As the CRO Council's first publication on this topic, we have focused on establishing a foundation of core definitions, considerations, and perspectives. Our thought leadership and engagement in this space will be important for achieving alignment between economic, regulatory, social and other outcomes being pursued by various stakeholder groups.

## Defining the Risks and Key Terms

Before assessing the risk, it is important to obtain a robust understanding of how it may manifest in nature and society and then in turn, how this would intersect with risks underwritten or assumed. Climate risks are broadly classified as either "physical risks" or "transition risks", which we define below:

- **Physical Risk:** The potential negative financial impacts that may arise from an increase in the severity and/or frequency of extreme weather events (acute risks) and long-term shifts in climate patterns

(chronic risks) caused directly or indirectly by climate change

- **Transition Risk:** The potential negative financial impacts that may arise from a transition to a low-carbon economy, including policy and legal, technology, market and reputation risks<sup>1</sup>

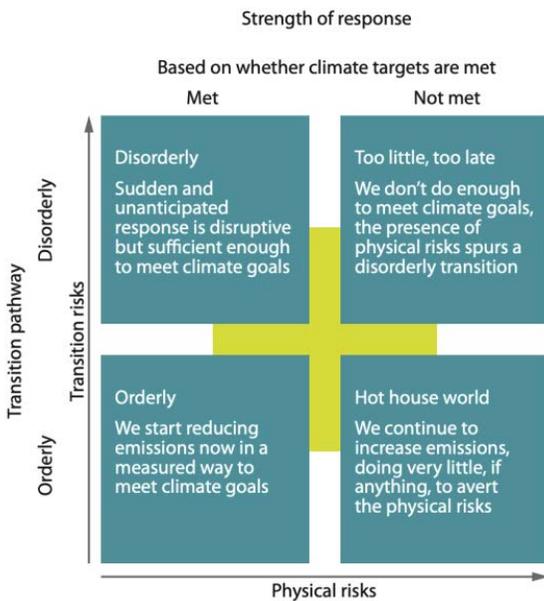
Some bodies have embraced the idea of classifying "legal risks" or "liability risks" as a third broad category while others capture it as an element of transition risks. While neither is wrong, we have embraced the latter approach for purposes of this paper. When thinking of these categories, it is important to recognize and account for the relationships among them. Specifically, one must consider how the degree of action or inaction to transition toward lower carbon economies may impact the degree of physical risks that arise or conversely how the frequency and severity of physical risks experienced may influence transition efforts. In either case, the degree of physical and/or transition risks may also be heavily dependent upon the time horizon under consideration. Finally, one must also consider and recognize that the factors that have the potential to drive societal shifts toward lower carbon economies—e.g., political outcomes, policy incentives, new technology, and court rulings—are subject to significant uncertainty.

The illustration below, which has been developed by *The Network for Greening the Financial System (NGFS)* depicts the relationship between the risks:

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<sup>1</sup> From the Financial Stability Board's Task Force on Climate-Related Financial Disclosures ("TCFD") recommendations

### NGFS Climate Scenarios Framework



Source: NGFS (2019a).

Source: [www.ngfs.net](http://www.ngfs.net)

### How Climate Risks May Impact Insurers

Climate risks will increasingly influence how the existing range of risks insurers underwrite emerge. Therefore, as part of ongoing risk management practices, insurers should assess to what extent, if any, they could be impacted by climate risks over both the short and long term. Insurers should consider that the impact of climate risk is transversal such that it may impact many areas of an insurers business and risk profile and therefore will need to be managed across risk disciplines.

- **Investment Risk**

Investment portfolios are exposed to both transition and physical risks, with the former being the more prominent of the two. For transition risk, several difficult-to-predict factors will inform the pace and breadth of the shift toward low carbon economies and therefore the degree to which an insurer may incur losses on its asset holdings. The potential for sudden developments on the transition front

could result in unexpected losses that manifest over a relatively short time horizon. The insurer should consider the time horizon for potential transition and physical investment risk exposures in the context of the duration of its liabilities and its asset liability management (ALM) program. Different types of assets will have different exposures to climate risks. For example, commodities are often associated with carbon-intensive industries, and may be more volatile as transition risk comes into play. Foreign exchange, by comparison, has much less direct exposure to climate risk.

Physical risks must also be considered, especially for investments in real estate or other physical assets in regions that may experience more frequent and/or severe weather events. Climate change may drive increased losses for such assets, particularly over longer time horizons as the probability of such outcomes increases. However, an assessment of the exposures should consider mitigating factors that could temper losses (e.g., insurance coverage for the asset, storm proofing measures for the asset and/or community, and progress of transition efforts). As firms review their exposures, they will also need to review their asset liability management strategies to determine where adjustments may be needed.

To the extent that an insurance company uses outside investment managers, there is a potential to promote incorporation of the insurer's approach to climate risk in the management of their investments through the mandates provided to those managers. Changes to correlations in the portfolio from climate risk are also important to consider. While such changes are difficult to assess given the

lack of data and experience on how to forecast them, insurers will need to develop new tools to obtain insight into how their assets could be impacted. Work in this space is likely to grow in sophistication as the industry takes up the challenge.

While we are first and foremost focused on understanding how the risks may impact the probability distributions of potential outcomes, insurers must also consider the potential opportunities climate change may generate when evaluating their existing portfolios and considering future investments.

- **Insurance Risk (Claims Experience)**

From an insurance risk perspective, the potential impacts of climate change will vary by line of business and time horizon (i.e., short-term versus long-term). From a physical risk perspective, lines of business related to the protection of physical assets are likely to experience adverse outcomes that worsen over time – especially for more vulnerable regions. Risk professionals will play a key role in preparing for and quantifying the evolving nature of these risk exposures and influencing strategic action to protect policyholders and shareholders. Insights and actions identified, such as the potential need for modeling revisions, pricing and underwriting changes, can also serve as important signals to the market and society which in turn may help drive broader action on the risk mitigation (e.g., storm proofing assets) and sustainability front (e.g., policy maker action). Longer term physical risks and in certain cases transition risk, can negatively impact the reputation and legal liability of insureds leading to more adverse claims experience.

Adverse impacts to morbidity and mortality related lines of business, which are typically long duration in nature, are expected to manifest over a longer, as yet-to-be determined time horizon. On the liability side, changes in pathogens around the world (e.g., broader migration of mosquitoes carrying diseases) and more frequent heat waves are examples of climate related changes that could impact long-tailed risks like mortality. It is important to note the need to consider potential favorable offsets to longevity risk assumed. The severity of the impacts will be directly informed by the transition pathway societies pursue—i.e., more substantive transition efforts could lessen the physical impacts experienced and vice versa.

- **Operational Risk**

The potential for increased interruptions to company operations as a result of physical risks must also be considered. For example, extreme weather has the potential to damage buildings or worksites therein interrupting business and damaging assets (e.g. wildfires could impact electricity availability and coastal operations could be impacted by more frequent flooding). In these cases, firms will need to ensure that their business continuation plans include appropriately robust consideration of climate risks. As we have learned during the recent COVID-19 pandemic, firms may be exposed to multiple events happening at the same time across multiple geographic locations. The potential for disruptions to the firm’s supply chain also requires careful consideration. It is important to identify a variety of strategies to maintain business resiliency under such circumstances and

engage in discussions with relevant third parties regarding their plans for mitigating these risks.

- **Model Risk**

As with other risks, the models underpinning climate risk assessments are complex and require expertise to develop, maintain, and review. The emerging and uncertain nature of how climate change and the related policy response will manifest creates additional challenges that must be accounted for both in developing models for assessing the risks and, perhaps more importantly, when interpreting and using the model output. As recognized by the NGFS in their June 2020 publication of Climate Scenarios for central banks and supervisors, today's climate scenario modeling is subject to significant gaps that can be categorized into scope, coherence, and uncertainty. Insurers similarly face challenges with scenario modeling to assess their exposure to climate risks. Accordingly, insurer models will likely be subject to ongoing development and review as climate experts and the insurance industry gather more data regarding climate change and its impacts.

- **Economic Risk**

The potential effects of climate risks on economic growth should also be considered, particularly over longer time horizons. For example, more frequent and severe natural catastrophes could curtail productivity and economic output of various regions of the world (e.g., droughts in farmlands, flooding of coastal economic centers) or trigger material

losses in personal wealth (e.g., plummeting real estate values in highly exposed regions). Efforts to transition to lower carbon economies could result in price volatility from a carbon tax and/or also trigger a decline in overall consumer consumption of goods and services.

In addition, as markets realize the impact of climate risk on the broader economy, there could be increased market volatility as well as material changes in global interest rates.

- **Strategic Risk**

Ensuring our companies can withstand extreme events is an essential part of our role as risk professionals however, ensuring they can adapt, grow, and excel in a changing world is also highly important; thus, consideration of the strategic implications of emerging risks is critical. The risks associated with climate change will present both challenges and opportunities, particularly over the long-term. Insights and analysis of the risk professionals within an organization will serve as a vital underpinning for a number of critical decisions—e.g., determining how pricing may need to evolve or whether a product line or market remains attractive or insurable.

- **Reputational Risk**

From a reputational perspective, risk managers must consider the perspectives of all stakeholders. Given the various time horizons over which climate risk must be managed, it is very important for insurance companies to maintain consistency between what they state they are doing (e.g., saying they're going to be carbon-neutral by a certain date)

and what their business practices actually result in (e.g., offering coverage for carbon-intensive sectors). As risk managers, it is important to monitor trends in regulation, public sentiment and public policy along with the tools or metrics that stakeholders are considering when evaluating an insurer's climate risk related actions (i.e., ESG ratings, climate disclosures, etc.). Conversely, in a polarized political environment, a firm could also be perceived by some stakeholders as taking an overly aggressive stance on climate-related issues. More broadly, risks related to talent acquisition and shareholder activism could also fall in this category.

### **Establishing an Enterprise-wide Perspective**

From an enterprise perspective, insurers should develop a holistic understanding of how, and the extent to which, climate risks may affect them. For example, some firms have conducted an exercise to look across the firm and catalog the potential risks associated with climate change. Based on this exercise, the firm can develop long-term strategies for addressing these risks, including developing action plans, and/or updating the risk appetite statement, as appropriate.

In most cases, existing reporting and governance infrastructures can and should serve as the vehicles for addressing climate risk—e.g., incorporating consideration of climate risks within the Own Risk and Solvency Assessment (ORSA) or within existing Board Committees and reporting processes.

### **Approaches and Methods for Assessing Exposure to Climate Risks**

Understanding how climate risks intersect with the operations of the insurer will facilitate

pursuit of more appropriately designed risk assessments that target the potential exposures and objectives of the company, while remaining conscious of cost/benefit considerations. As an overarching point, the emphasis of climate risk assessments should be on obtaining an understanding of how an insurer may be affected by the risks rather than the methodology used to conduct the assessment. Factors to consider when selecting an approach include the objective of the exercise, risk exposure(s) being assessed, time horizon of interest, and level of experience conducting climate risk assessments.

There are two broad categories of approaches for assessing exposure to climate risks – quantitative assessments and qualitative assessments. While the two approaches are often considered independently, they can be blended as part of an organization's effort to develop a holistic assessment of how climate risks may impact the company.

- **Quantitative Assessments**

Quantitative assessments aim to deliver a measure of the potential impact climate change may have based on a given set of assumptions (e.g. stress testing and scenario analysis to explore the impact under a severe adverse set of assumptions) for a targeted confidence level. Use of natural catastrophe modeling serves as a ready example of how quantitative approaches can be used to explore physical risks however, they can also be used to assess the potential impact of transition risks. For example, "climate foot printing", which aims to determine the extent to which an investment portfolio is holding carbon intensive assets and/or investments exposed to physical risks (e.g., real estate in flood prone regions), is becoming an

increasingly important exercise for insurers to consider.

It is important to acknowledge that given the uncertainty surrounding climate risk (e.g. dependency on assumptions that cannot be anchored to reliable historical data or experience), the value of quantitative measures, particularly over longer time horizons, can be limited. More broadly, there is still much to learn when considering how various climate pathways may manifest. For example, understanding how insurers will be affected requires them to consider how climate risks may disrupt the business models of the issuers they invest in (and to what extent current credit spreads and valuations may already account for the risks) and the customers/societies they serve. The challenge is compounded when one considers projecting the evolution of climate risks and related impacts to diverse business models over long time horizons (e.g., 20–30 years or more).

While uncertainty presents a challenge there can still be value in aiming to derive a range of potential impacts using quantitative methodologies provided end users recognize and account for the limitations of the resulting data.

- **Qualitative Assessments**

Qualitative assessments also aim to deliver a measure of the potential impact climate change may have. However, in place of assigning a narrow dollar impact that results from a set of assumptions the target output is a narrative of the potential impacts the pathway could have – e.g., the business implications, risk management actions that could be considered, etc. Qualitative tools are

particularly important in light of the challenges surrounding quantitative analysis discussed above. They may be used by insurers aiming to do a comprehensive assessment of climate risk across different aspect of their businesses or may also be used in a bottom-up approach (e.g. to analyze specific investments, assess specific risk or to aid in strategy or planning). Either way, they can provide insights and direction for risk managers aiming to identify and mitigate climate risks.

### **Use and Interpretation of the Results**

An understanding of the assumptions underpinning assessment exercises is critical for determining how the results can and should be interpreted and used. The highest priority for climate risk assessment is to determine if actions are needed to ensure the interests of policyholders and shareholders are protected, which is a common area of focus between risk managers and insurance regulators. Beyond the protection of policyholders and shareholders, climate risks assessments can and should be used to facilitate business and strategy planning—especially over longer time horizons.

The insights gained from climate risk assessments and resulting insurer actions (e.g., impacts to risk pricing, insurability, investment decisions, etc.) may drive broader action across stakeholders such as driving the evolution of business models to more sustainable outcomes. While this could be a positive step for moving societies toward low carbon economies, such actions would be driven by risk based motives as opposed to public policy. Stakeholder groups, including regulators and policymakers must not conflate such actions or mandate them in cases where they are not warranted or run counter to the underlying economics of the insurance

business model (e.g., government mandates for the private sector to offer certain coverages).

### **Next Steps**

Insurers are continuously developing an improved understanding of climate risks relevant to their businesses. While the risk management practices employed will likely remain broadly consistent with insurers' existing well-developed risk management programs, the modeling of climate risk will evolve as existing limitations are addressed. Correspondingly, the ability to obtain substantive insights and effectively deploy the information obtained from assessments will

likely evolve. Dialogue among industry risk professionals and key stakeholders, including investors, policyholders, regulators and standard setters is essential for fostering a deeper understanding of the potential risks, advancing best practices, and ensuring that regulatory approaches are aligned with effective risk management. The CRO Council will continue to play an active role in promoting thought leadership, educating stakeholders and engaging with key bodies to advance these objectives and the ability for the insurance sector to protect its policyholders and meet the insurance needs of future customers.