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P&C Insurance and Reinsurance – Global

# Climate change risks outweigh opportunities for P&C (re)insurers

## Summary

The property and casualty (P&C) insurance and reinsurance sectors have significant exposure to the economic consequences of climate change. Risks arise primarily from weather-related catastrophe exposures, potential claims on liability policies, and investments. To a lesser degree, climate change also presents opportunities for firms to introduce new products and expand existing products.

» **Negative credit impact for P&C (re)insurers from correlated risks.** Not only are the effects of climate trends on the frequency and severity of catastrophic events difficult to predict, but the correlation of climate-exposed risks that span P&C (re)insurers' balance sheets increases the magnitude of potential losses.

» **Climate change adds an extra layer of risk modeling and pricing uncertainty.** Climate scientists expect the frequency and severity of weather-related catastrophe events to increase at higher temperatures and/or greater extremes in temperatures and as sea levels rise. Although P&C (re)insurers are able to reprice insurance policies annually to mitigate this risk, the potential for increasing incidence of catastrophe losses linked to climate change creates additional underwriting and risk management complexity.

» **Climate change litigation presents a risk under liability insurance policies.** (Re)insurers are exposed to potential losses from liability insurance provided to corporations that face litigation alleging damages resulting from carbon emissions, and from companies' failures to disclose the risks of climate change. These policies could lead to significant risk accumulation across multiple insured clients and products.

» **Asset risk associated with carbon transition and regulation is modest.** P&C insurers face some risks linked to the potential devaluation of investments in carbon-related firms – energy and utility companies, for example – resulting from increased regulations on carbon emissions and the ongoing transition to a lower carbon economy. However, these risks are modest given P&C (re)insurers' low asset leverage and well diversified investment portfolios.

» **Providing (re)insurance to entities affected by climate change is a growth opportunity.** As governments, businesses and individuals become more aware of the financial and economic risks arising from climate change, insurance usage will likely increase as part of comprehensive risk adaptation strategies, providing growth opportunities in the years ahead.

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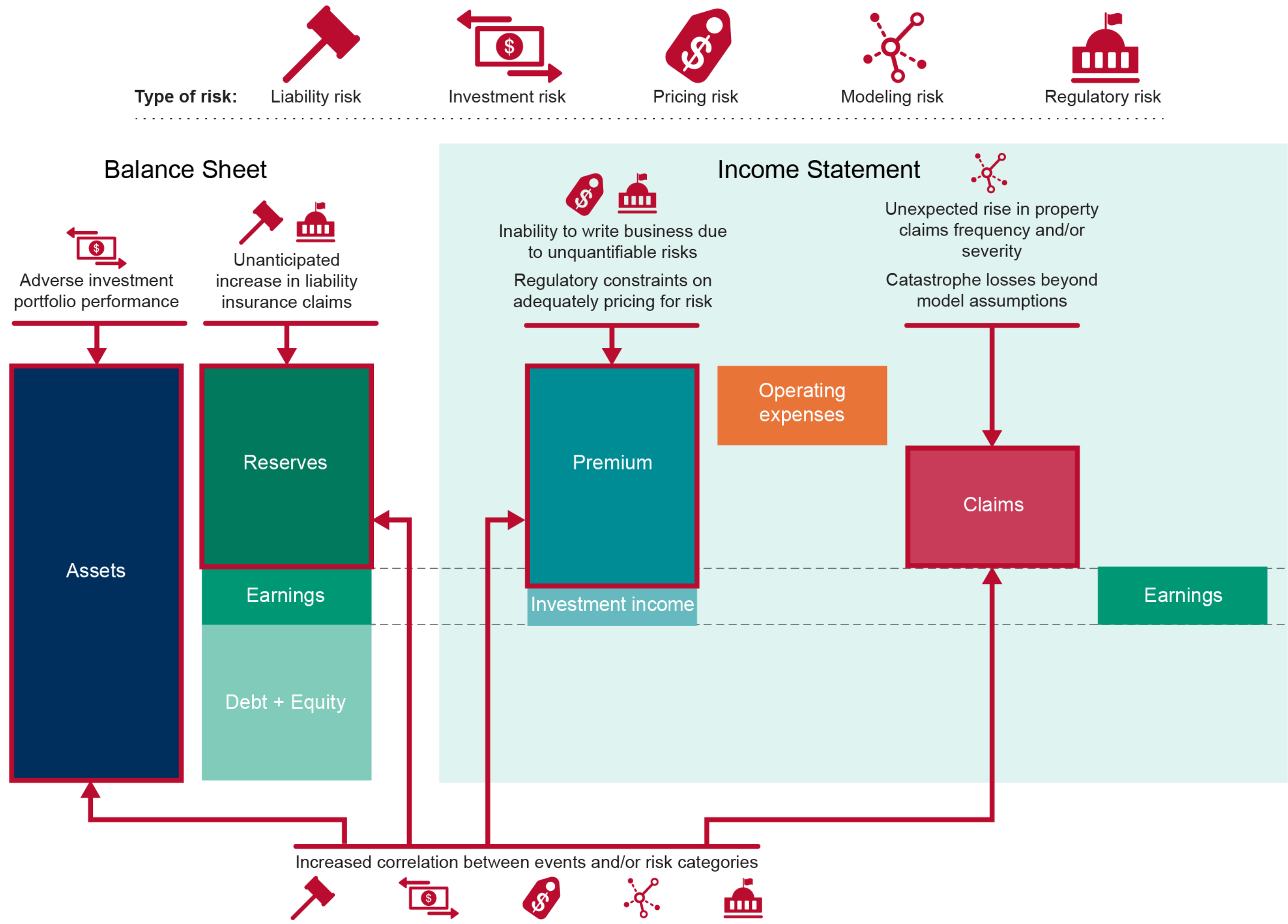
## Negative credit impact for P&C (re)insurers from correlated risks

We see climate change as having a net negative credit impact on the P&C insurance and reinsurance sectors as the risks associated with climate change outweigh potential opportunities. Not only are the effects of climate trends on the frequency and severity of catastrophic events difficult to predict, but the correlation of climate-exposed risks spans both sides of balance sheets and a number of line items on income statements for P&C (re)insurers (Exhibit 1).

Although catastrophic events have always been a key risk contributor to P&C insurers and reinsurers, the continued increase of insured property values along coastlines and the increased frequency of weather-related catastrophic events will magnify the volatility for these firms and result in a number of risk management challenges associated with the assessment, measurement and mitigation of catastrophic risks.

Exhibit 1

**P&C (re)insurers' exposure to climate change**




*Source: Moody's Investors Service*

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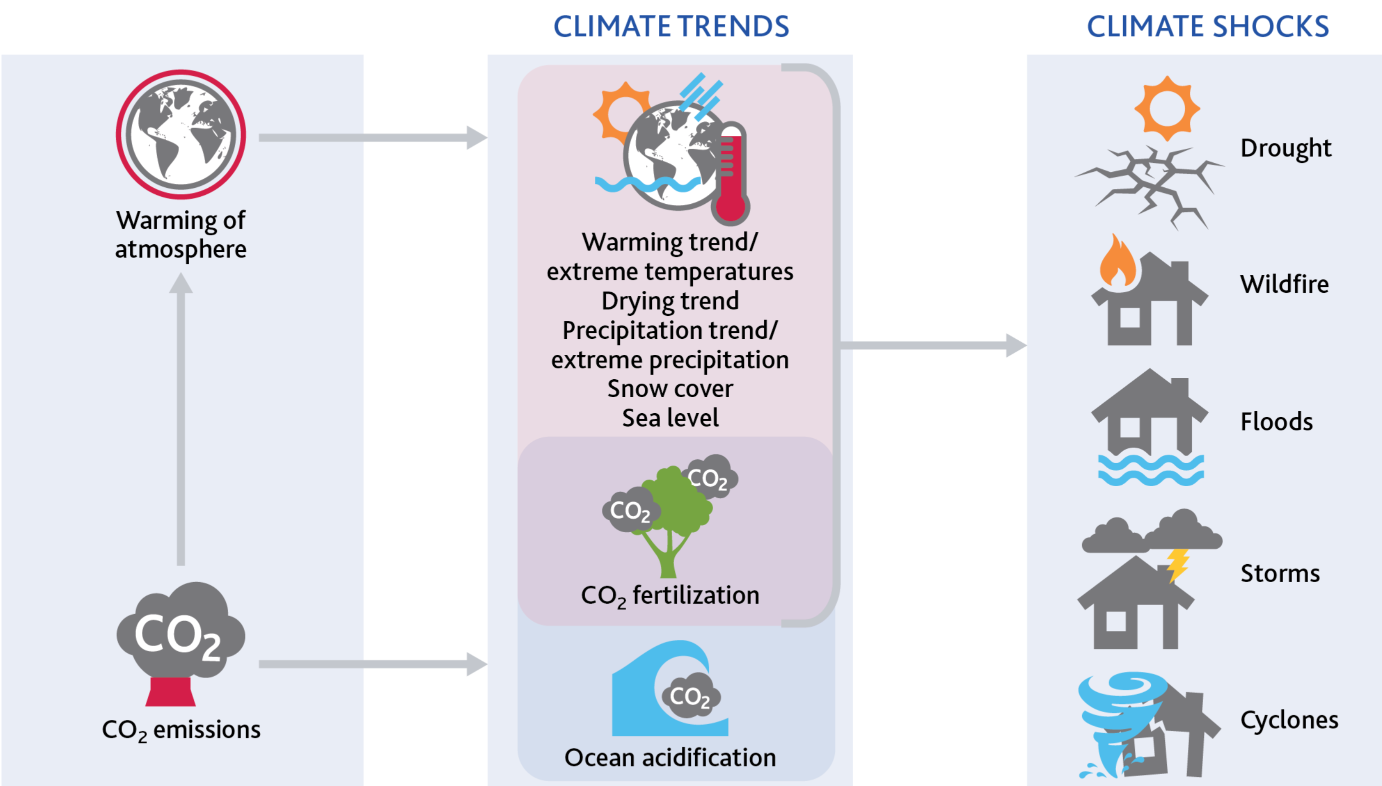
P&C (re)insurers will see other challenges stemming from global climate change. Among these are financial risks from the transition to a lower-carbon intensive economy, including the potential for certain invested assets to fall in value, as well as potential liability risks arising from legal disputes to establish liability claims against those alleged to have been responsible for climate change.

We expect P&C (re)insurers to continue to adapt to the economic and regulatory challenges that result from climate change, as these firms can mitigate these risks through their ability to reprice risk on an annual basis, and by further diversifying their underwriting exposures and investment portfolios. However, the volatility resulting from the risks associated with climate change favors larger insurers and reinsurers due to their greater capital resources and risk management capabilities, while smaller, more geographically concentrated firms may struggle to adequately adapt to these new challenges.

## Incremental climate trends exacerbate extreme climate shocks

The climate change risks of P&C insurers and reinsurers are dominated by weather-related physical events. To a large extent, **climate shocks**, or acute physical events such as droughts, wildfires, convective storms, floods and tropical cyclones comprise the majority of this risk. However, (re)insurers are also impacted by longer term **climate trends**, or gradual, multi-decade (or multi-century) climate phenomena, that may exhibit little visible change from one year to the next, such as the trend of warming, as illustrated by rising mean temperatures globally, and other changes such as a decrease in cold temperature extremes and an increase in warm temperature extremes. Climate trends are distinct from climate shocks, but they are interconnected (Exhibit 2). Although the occurrence of a singular, isolated climate shock event may not be the direct result of climate change, the Intergovernmental Panel on Climate Change (IPCC)[1] notes that the probability and frequency of such shock events will increase at higher temperatures and/or greater extremes in temperatures and precipitation.

Exhibit 2
**Climate trends can influence the frequency of climate shocks**




*Source: Moody's Investors Service*



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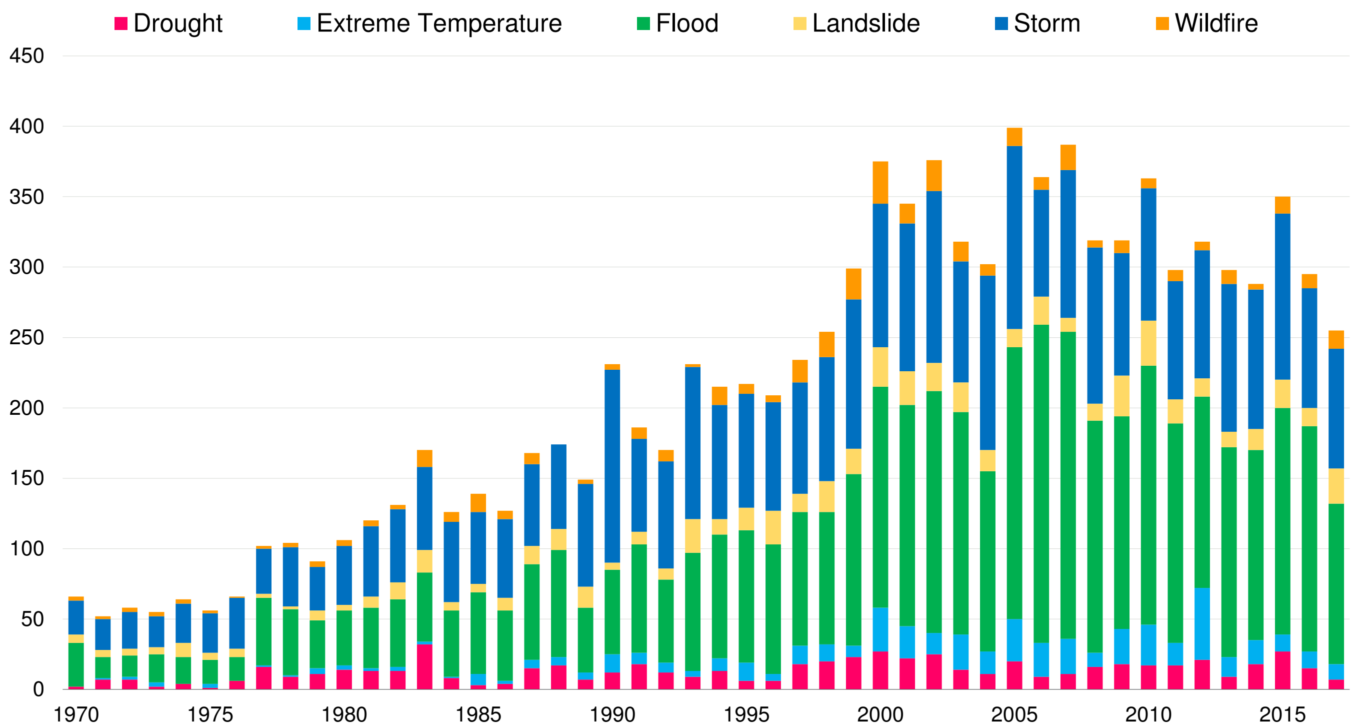
## The frequency of catastrophe events has significantly increased

The number of annual natural catastrophe events has spiked higher in recent decades, from around 60 events annually in the early 1970s to an average of 310 events annually during the past 10 years (Exhibit 3).

Exhibit 3

**Frequency of weather-related natural catastrophe events trending higher**

**Number of global natural disaster events**



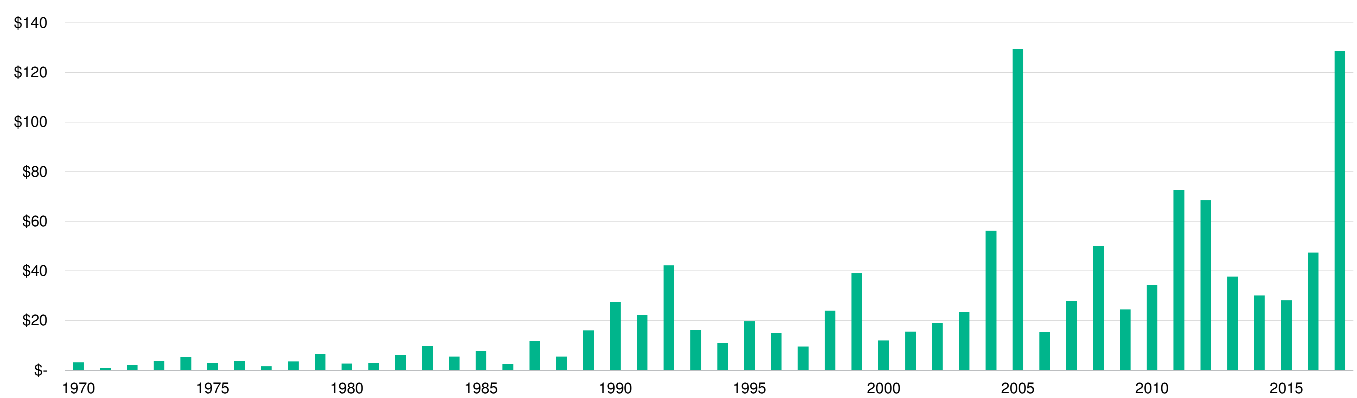

*Sources: EM-DAT: The Emergency Events Database - Universite Catholique de Louvain, Moody's Investors Service*

Likewise, the amount of insured losses from weather-related catastrophic events, which include tropical cyclones, convective storms, floods, extreme temperatures, droughts and wildfires, has also trended strongly higher even after controlling for inflation (Exhibit 4).

Exhibit 4

**Insured losses arising from weather-related catastrophes have trended higher**

**USD Billions**




Losses are inflation adjusted at 2017 prices

*Source: Swiss Re Institute*



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Although the higher insured losses reflect increased levels of insurance penetration (particularly in emerging markets) and a marked increase in the insured value of real estate and other assets in exposed areas, they also reflect the effects of climate change, including more frequent and severe storms, extreme weather events and the impact of rising sea levels on coastal flooding.

## Climate change adds an extra layer of risk modeling and pricing uncertainty

Determining how climate change affects the catastrophic risk associated with natural hazards is a key area of focus for P&C (re)insurers. Although assessing, pricing and managing catastrophic risk exposures is a core competency of these firms, historical catastrophe events have demonstrated that actual losses can differ materially from anticipated, or modeled, losses as a result of the limitations of catastrophe models and the assumption parameters they use. Although catastrophic loss events are studied in an effort to improve future iterations of catastrophe exposure models, these models have inherent limitations that subject (re)insurers to unexpected underwriting losses from extreme events.

The ability of insurers and reinsurers to reprice risk on an annual basis somewhat mitigates this risk. However, as climate change trends create an unpredictable environment that makes assessing and pricing risk more difficult, it becomes more likely that pricing trends will consistently lag actual loss experience, meaning that the industry would be playing ‘catch up’ in raising premiums to match increasing losses.

Market dynamics can change dramatically following large loss events, particularly when catastrophe models have significantly underestimated potential losses. For primary insurers, regulatory pressure could limit rate increases for certain products, even as the cost of reinsurance rises, pressuring companies' underwriting margins. If insurers are unable to obtain adequate pricing to meet their return targets, companies will seek to exit the business and exposures could migrate to government-backed risk facilities which have a lower cost of capital. For reinsurers, the ample supply of reinsurance capacity in both the traditional and alternative markets places a ceiling on post-event rate increases.

## Climate change litigation presents a risk under liability insurance policies

Litigation associated with climate change represents an emerging risk for P&C (re)insurers because they have significant exposures under various types of liability insurance policies provided to corporate clients. A number of lawsuits have been filed against large energy and utility firms seeking to establish liability for carbon emissions and the associated impact on climate change. One recent example is a lawsuit filed in US District Court by New York City against the five largest publicly traded oil companies seeking damages for costs incurred by the city to mitigate the impact of climate change. To date, the legal theories underpinning these legal actions have been unsuccessful in establishing liability. However, we expect plaintiffs to continue to use litigation as an alternative to legislation and regulation to bring about change. To the extent these legal theories gain traction by establishing liability against carbon emitters, climate change would represent a substantial exposure to (re)insurers.

Another threat to insurers arises from shareholder derivative claims for financial losses under professional liability policies resulting from the failure of corporations to mitigate risks associated with climate change, or the inadequate disclosure of climate change exposures. Recently, Exxon Mobil Corporation (Aaa stable) has been subject to an SEC investigation into whether the firm and its auditors committed securities fraud by filing financial statements that may contain misleading or deceptive representations to investors about the impact of climate change on the company.

We note that the exposure of (re)insurers to such litigation actions is not necessarily subject only to losses in court. Firms subject to climate change lawsuits could settle cases out of court as a result of political or reputational pressures. In such cases, costs related to the legal defense, as well as indemnification for losses, are routinely covered under liability insurance policies.

## Asset risk associated with carbon transition and regulation is modest

The main form of carbon transition risk for P&C (re)insurers is the potential devaluation of carbon-related financial assets. Here, investments in carbon intensive sectors, such as energy and utilities, are at higher risk of devaluation or impairment because of the potential for companies operating in these sectors to be confronted with higher taxation, more stringent carbon emissions regulation and other contingent liabilities. Such devaluations would adversely affect the performance of (re)insurers’ investment portfolios, placing pressure on profitability.



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For P&C (re)insurers, we believe this risk remains modest for several reasons, including the low asset leverage employed by the P&C insurance business model, the preponderance of low-duration, investment grade fixed income assets within investment portfolios, and investment guidelines that target broad diversification of investment portfolios.

We note that a number of (re)insurers, particularly those domiciled in Europe, have embraced "responsible investing" and have built environmental, social and governance (ESG) sustainability guidelines into their investment policies. Such policies include the transition to broad-based ESG investment benchmarks, creating investment mandates for sustainable investments such as green bonds and renewable power infrastructure, as well as the exclusion of investments in sectors that fail to meet sustainability risk hurdles, such as thermal coal.

## Providing (re)insurance to entities affected by climate change is a growth opportunity

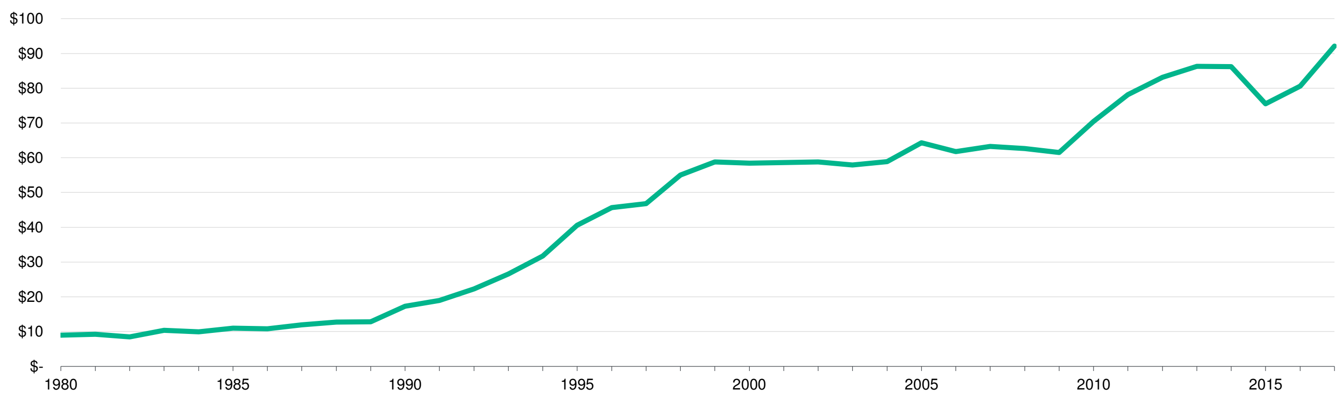
Climate change also brings growth opportunities for P&C (re)insurers to provide insurance risk management solutions for entities affected by climate change, through both existing and new products. Additionally, the potential for greater utilization of insurance risk transfer in both emerging and developed economies to close the "protection gap" represents a growth opportunity for (re)insurers in the years ahead.

The protection gap – the difference between total economic losses arising from catastrophes and the amount of such losses covered by insurance – has long been a talking point among (re)insurers looking to increase demand for risk transfer capacity, particularly in emerging economies with low levels of insurance penetration. According to Swiss Re, the protection gap for weather-related catastrophic events averaged $78 billion annually during the past 10 years (Exhibit 5).

Exhibit 5

**Protection gap continues to increase**

**10-year rolling average protection gap for weather-related catastrophes (USD billions)**




The protection gap is the difference between estimated economic losses and insured losses

*Source: Swiss Re Institute, Moody's Investors Service*

However, as the hurricane events of 2017 demonstrate, under-insurance is not a problem faced just by nations with developing economies. Swiss Re estimates the 2017 protection gap for weather-related catastrophes was approximately $160 billion, the highest level on record. With Hurricanes Harvey, Irma and Maria constituting roughly 70% of total 2017 insured losses, the extent of the protection gap, even in the US and its territories, is substantial.

The failure of public and private entities alike to adequately cover weather-related catastrophe events results in heightened levels of susceptibility to physical climate change risks. By narrowing the protection gap through additional purchases of insurance risk transfer capacity, the ability of companies, as well as local and national economies, to withstand the effects of climate change would be strengthened.[2]

While it will likely take a combination of public/private partnerships, government sponsored risk facilities and governmental coverage mandates to make serious headway in closing the protection gap, it promises to be a key area of growth for (re)insurers in the years



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ahead. Examples include the California Earthquake Authority, the Florida Hurricane Catastrophe Fund and the National Flood Insurance Program in the US and Flood Re Limited in the UK.

Beyond insurance and reinsurance for catastrophic events, climate change related demand growth is likely to come from products that can transfer risks associated with the increased frequency of extreme weather events, such as agriculture and crop insurance, flood insurance and other weather risk management products. Likewise, new infrastructure and technologies associated with carbon transition, including renewable and clean power generation, will increase demand for both property and liability coverages. Although we expect an erosion of insurance demand from carbon intensive industries that are displaced or disrupted by energy transition over time, we believe the aggregate demand for risk management products will increase from climate change. However, these new opportunities will also bring challenges associated with underwriting new technologies or products without significant loss histories, resulting in some uncertainty as to the rate adequacy of premiums charged to clients.

## Regulatory landscape evolving as climate change issues become more prominent

The impact of climate change on insurers has become a key topic of discussion among financial and insurance regulators around the globe. A growing number of regulators are incorporating climate change and other sustainability issues into their oversight of (re)insurers. Thus far, regulators, including the Prudential Regulation Authority in the UK[3] and the National Association of Insurance Commissioners in the US, have focused primarily on assessing and analyzing the potential impact of climate change on the sector without issuing prescriptive regulatory policy mandates.

Other governmental bodies and regulatory panels are exploring how insurers can play a role in contributing to sustainable development, including the European Commission's High Level Expert Group on Sustainable Finance and the United Nations-sponsored Sustainable Insurance Forum. Reports published by these groups recommend a broad range of sustainability-related policy actions to enhance corporate disclosure of climate risks and the assessment of systemic risks, promote access to insurance, increase resilience to natural catastrophe risk and encourage long-term investments in clean power infrastructure.

We expect regulators to continue to promote the use of enhanced sustainability disclosures for insurers in financial statements and favor sustainable investment frameworks. Article 173 of France's Energy Transition Law, for example, requires insurers and institutional investors to report how their investment policies incorporate climate change considerations. In the US, the California Insurance Commissioner's 2016 Climate Risk Carbon Initiative mandated insurers to disclose fossil fuel investments. Additionally, as issues related to climate change become a more prominent feature of insurance regulation, climate change factors could also be integrated into insurance companies' Own Risk and Solvency Assessments and other regulatory capital adequacy measures and stress tests over time.



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## Moody's related publications

- Oil and Gas Industry - Global: Global oil refining faces weakening demand, tighter regulation due to carbon transition (February 2018)
- Power Generation Projects - Global: Credit impacts of carbon transition cover a wide spectrum (December 2017)
- Regional & Local Governments - Europe: Climate change will pose increasing credit challenges for cities (December 2017)
- Environmental Risks: Evaluating the impact of climate change on US state and local issuers (November 2017)
- Environmental, Social and Governance (ESG) - Global: Moody's approach to assessing ESG in credit analysis (October 2017)
- Environmental, Social and Governance (ESG) - Global: Greater policy certainty and corporate disclosure would enhance carbon transition analysis (August 2017)
- Environmental Risks - Sovereigns: How Moody's assesses the physical effects of climate change on sovereign issuers (November 2016)

## Endnotes

1 The Intergovernmental Panel on Climate Change (IPCC) was created by the United Nations Environmental Panel and the World Meteorological Organization in 1988. It does not conduct independent research, but produces a consensus of research published in the world.

2 Natural disaster insurance and/or saving funds can enhance sovereign resilience to physical climate change risks significantly. Please see "Environmental Risks – Sovereigns: How Moody's assesses the physical effects of climate change on sovereign issuers".

3 Bank of England Prudential Regulation Authority, "The impact of climate change on the UK insurance sector", September 2015.



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