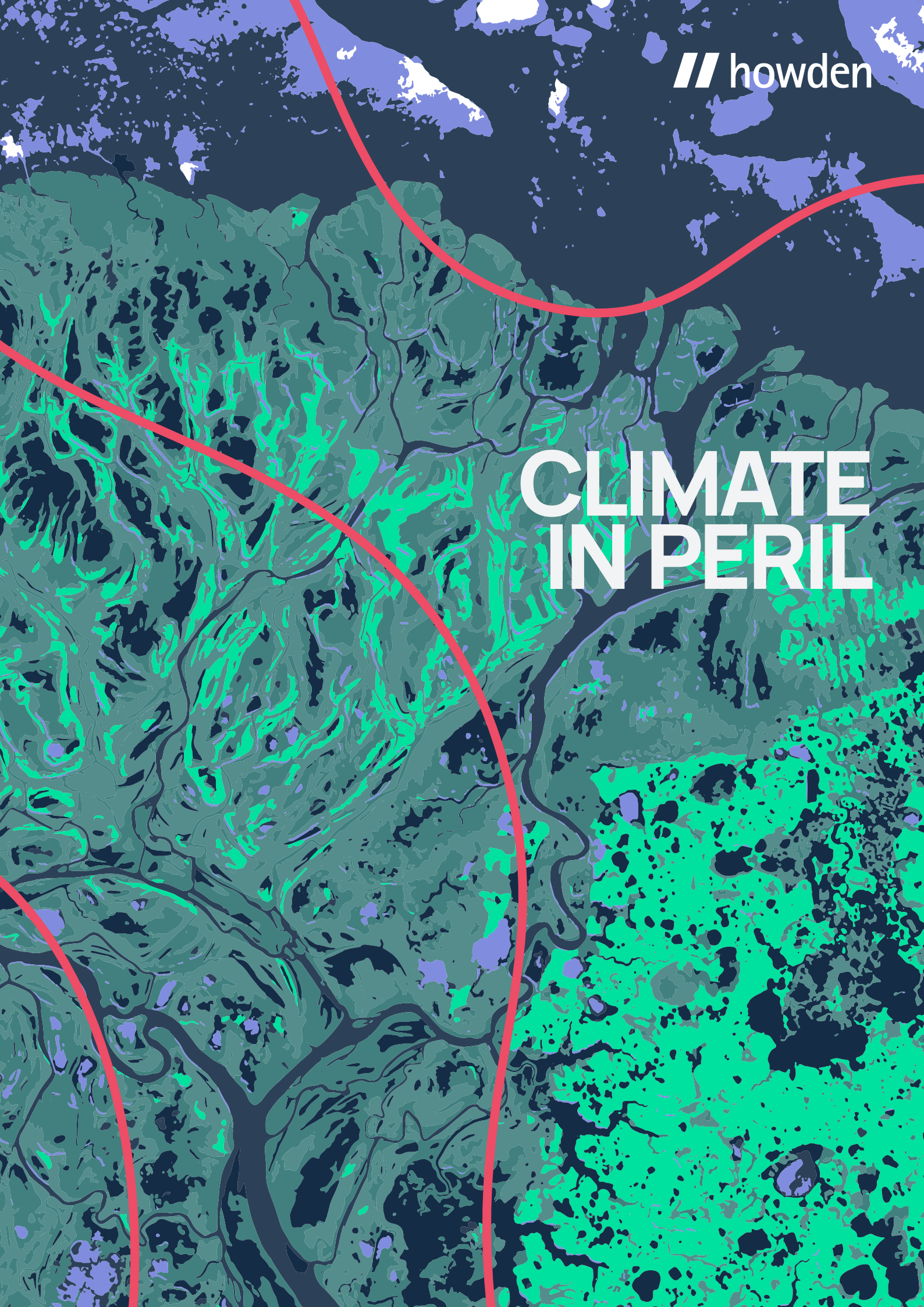
howden

CLIMATE IN PERIL



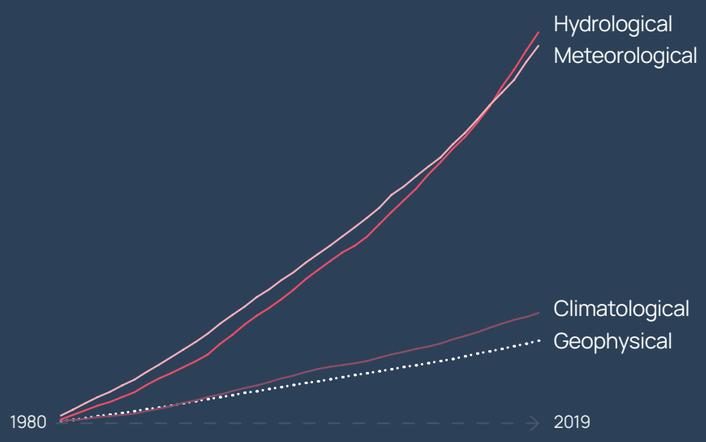
Key takeaways

Climate change is a complex, global issue that affects almost every aspect of society, requiring coordinated action in order to protect lives and livelihoods.

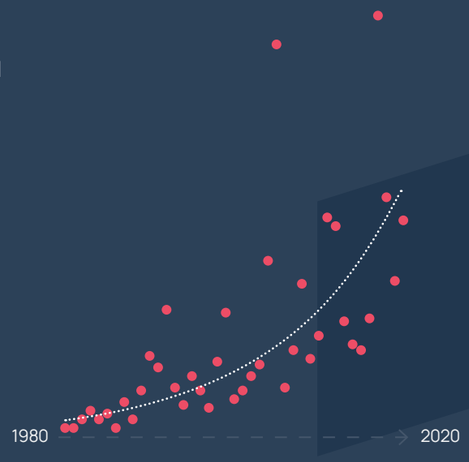
Increased loss frequency and severity only serve to elevate the importance of insurance. But accessibility is a problem for some of the world's most vulnerable communities.

The frequency and severity 'new normal'

Steep upward curve for tropical cyclones, storms, floods...

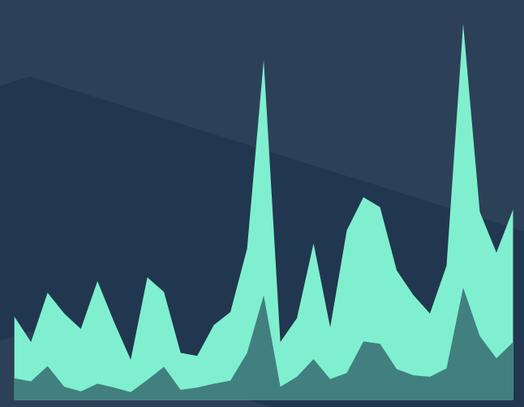


...and weather-related losses

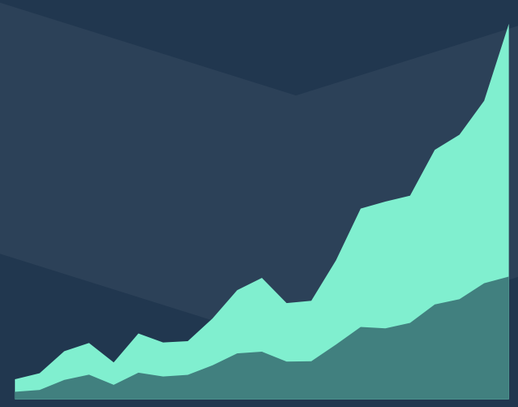


Long-standing protection gaps

Economic vs insured losses



Humanitarian funding gap



The pace of change is moving the (re)insurance market

Frequency of worldwide weather events up

45%

during 2010-19 over previous decade

Source: Munich Re

Economic losses for worldwide weather events up

57%

during 2010-19 over previous decade

Source: Swiss Re

Global insured wildfire losses up

500%

during 2010-19 over previous decade

Source:: HX Nova Portal

Scaling up the risk transfer market to break down barriers

Howden is rising to this challenge by unlocking private capital to create sustainable markets for social good. Our mission is to build resilience by extending protection to communities most exposed to disaster and climate risks.

Executive summary

The magnitude and complexities of the issues surrounding climate change – rising greenhouse gas emissions, more frequent extreme weather events, the transition to net-zero, carbon offsetting, widening economic inequality, to name a few – can at times seem overwhelming, with lofty language from governments and corporations seldom matched by delivery. The world has reached an inflection point: ambitious, actionable strategies are needed urgently to protect lives, livelihoods and ecosystems.

2021 is likely to be a decisive year in this regard. Newly released research from the Intergovernmental Panel on Climate Change (IPCC) conveys in the starkest terms the dramatic consequences of inaction, whilst COP26, the UN's climate change summit which takes place next month, is being heralded as the best (or even last) chance to secure the public and private sector commitments needed to avert the worst impacts.

The evidence is undeniable: the world is now living through climate change. Catastrophe losses are rising as a result, with a sequence of devastating events in recent years providing a wake-up call to the (re)insurance sector. Analysis contained herein indicates that those expecting a return to the loss amounts of yesteryear are likely to be disappointed. With the link between past loss experience and future underwriting now seemingly broken, pricing adequacy and the efficacy of catastrophes models are already key areas of focus for the market.

INCREASED LOSS FREQUENCY AND SEVERITY ONLY SERVE **TO ELEVATE THE IMPORTANCE OF INSURANCE**

A force for social good

Increased loss frequency and severity only serve to elevate the importance of insurance. But there is an accessibility problem for some of the world's most vulnerable communities in particular. After all, insurance has covered only a third of all global weather-related losses since 1990 (or less than 10% in emerging economies), and remains a peripheral player in financing disaster relief for humanitarian organisations.

The likelihood of these protection gaps being closed any time soon by traditional risk transfer products is next to zero. The magnitude of the issue (and opportunity) requires something far more imaginative and innovative which resets how disaster relief is funded, with insurance at its core. This is about scaling up the risk transfer market into areas where no insurance solutions exist currently.

Howden is rising to this challenge by unlocking private capital to create sustainable markets for social good. Our mission of extending protection to communities most exposed to disaster and climate risks not only has the potential to create new premium pools for the sector, but, more importantly, strengthen developing countries' resilience to extreme events and expedite post-disaster recovery.

Such benefits have historically been the preserve of advanced economies with higher rates of insurance penetration, but innovative use of insurance capital in the disaster relief space opens an opportunity to export this level of support to poorer communities facing the starkest effects of climate change. When deployed effectively, insurance has the power to create new markets and act as a force for social good by driving adaptation and resilience and, ultimately, reducing social and economic inequalities.

Howden's newly created Climate Risk and Resilience division is dedicated to these goals. We are bringing a similar approach and zeal to supporting the transition to net-zero by pushing the boundaries of insurability to create products that guarantee the integrity of businesses' carbon offset investments. This is just a taste of what we offer, and there is much more in the pipeline. Come and talk to us.

01

Code red

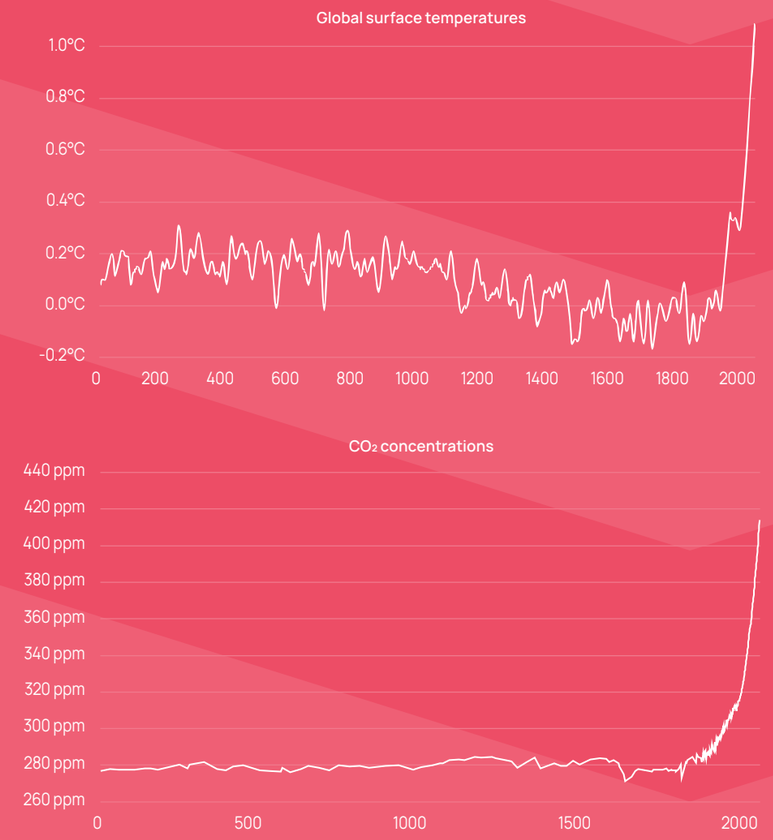
The harsh reality of risk has been laid bare by COVID-19. The profound socio-economic change brought about by the pandemic has transformed the world, with widening inequality and social fragmentation just two of several long-term legacies borne out of inaction and a lack of preparation. COVID-19 was, after all, no black swan.

The challenges raised by the pandemic apply equally to the other big systemic risk of our time. Climate change is likewise a complex, global issue that affects almost every aspect of society, including wealth and health, requiring coordinated action in order to protect lives and livelihoods. Even the more optimistic climate change scenarios foresee serious physical and economic consequences in the coming years and decades.

The world faces no bigger issue. Figure 1 shows that carbon dioxide (CO_2) emissions and the level (and pace) of global warming are without precedent during the last two millennia. The trajectory is clear: delay in confronting this reality will only require more painful interventions as the clock runs down.

DELAY IN CONFRONTING THE REALITY OF CLIMATE CHANGE WILL ONLY REQUIRE **MORE PAINFUL INTERVENTIONS AS THE CLOCK RUNS DOWN**

Figure 1: Changes in global surface temperatures and CO_2 concentrations in last 2,000 plus years (Source: IPCC AR6, NOAA)



A call to action

We have been warned. This is what the Intergovernmental Panel on Climate Change (IPCC) said in its Fifth Assessment Report (AR5) eight years ago: "Warming of the climate system is unequivocal, human influence on the climate system is clear, and limiting climate change will require substantial and sustained reductions of greenhouse gas emissions."

The much anticipated release of the IPCC's Sixth Assessment Report (AR6) earlier this year goes further in stressing the urgency of the matter. Although the key conclusions of the latest report remain largely in line with those in AR5, it draws on new data and modelling technology to provide certainty to its findings. Some of the key conclusions are highlighted here.

⟶ Human-induced climate change is already affecting weather and climate extremes in every region of the globe.

⟶ Atmospheric CO_2 concentrations in 2019 were higher than at any time in at least 2 million years (*high confidence*). Concentrations of methane and nitrous oxide were higher than at any time in at least 800,000 years (*very high confidence*).

⟶ Global surface temperatures have increased faster since 1970 than in any other 50-year period over at least the last 2,000 years (*high confidence*).

⟶ Human-induced climate change is the main driver of more frequent and more intense heatwaves (*high confidence*).

⟶ The global mean sea level has risen faster since 1900 than over any preceding century in at least the last 3,000 years (*high confidence*).

⟶ The last decade has seen the annual average Arctic sea ice area reach its lowest level since at least 1850 (*high confidence*). Human influence is *very likely* the main driver.

⟶ Global warming of 1.5°C and 2°C relative to pre-industrial levels will be exceeded this century unless deep reductions in CO_2 and other greenhouse gas emissions occur in the coming decades.

⟶ It is *very likely* that heavy precipitation events will intensify and become more frequent in most regions with additional global warming.

⟶ At a global scale, extreme daily precipitation events are projected to intensify by about 7% for each 1°C of global warming (*high confidence*).

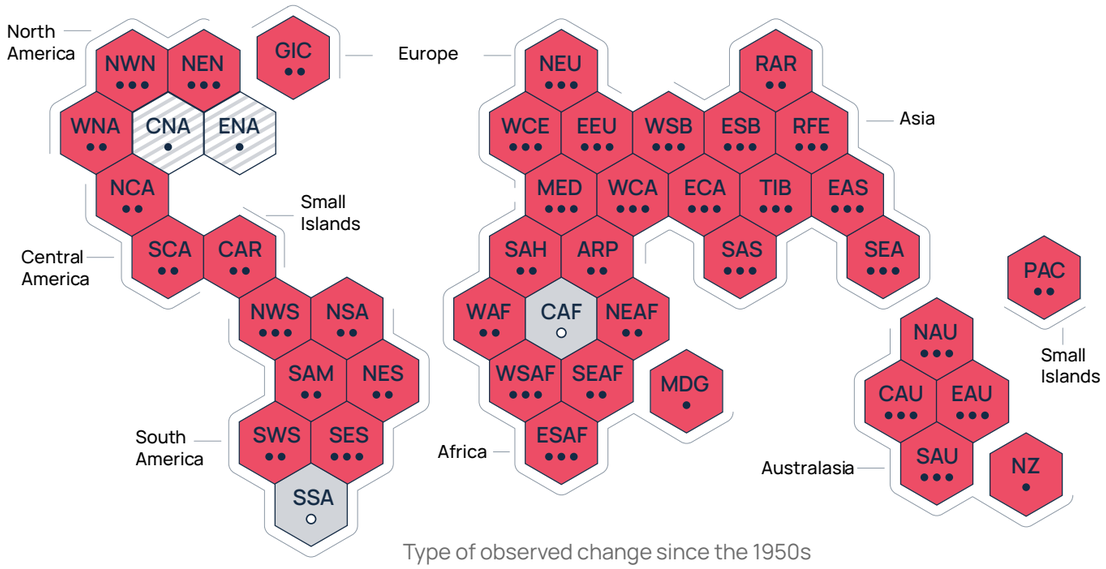
⟶ The proportion and peak winds of intense global tropical cyclones (categories 4-5) are projected to increase with increased global warming (*high confidence*).

The IPCC leaves little room for doubt: it is 'unequivocal' that human influence is warming the atmosphere, oceans and land, and that certain 'unprecedented' and 'irreversible' impacts (e.g. sea level rise for the latter) are already being observed across the climate system.

Figure 2 outlines observed changes to temperature and precipitation extremes in each global region over the last 70 years, as well as scientists' (heightened) confidence in attributing human activity to these changes.

Figure 2:Assessment of observed changes in weather and climate extremes and confidence in human contribution (Source: IPCC, AR6)

Assessment of observed changes in **hot extremes**



Type of observed change since the 1950s

Type of observed change
in hot extremes

- Increase (41)
- Decrease (0)
- Low agreement in the type of change (2)
- Limited data and/or literature (2)

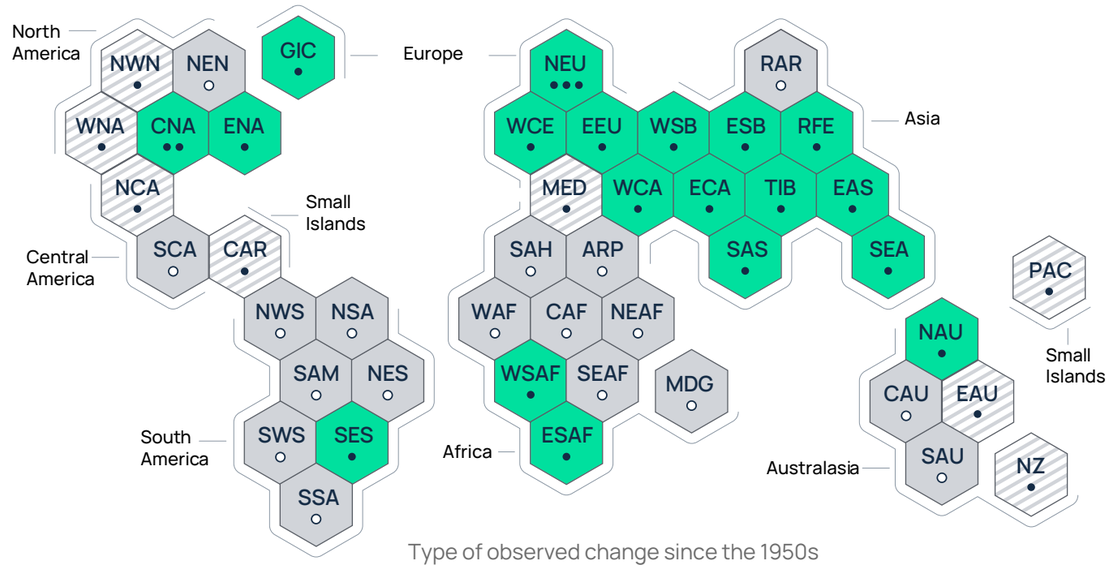
Confidence in human contribution
to the observed change

- ●●● High
- ●● Medium
- ● Low due to limited agreement
- ○ Low due to limited evidence

IPCC AR6 WGI reference regions: North America: NWN (North-Western North America, NEN (North-Eastern North America), WNA (Western North America), CNA (Central North America), ENA (Eastern North America), Central America: NCA (Northern Central America), SCA (Southern Central America), CAR (Caribbean), South America: NWS (North-Western South America), NSA (Northern South America), NES (North-Eastern South America), SAM (South American Monsoon), SWS (South-Western South America), SES (South-Eastern South America), SSA (Southern South America), Europe: GIC (Greenland/Iceland), NEU (Northern Europe), WCE (Western and Central Europe),

> IT IS 'UNEQUIVOCAL' THAT HUMAN INFLUENCE IS WARMING THE ATMOSPHERE, OCEANS AND LAND

Assessment of observed changes in **heavy precipitation**



Type of observed change since the 1950s

Type of observed change
in heavy precipitation

- Increase (19)
- Decrease (0)
- Low agreement in the type of change (8)
- Limited data and/or literature (18)

Confidence in human contribution
to the observed change

- ●●● High
- ●● Medium
- ● Low due to limited agreement
- ○ Low due to limited evidence

EEU (Eastern Europe), MED (Mediterranean), Africa: MED (Mediterranean), SAH (Sahara), WAF (Western Africa), CAF (Central Africa), NEAF (North Eastern Africa), SEAF (South Eastern Africa), WSAF (West Southern Africa), ESAF (East Southern Africa), MDG (Madagascar), Asia: RAR (Russian Arctic), WSB (West Siberia), ESB (East Siberia), RFE (Russian Far East), WCA (West Central Asia), ECA (East Central Asia), TIB (Tibetan Plateau), EAS (East Asia), ARP (Arabian Peninsula), SAS (South Asia), SEA (South East Asia), Australasia: NAU (Northern Australia), CAU (Central Australia), EAU (Eastern Australia), SAU (Southern Australia), NZ (New Zealand), Small Islands: CAR (Caribbean), PAC (Pacific Small Islands)

Projecting the future

These are ominous signs. The IPCC report warns that even 1.5°C of warming compared to the pre-industrial average (1850-1900) will bring more severe weather events than what has occurred to date. At 2°C of warming, heat extremes would more frequently breach tolerance thresholds for agriculture and health. Today's average global temperature is 1.1°C higher than the 1850-1900 period, according to the IPCC.

To project future greenhouse gas emissions and associated global (best estimate) temperature rises, the IPCC has created five Shared Socio-economic Pathways (SSP) up to 2100, ranging from a very strong mitigation scenario (SSP1-1.9) to a no mitigation / high fossil fuel consumption scenario (SSP5-8.5). The greenhouse gas emissions and temperature pathways assigned to each SSP scenario are shown in Figures 3 and 4, respectively.

Figure 4: Global surface temperature change up to 2100 relative to pre-industrial times (Source: IPCC AR6)

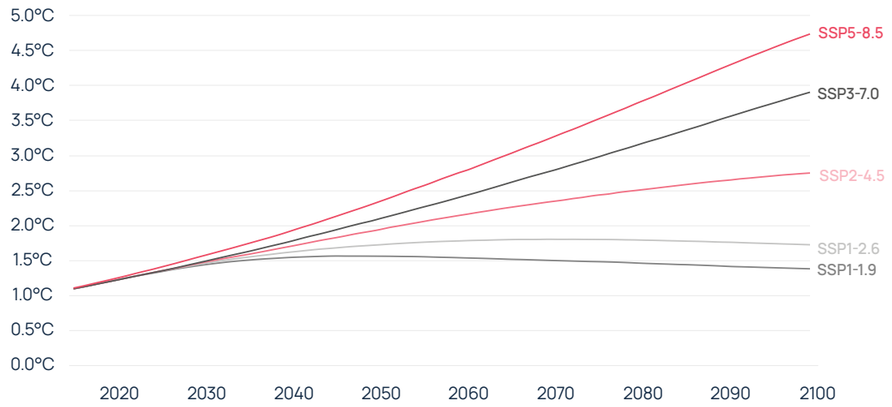
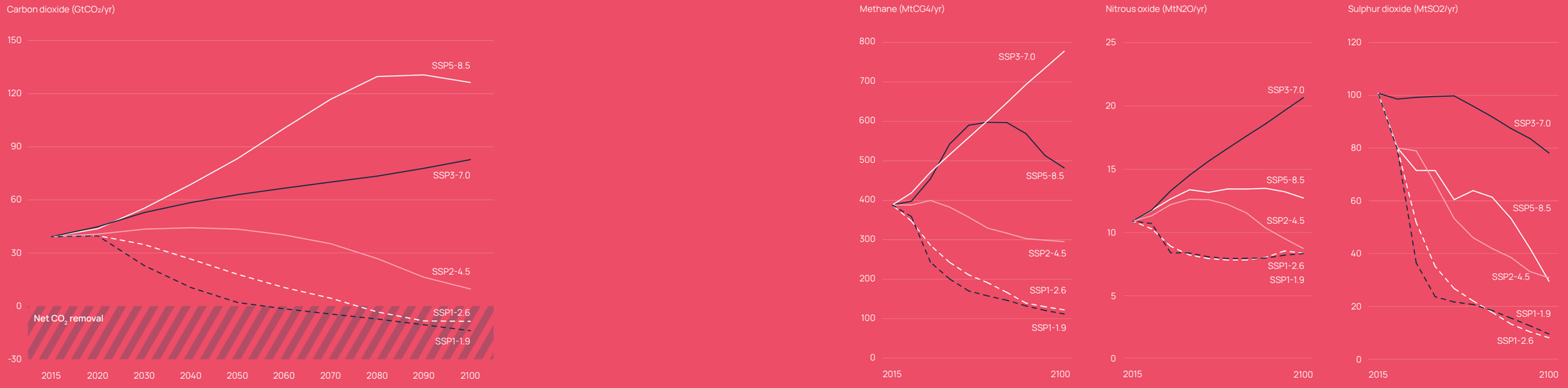
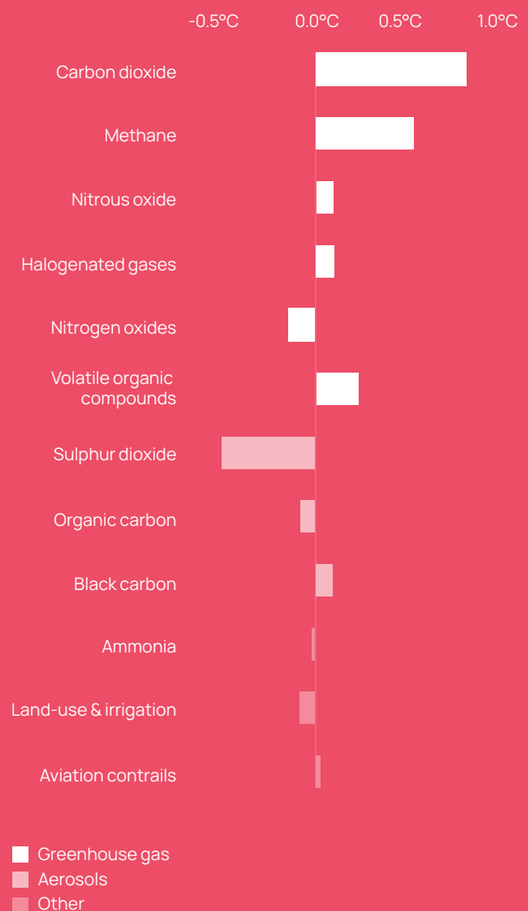


Figure 3: SSP pathway projections for CO_2 and non-CO_2 emissions up to 2100 (Source: IPCC AR6)



Short-term gain – non-CO_2 emissions

Figure 5: Global warming by emissions
(Source: IPCC AR6)



Whilst carbon dioxide remains the focus of attention in tackling climate change, the IPCC in its latest report also highlights the importance of curbing methane emissions. As shown by Figure 5, methane is second to carbon in terms of its contribution to global warming. Like CO_2, methane concentrations are at record observed highs.

Whereas CO_2 can linger in the atmosphere for centuries, methane's atmospheric lifetime is limited to roughly 12 years only. Its warming impact is also much higher than CO_2, holding more than 80 times the warming potential of carbon over a 20 year period.[1] Efforts to cut methane emissions will therefore be rewarded with a significantly quicker cooling impact.

This will be all the more crucial as the not unsubstantial offsets provided by sulphur (a pollutant gas that helps cool the planet by reflecting sunlight) fall away in the coming years, as new clean-air laws come into effect.

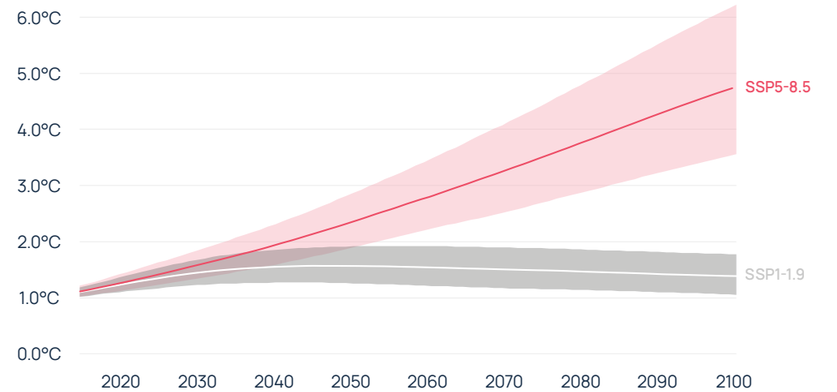
[1] Environmental Defense Fund, https://www.edf.org/climate/methane-crucial-opportunity-climate-fight.

Under all scenarios, the average global temperature reaches or surpasses the 2015 Paris Agreement aspiration of 1.5°C by 2040. Although the lowest emission scenario of SSP1-1.9 sees warming fall back to sub-1.5°C levels later in the century, it requires emission cuts that go further than what countries have pledged to date.[2] Under the low (2.6) scenario, in which net-zero is achieved in around 2075 and followed by net negative emissions shortly after, warming is projected to remain below 2°C through the century.

The intermediate (4.5), high (7.0) and very high (8.5) scenarios anticipate more sobering outcomes that foresee warming in excess of 2% by the 2040s or 2050s. The IPCC report shows that warming of 2°C means an extreme heatwave that previously occurred once in 50 years is likely to occur 14 times (or once every 3.5 years).

There are, of course, considerable uncertainties baked into these SSP scenarios, and the shaded areas in Figure 6 show the projected temperature ranges (i.e. uncertainties) associated with the lowest (1.9) and highest (8.5) pathways up to 2100. The realisation of the worst case scenario captured by SSP5-8.5 would likely bring catastrophic impacts, although it should be noted that one of the more notable changes in the latest IPCC report is that it now considers some of climate change's tail risks (i.e. extreme emissions / temperature scenarios akin to SSP5-8.5) to be less likely than previously thought.[3]

Figure 6: Projected temperature warming ranges (uncertainty) associated with SSP1-1.9 and SSP5-8.5 scenarios (Source: IPCC AR6)



[2] The SSP1-1.9 scenario anticipates CO_2 emissions declining to net-zero around 2050, followed thereafter by levels of net negative emissions (i.e. more carbon removed from the atmosphere than added), likely requiring CO_2 offsetting initiatives and capture and storage technologies to be deployed at scale.

[3] The highest-emission pathway in the previous AR5 IPCC report (RCP8.5) has often received disproportionate attention, even though it assumed no new mitigation policies and envisioned aggressive emission growth. The IPCC states in AR6 that the likelihood of high emission scenarios such as such as RCP8.5 or SSP5-8.5 should now be 'considered low in light of recent developments in the energy sector.'

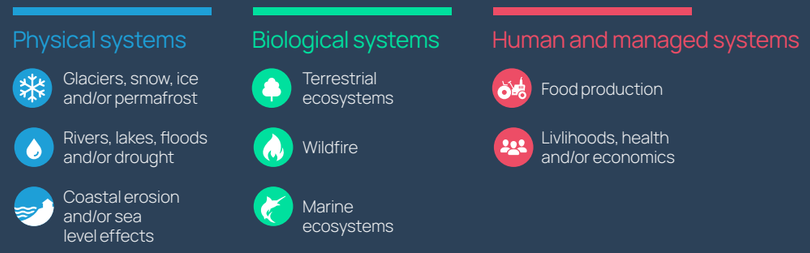
Future risks and impacts

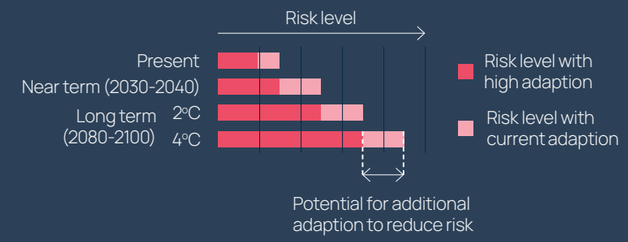
The predicted consequences of a warming planet are becoming clearer. The scale and nature of risks countries and regions face vary significantly. Whilst certain territories will feel the effects more significantly and suddenly, others will suffer more marginal impacts.

According to the IPCC, floods and heatwaves are set to become more frequent and severe in parts of Europe and North America, with wildfires expected to intensify across western regions of North America and southern Europe specifically, whilst rising sea levels pose a considerable socio-economic threat to small island nations.

Figure 7 (overleaf) from the IPCC's AR5 report outlines the uneven risks, impacts and risk reduction potential different regions around the world are expected to encounter under different climate change scenarios.

Figure 7: Projected impacts of climate change by region (Source: IPCC AR5)





North America

- Increased damages from wildfires
- Heat-related human mortality
- Increased damages from river and coastal urban floods

Europe

- Increased damages from river and coastal floods
- Increased water restrictions
- Increased damages from extreme heat events and wildfires

Asia

- Increased flood damage to infrastructure, livelihoods and settlements
- Heat related human mortality
- Increased drought-related water and food shortage

The Ocean

- Distributional shift and reduced fisheries catch potential at low altitudes
- Increased mass coral bleaching and mortality
- Coastal inundation and habitat loss

Central & South America

- Reduced water availability and increased flooding and landslides
- Reduced food production and quality
- Spread of vector-borne diseases

Africa

- Compounded stress on water resources
- Reduced crop productivity and livelihood and food security
- Vector- and water-borne diseases

Australasia

- Significant change in composition and structure of coral reef systems
- Increased flood damage to infrastructure and settlements
- Increased risks to coastal infrastructure and low-lying ecosystems

Small Islands

- Loss of livelihoods, settlements, infrastructure, ecosystem services and economic stability
- Risk of low-lying coastal areas

Polar Regions (Arctic & Antarctic)

- Risks for ecosystems
- Risks for health and well-being
- Unprecedented challenges, especially from rate of change

A more resilient world

The transition to net-zero will be crucial to minimising the impacts of climate change, requiring the cooperation of governments, businesses and communities worldwide (more on this topic shortly). Deft policymaking at global, national and regional levels will be required to secure (and retain) the support of stakeholders whilst decarbonising at the pace required.

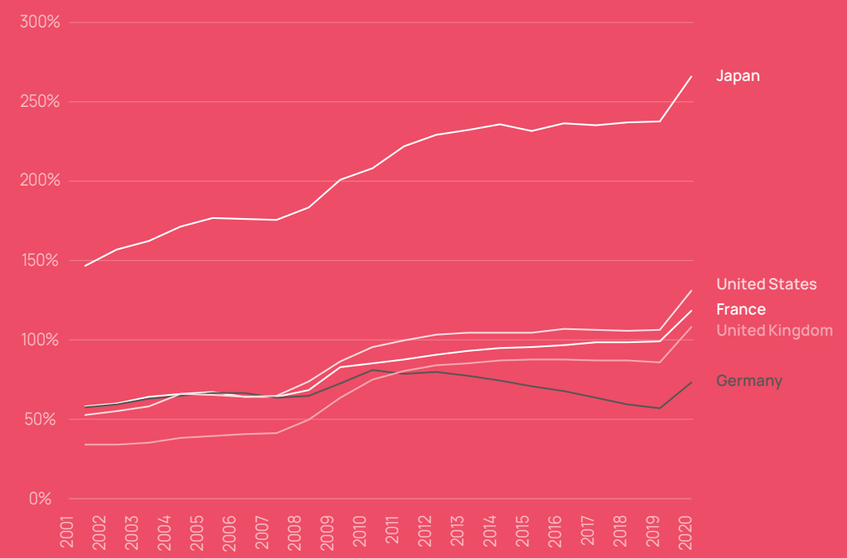
But whilst cutting greenhouse gas emissions will help stabilise global warming in the medium-to-long-term, it does little for communities already suffering the consequences of climate change, or those that will soon do so. Adaption will be key to building resilience and limiting climate change risks.

The potential for risk reduction across all perils and regions is considerable (as shown by IPCC data in Figure 7). Some of the exposures at risk from climate change can be mitigated by relatively simple and cost effective measures that include strategic investments in natural barriers (e.g. mangrove forests), flood defences, better drainage, installation of protective materials in properties, deployment of early warning systems, maintenance of key / vulnerable infrastructure (e.g. power lines), forest management, updating building codes and 'building back better' in the event of a loss.

A lack of funding is often an obstacle for these and more ambitious changes. At the time of writing, the world's wealthiest nations had still not delivered on their commitment to raise USD 100 billion annually to help developing nations deal with climate change. Most advanced economies are, of course, experiencing financial pressures of their own, with government debt levels soaring to new heights after recording exceptional increases in 2020 (see Figure 8). But they too have a vested interest in finding solutions: governments carry substantial risks of their own but are often the least protected.

INSURANCE MUST BE FRONT AND CENTRE OF POLICIES TO MOBILISE CAPITAL AND DEVELOP SOLUTIONS

Figure 8: Gross government debt as a share of GDP in advanced economies – 2001 to 2020 (Source: International Monetary Fund, HX Analytics)



Climate finance is set to be a key issue at COP26 and beyond. Insurance must be front and centre of policies to mobilise capital and develop solutions. In addition to carriers' position as large, long-term investors, insurance has long been a facilitator of risk taking and invention.

Additionally, this is an opportunity for the insurance sector to go beyond traditional risk transfer and move into the realms of risk mitigation and prevention. The indemnification element of insurance will, of course, continue to be crucial to shoring up resilience and expediting recovery in the event of a loss, but insurance should also be a critical component of adaptation by offering risk reduction incentives to policyholders and rewarding measures and behaviours (e.g. through more favourable price and terms) that will help mitigate the overall level of risk.

Economics of climate change

The timing and persistence of economic change brought about by the changing climate are inexorably linked to everything that has been discussed up to this point. The complexities and uncertainties associated with the various scenarios for greenhouse gas concentrations, temperature changes and sea level rise are substantial, and present significant challenges when assessing the potential economic impacts. The implications of climate change on economic growth remain highly uncertain.

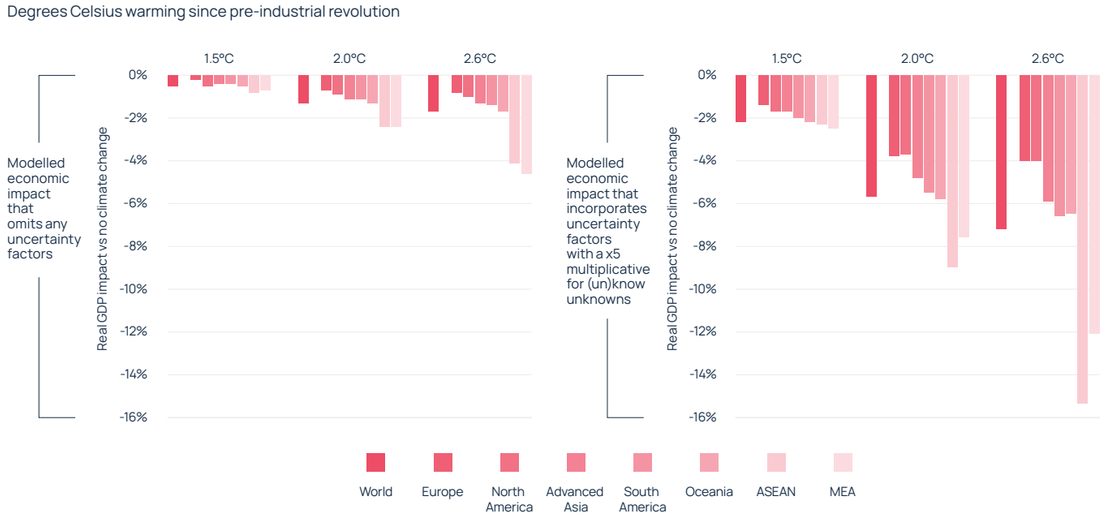
There are two main economic risks to consider:

1. **Physical risks** that emanate from event driven (acute) or longer-term (chronic) shifts in climate patterns. These risks have the potential to cause direct damage to assets and indirect impacts to production and supply chains.
2. **Transition risks** associated with an abrupt change of course to a low carbon economy that causes investments to lose value and raises the prospect of a macroeconomic supply shock.

These risks have the potential to reshape the global economy, a fact confirmed by a comprehensive study carried out by Swiss Re[4] earlier this year which forecasts stark (and highly divergent) GDP impacts under different temperature scenarios for various regions worldwide.

Figure 9 shows different degrees of GDP loss (vs no climate change) by mid-century under three warming scenarios – 1.5°C, 2°C and 2.6°C.[5] The results in the left hand chart show global GDP reductions of 0.5% to 1.7% by mid-century that are modelled for the three temperature scenarios, with notable variances by region. The results to the right, which show far more substantial / divergent global and regional GDP losses, incorporate additional uncertainty factors around tail risk parameters – or (un)known unknowns – by applying a multiplicative factor of x5.

Figure 9: Modelled economic impacts from climate change by mid-century
(Source: Swiss Re, HX Analytics)



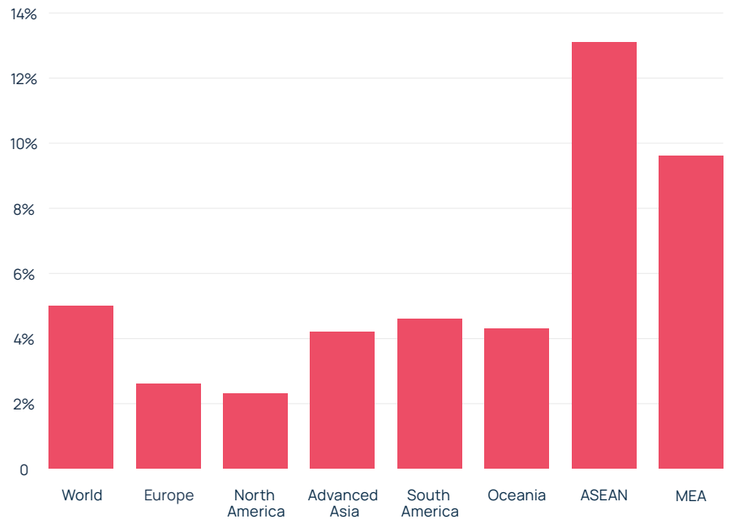
[4] Swiss Re, *The economics of climate change: no action not an option*, April 2021 https://www.swissre.com/media/news-releases/nr-20210422-economics-of-climate-change-risks.html.

[5] Estimates based on Swiss Re's GDP scenario of well below 2°C warming rather than 2.6°C by mid-century, which also incorporates uncertainty factors, with a x5 multiplicative for (un)known unknowns.

The economic case for net-zero is clear. Figure 10 displays the results of Swiss Re's study differently by showing the amount of GDP loss that can be prevented by limiting temperature rise to roughly 1.5°C, rather than warming reaching 2.6°C.[5] In this scenario, global GDP would likely be 5% higher by mid-century (equivalent to multiple trillions of dollars). More exposed nations would see an even greater economic benefit: GDP could be more than 13% higher for the ASEAN (Association of Southeast Asian Nations) region if temperatures are contained successfully. Whilst there are of course challenges and risks in transitioning to a net-zero economy, the cost of inaction is likely to be far higher.

The IPCC is clear: the targets set in the Paris Agreement are still achievable today if communities, businesses and government worldwide act decisively and quickly in cutting greenhouse gas emissions. It is in countries' self interest to do this, otherwise the planet's climate could suffer irreversible damage and fix a course characterised by tail weather events and cascading systemic impacts.

Figure 10: Mitigated economic loss by 2050 – the case for net-zero[5]
(Source: Swiss Re, HX Analytics)

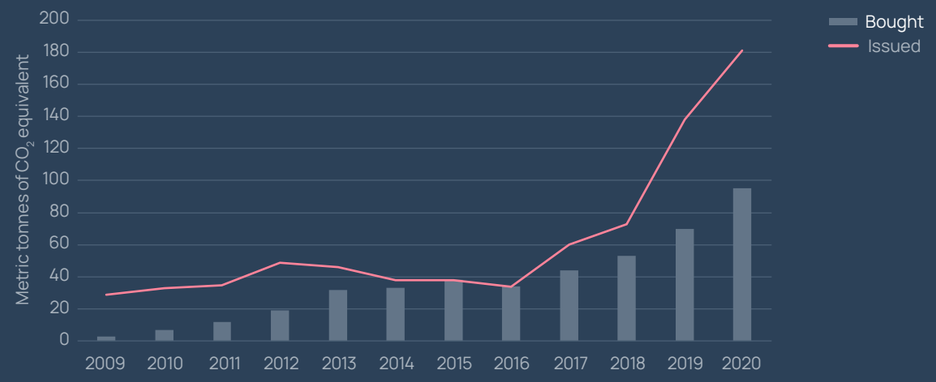


THE ECONOMIC CASE FOR NET-ZERO IS CLEAR

Offsetting to net-zero

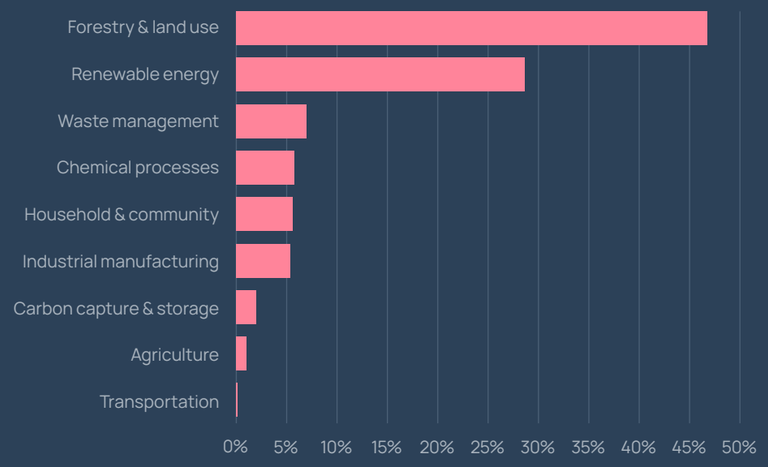
Cutting carbon emissions is one of the biggest challenges confronting businesses and governments today. As an increasing number of companies worldwide set net-zero targets to cancel out the carbon they emit into the atmosphere, the demand (and supply) for voluntary carbon offsets has grown substantially in recent years (see Figure 11).

Figure 11: Growth in voluntary carbon markets – rising demand and supply
(Source: Taskforce on Scaling Voluntary Carbon Markets, Ecosystem Marketplace, McKinsey)



These offsets are typically generated from groups that plant and protect trees, build renewable / cleaner energy facilities or engage in green activities. The value of one offset is equal to the value of one tonne of carbon removed or saved, and is held by the polluter to counter the emissions they make. Almost three-quarters of all offsets currently come from forestry / land use and renewable energy projects (see Figure 12).

Figure 12: Share of offsets issued by project type (Source: Berkeley Carbon Trading Project)



[6] McKinsey, *A blueprint for scaling voluntary carbon markets to meet the climate challenge* https://www.mckinsey.com/business-functions/sustainability/our-insights/a-blueprint-for-scaling-voluntary-carbon-markets-to-meet-the-climate-challenge.

Despite the rapid development of the voluntary offset market in recent years, a significant amount of work is still needed to achieve maturity. Unlike well-regulated compliance markets such as the EU's Emissions Trading System (ETS) and California's Carbon Cap-and-Trade Program, the voluntary offset market is under-developed and opaque, which raises questions about the environmental integrity of many offset schemes. For example, there is seemingly little relationship between the price and quality of traded offsets, and critics argue that offsets are being used as a licence to pollute, rather than addressing the need to decarbonise corporations' activities.

In order to combat the mistrust around the voluntary offset space, a taskforce led by Mark Carney, the UN's special envoy on climate action and finance, was established last year with the aim of ensuring only high quality credits are traded by providing greater governance and rules enforcement.

The taskforce also aims to create a system which ensures permanence and additionality are maintained. A number of offset projects have been deemed worthless recently due to natural catastrophes (e.g. some forestry-based carbon credit projects were destroyed by wildfires in California this year), or worse still, dubious schemes advocating their carbon elimination credentials but actually doing no such thing.

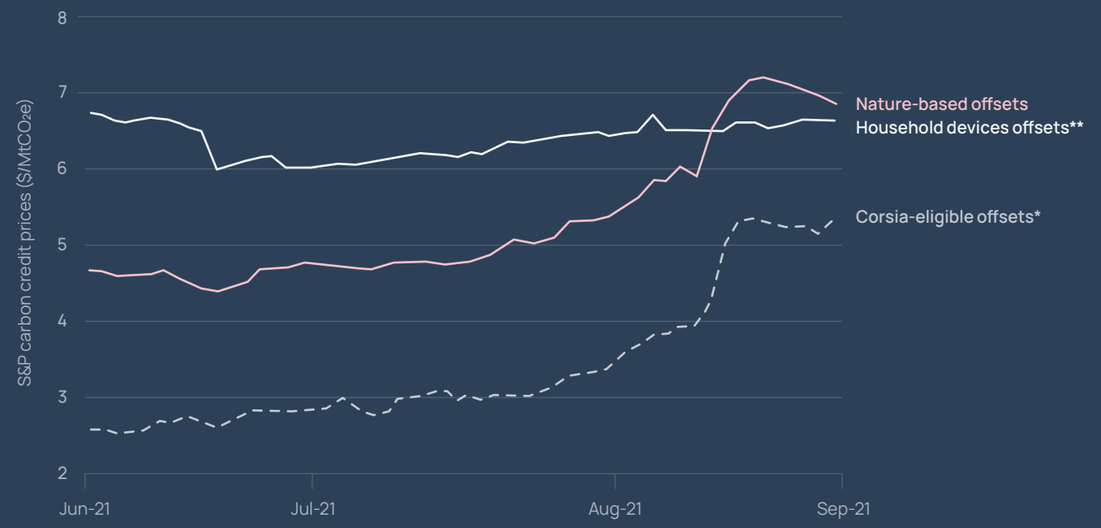
Howden and energy and climate finance specialists Parhelion have pushed the boundaries of insurability by collaborating to create a product that indemnifies clients against the risk that purchased credits are invalidated under the Carbon Cap and Trade Program. This new product protects policyholders from offset credit invalidation by regulators.

To date, 24 million carbon offsets have been wrapped in the California market with insurance, with a total of six bound policies. Not only do these policies guarantee offset credits against invalidation (thereby securing their value), they are also increasing the liquidity of the Californian carbon market.

The insights and relationships established in bringing this product to market are proving invaluable, as Howden focuses on creating more (scalable) risk transfer products for the voluntary carbon offset market. This is a market that has the potential to grow to USD 50 billion by 2030, according to some estimates.[6]

Following the recent wave of government and corporate net-zero commitments, demand for carbon offsets in the voluntary offset space has increased significantly. Insurance can play an important role in facilitating the development of the market, transforming it from a mistrusted system to one that has robust rules that ensure the environmental integrity of offset credits.

Figure 13: Carbon offset prices (Source: S&P Global Platts)

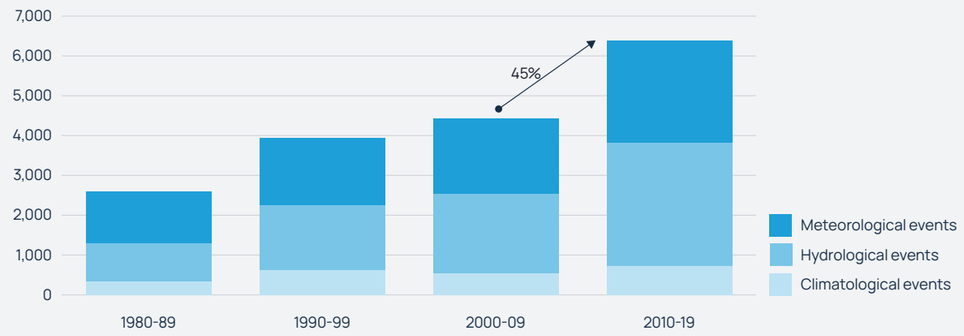


The new normal

Climate change is 'rapid, widespread and intensifying' (to quote the IPCC). Advances made recently in the field of climate attribution now prove that climate change is impacting the frequency and severity of certain weather perils. Put simply, climate change can no longer be considered some future, theoretical threat.

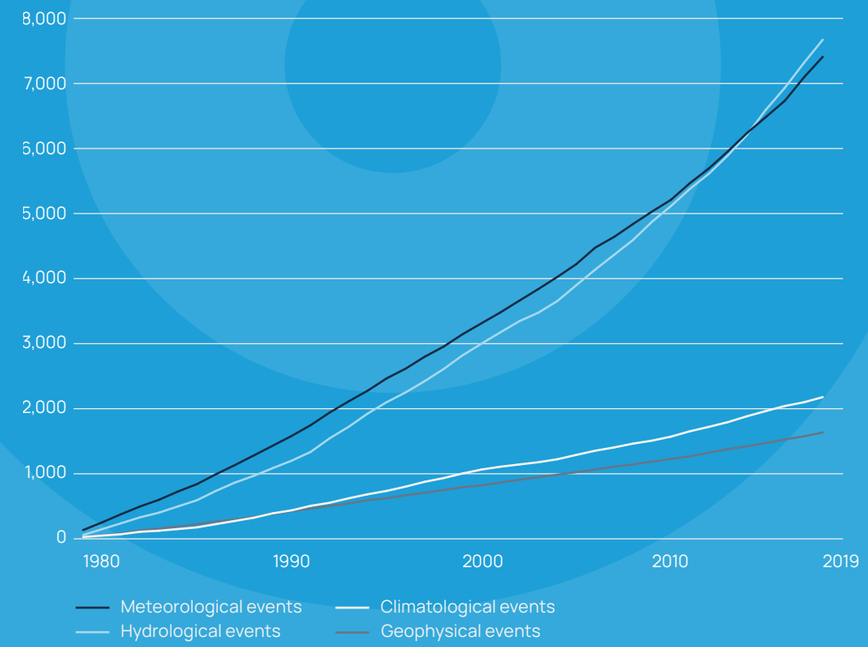
This is supported by data. Figure 14 shows that the frequency of weather-related events has more than doubled over the last 40 years, with a notable acceleration in the last decade. Hydrological and meteorological events have been responsible for the bulk of the increase, with climatological events growing at a more modest pace in comparison (akin to something similar for geophysical perils – see Figure 15).

Figure 14: Frequency of weather events worldwide by decade – 1980 to 2019 (Source: Munich Re, HX Analytics)



ADVANCES IN THE FIELD OF CLIMATE ATTRIBUTION NOW PROVE THAT CLIMATE CHANGE IS IMPACTING THE FREQUENCY AND SEVERITY OF CERTAIN WEATHER PERILS

Figure 15: Cumulative number of natural catastrophes – 1980 to 2019
(Source: Munich Re, HX Analytics)



This has unsurprisingly brought about a corresponding increase in economic losses from weather-related events. Increased frequency and severity have been important factors in driving loss experience higher over the last decade, with a notable uptick in global economic losses (47% or 57%, depending on the source), and a cluster of record, top 10 events (U.S. hurricanes mostly) that have cost economies a total of more than USD 600 billion since 2005 (see Figure 16 and 17).

Figure 16: Economic losses worldwide for weather events – 1980 to 2019
(Source: World Meteorological Organization, Swiss Re, HX Analytics)

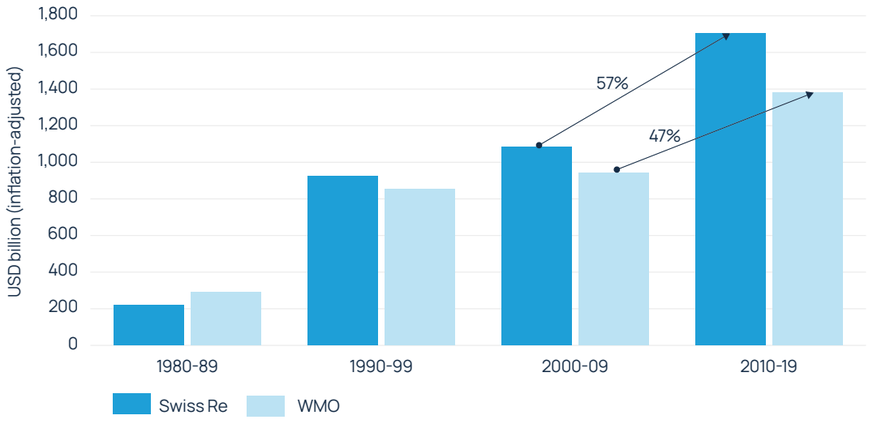
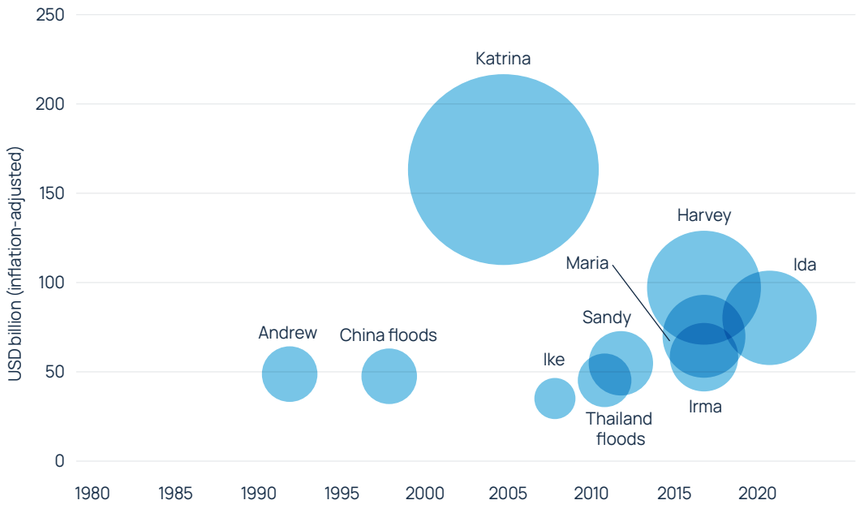


Figure 17: Top 10 weather disasters by reported economic losses
(Source: World Meteorological Organization, HX Analytics)

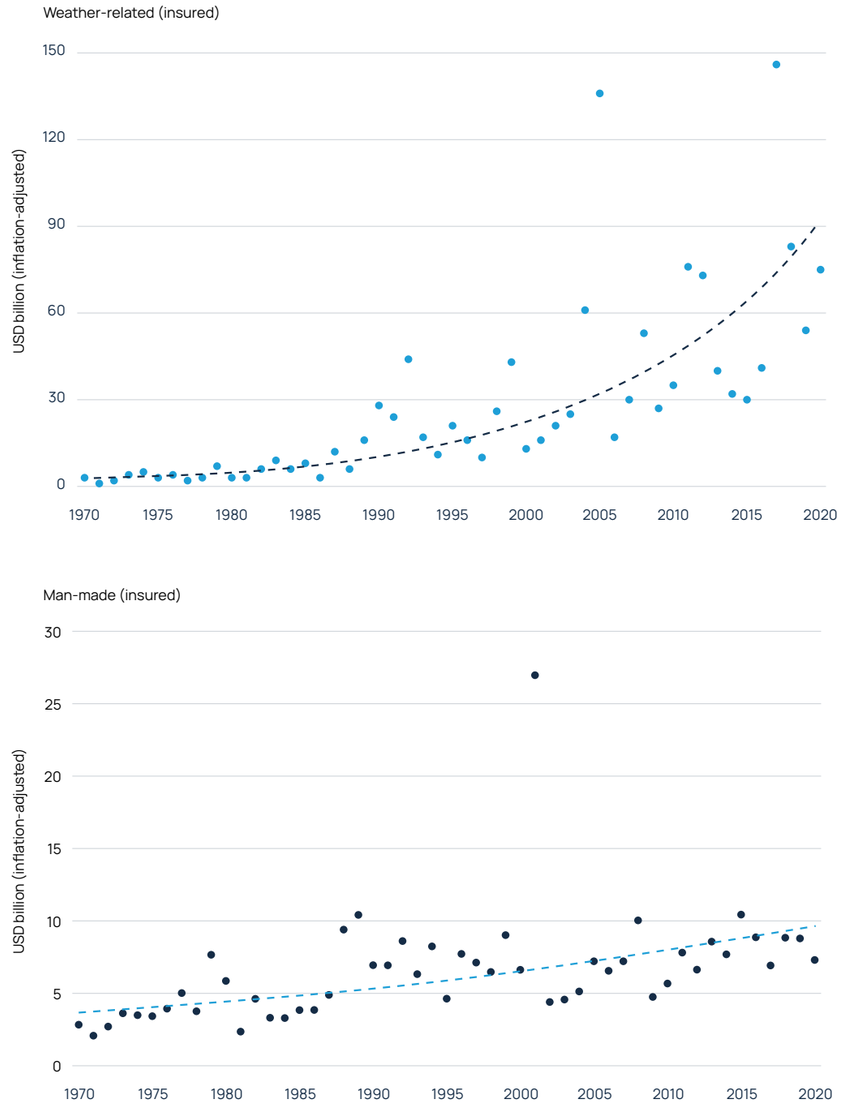


There are, of course, other important factors at play here – including higher asset values and exposures, land-use changes, rapid urban expansion and the lure of living in areas exposed to extreme weather – but the additional effects of climate change are now driving the frequency and intensity of certain perils beyond historical norms. The message is clear: communities, business and policymakers must prepare for higher levels of loss.

More than a coincidence

More extreme weather events, and their associated economic costs, are also starting to translate into higher insured catastrophe losses. Figure 18 shows the distribution of weather-related insured losses over the last 50 years assuming a rapid, non-linear trajectory towards the end of the timeframe whereas man-made events have experienced a flatter loss trend overall. This stresses the underlying increase in weather-related insured losses in the last 10 years specifically, even when allowing for inflation and asset growth.

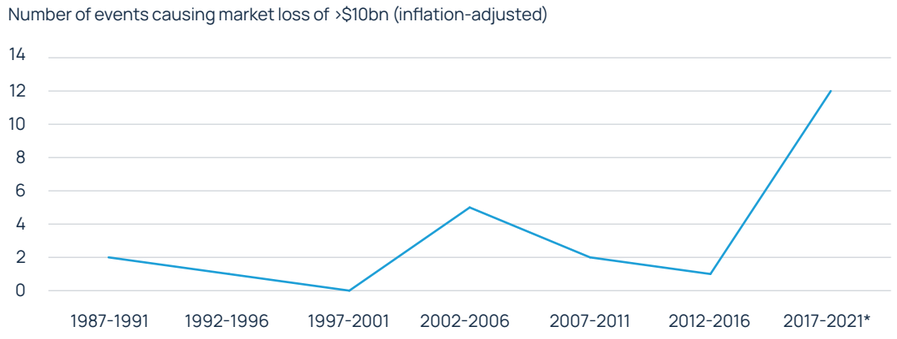
Figure 18: Distribution of insured losses for weather events vs man-made events – 1970 to 2020 (Source: Swiss Re, HX Nova Portal)



After a period of benign catastrophe loss experience in the middle of the last decade, a succession of intense, mid-sized events within the USD 10 billion to USD 30 billion bracket have hit the (re)insurance market in the last five years (see Figure 19). Twelve events to incur losses greater than USD 10 billion have been recorded since 2017, more than double anything seen previously. Given everything that has been discussed up to this point, companies and carriers can expect this trend to continue, or even accelerate.

Whilst acknowledging the challenges carriers face in determining the appropriate underwriting reactions to these trends, and isolating the role climate change is playing (versus asset and exposure growth), any expectation that loss experience will revert back to the old normal is unrealistic. The past is no longer a guide to the future for climate-sensitive perils.

Figure 19: Number of weather-related insurance industry losses >$10bn in real terms by five-year period – 1987 to 2021 (Swiss Re, HX Nova Portal)

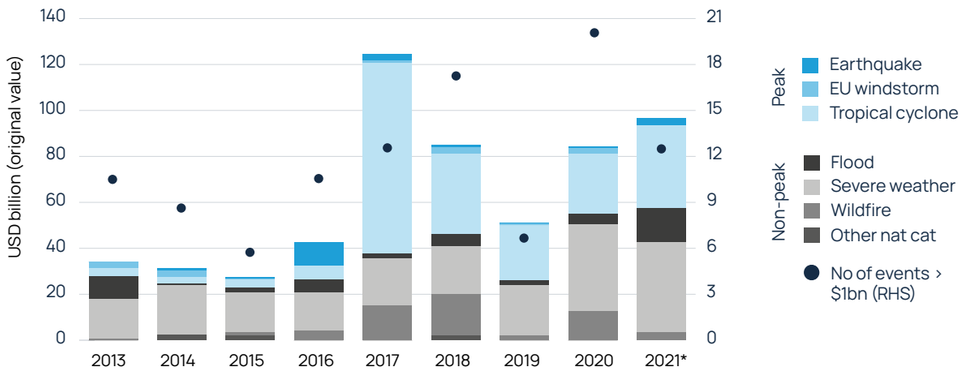


*Data current for 2021 up to end of September.

Rise of 'non-peak' perils

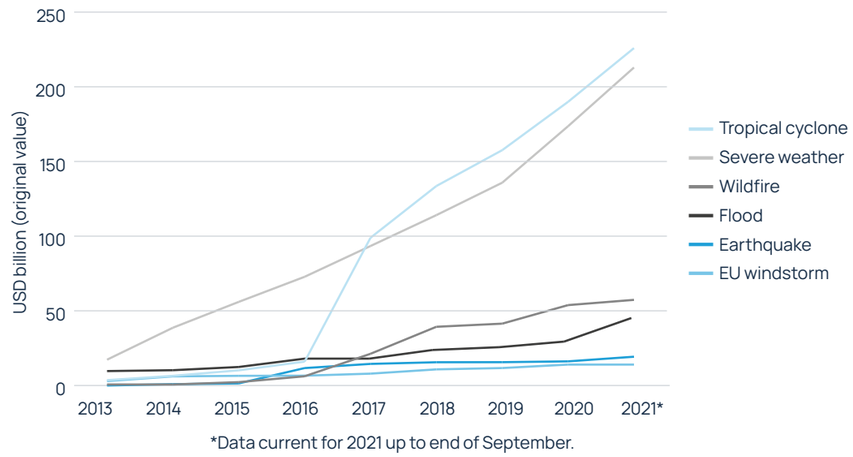
Perils once regarded as attritional or non-peak are contributing significantly to this trend. Figure 20 shows that so-called non-peak perils have been the biggest component of loss since 2013 in all but one year (2017). At the same time, losses from severe weather, made up predominantly of U.S. convective storm events, have come close to surpassing those from global tropical cyclones (see Figure 21). For what is considered to be a peak-peril, losses from European windstorm events have been negligible over the last decade or so. The 'peak' and 'non-peak' peril distinctions of the past are becoming increasingly redundant due to the effects of climate change.

Figure 20: Global insured catastrophe losses by peril – 2013 to 2021 (Source: HX Nova Portal)



*Data current for 2021 up to end of September.

Figure 21: Cumulative insured losses by peril – 2013 to 2021 (HX Nova Portal)

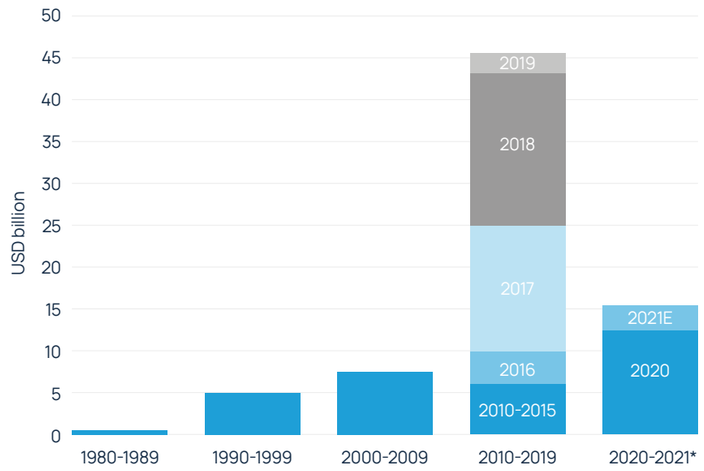


*Data current for 2021 up to end of September.

This significant shift in loss experience is forcing insurers and reinsurers to reassess their views of risk. Damaging losses from perils such as convective storms, winter storms and wildfires, along with increased severity from more established risks such as tropical cyclones, are raising questions about pricing adequacy, the efficacy of catastrophe models and the level of expected claims activity.

Wildfire risk in particular is under considerable scrutiny, as destructive, consecutive events in the U.S. (2017, 2018, 2020 and 2021), Canada (2016) and Australia (2019/20) have generated losses at a quantum more associated with tropical cyclones and earthquakes (see Figure 22). In California, the state's eight biggest wildfires have burned in the last five years. Accompanying (severe) losses are now an annual occurrence – approximately USD 50 billion of insured damage has been reported in California since 2017.

Figure 22: Global wildfire insured losses by decade – 1980 to 2021 (HX Nova Portal)



*Data current for 2021 up to end of September.

Model misses

Catastrophe models are once again firmly under the spotlight. Their credibility is being called into question by market participants, especially in relation to the severity of losses that are manifesting from more frequently occurring events. Discontent within the market is growing, and some are now openly questioning whether current models are fit for purpose in this era of climate change.

Fairly or not, the performance of catastrophe models is often measured against market loss estimates released during live events. Figure 23 shows that the results for a selection of recent major losses have consistently come up short.[7]

CLIMATE CHANGE WILL ONLY CHALLENGE THE ACCURACY OF MODELLED OUTPUTS FURTHER

Increased frequency and severity linked to climate change, and the concomitant impact on concentrations and aggregations, present significant challenges for tools that rely heavily on historical data and past experience to inform assumptions and output. Risk managers and carriers are now routinely asking to see the effect of adjustments in catastrophe models in order to account for future climate change exposures – even where not previously experienced.

This is true for hurricane risk, where certain scenarios foresee a future of not only increased intensity from rising sea surface temperatures but also increased complexity due to the interaction of primary perils (e.g. wind, surge) and secondary impacts (business interruption, loss amplification, power cuts from ageing infrastructure). Even greater hurdles will be encountered for so-called non-peak natural perils such as wildfires, convective storms and floods, not only because of climate variability, but also because these are underdeveloped modelled perils.

Investments in new, dynamic technologies and datasets, along with collaborations with academia and other institutions, will be crucial in delivering a more comprehensive view or risk, including an array of currently unmodelled perils / losses, as well as offering a more forward looking perspective.

Catastrophe models' limitations have been laid bare by recent events, and the effects of climate change will only challenge the accuracy of modelled outputs further. Ultimately, there is no substitute for skilled underwriting: models should be used to inform, not dictate, decision making. Assumptions must be challenged and supplemented by scientific data, as well as underwriting acumen, in order to develop sophisticated, long-term views of risk. Failure to do so is a one way road to underpricing and irrelevance.

[7] Ranges shown are the final / latest estimates released by the modelling companies for each respective event.

Figure 23: Performance of catastrophe models in predicting industry insured losses for recent major events (Source: HX Analytics, AIR, RMS, Munich Re, Swiss Re)

*AIR's estimate covers Germany only whilst RMS's captures losses in western and southern Germany, eastern Belgium, eastern France and Luxembourg.

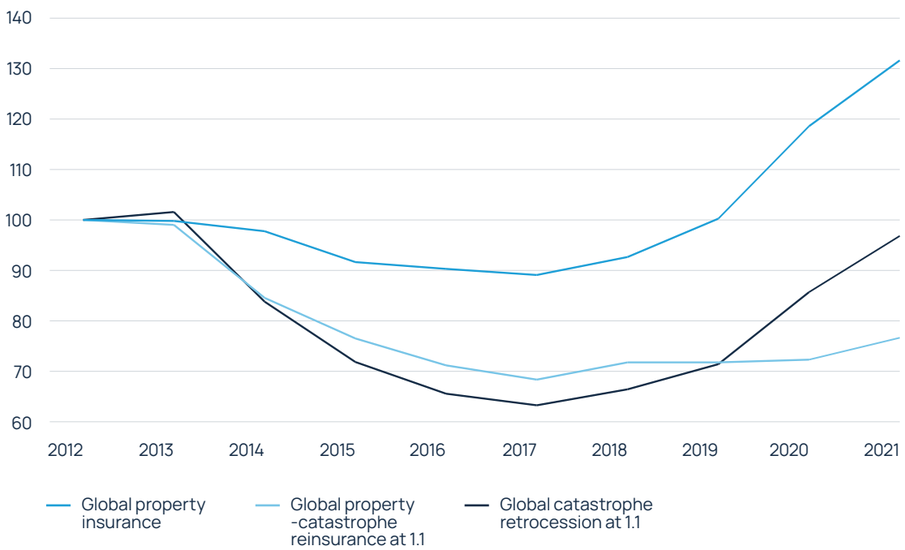
Underwriting implications

The pace of change over a relatively short timeframe is starting to move the (re)insurance market. Views of risk for certain perils are being reassessed, bringing consequences to property-catastrophe supply and demand dynamics. Pricing adequacy and risk selection are unsurprisingly front and centre of discussions, as (re)insurers look to understand the underwriting implications of increased catastrophe loss frequency, alongside attendant issues such as clients' exposure to climate-sensitive perils and even their carbon footprints. Carriers are looking to reduce exposure to higher frequency losses as a result, but could still be more susceptible to changing weather patterns than anticipated.

A recent study conducted by rating agency S&P found that reinsurers could be underestimating their natural catastrophe exposures by between 33% and 50%, exposing the potential for a significant increase in the amount of capital held against these exposures. Whilst S&P estimates that annual insured catastrophe losses of USD 150 billion has a one-in-10 return period, it believes the market is currently modelling this size of loss at return periods of between one-in-20 years and one-in-30 years. An inability or a lack of preparation to model climate change impacts sufficiently could expose carriers' earnings and capital to significant volatility, as well as cause damaging pricing corrections.

Some time is likely to pass before (re)insurers can be confident that catastrophe budgets and pricing levels are set adequately to account for climate change. But by confronting these issues now, the market has an opportunity to facilitate change in a managed way, and over a sustained period of time. Throughout this adjustment, the sector must live up to its responsibility of offering coverage that meets clients' changing needs, as well as ensuring that costs are appropriate for the level of risk assumed. Blanket exclusions cannot be the answer: moves that compel corporations to retain more or offload risks to governments will not only lead to premium loss, but also degrade the value of insurance and call into question the relevance of the industry.

Figure 24: Howden property pricing index for primary, reinsurance and retrocession markets – 2012 to 2021 (Source: HX Nova Portal)



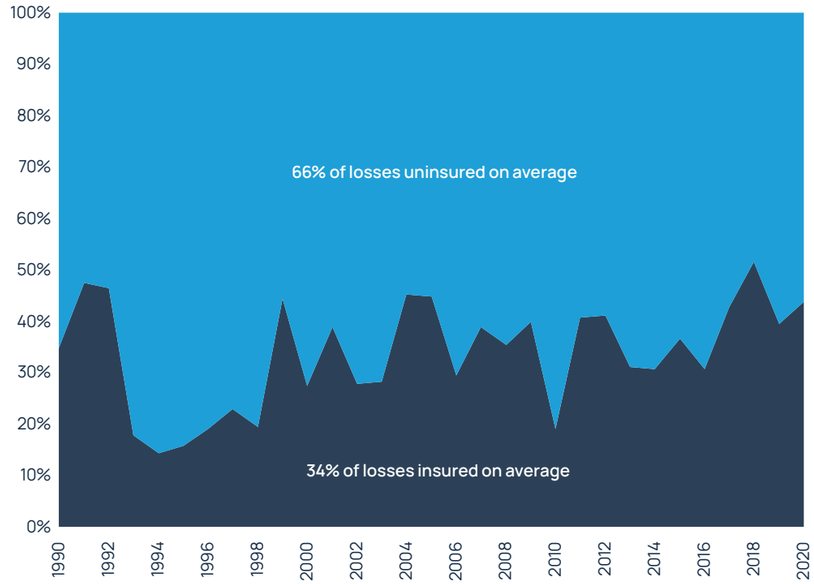
Whilst the underwriting environment will inevitably change to reflect the new operating landscape, this is a well-functioning market where differentiated risk profiles and risk management strategies and advice can still unlock access to capacity and secure favourable terms. In contrast to the dislocations that have frequently followed large losses in the past, the current marketplace remains resilient and well capitalised. Figure 24 shows how strong competition in the property space has contained pricing increases over the last decade or so, although recent frequency and severity trends now appear to be driving rates higher, in the primary market especially.

Protection gaps

Heightened risk awareness will inevitably increase the need for insurance going forward, reinforcing the importance of investing in and accessing world-leading research and models. Organisations that are able to accurately predict future loss activity and offer new, forward thinking solutions around the impacts of these changes will generate new growth opportunities for the sector.

The long-standing gulf between economic and insured costs, otherwise known as the 'protection gap', is often flagged as such an opportunity, albeit one that the insurance sector and other key stakeholders, including governments, have been slow to address. Figure 25 shows how the gap has ebbed and flowed over the last 30 years, rising from the depths of sub-20% in the early-to-mid 1990s but still languishing around the 40-50% mark for much of the remaining period. This essentially means that, on average, insurance has covered only a third of all weather-related losses since 1990.

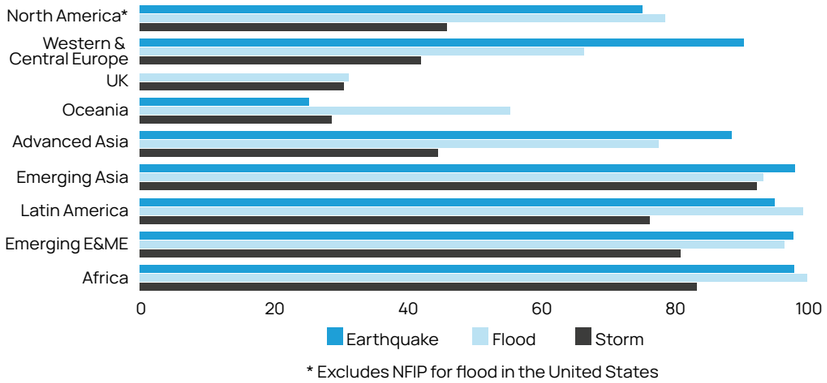
Figure 25: Protection gap for weather-related risks worldwide – 1990 to 2020 (Source: Swiss Re, HX Analytics)



The degree of underinsurance fluctuates significantly depending on the nature and location of events (see Figure 26). This is not a problem confined to emerging markets only: insurance covers less than half of all flood losses in four out of five advanced regions included in our study (the United Kingdom being the exception). Roughly 20% of all flood losses in North America are covered by private insurance.

The situation is just as grave for earthquake risk, where insurance claims payments contribute to less than 30% of the overall costs in every exposed advanced region other than Oceania. The data for storms (which include tropical cyclones) are more positive overall, although they continue to lag badly in emerging economies. Uptake for earthquake and flood insurance cover in developing countries is negligible.

Figure 26: Uninsured natural catastrophe losses by peril and region (Source: HX Analytics, Swiss Re, Munich Re, PCS, NOAA)



* Excludes NFIP for flood in the United States

Disaster relief finance

The prospect of the catastrophe protection gap in the emerging world being reversed any time soon by traditional risk transfer products is low to non-existent. But developing opportunities in the disaster relief space could be a game changer for some of the world's poorest populations, with insurance at the heart of the solution.

Vulnerable communities in low-income countries already suffer disproportionately from natural disasters, and are now facing the starkest effects of climate change. Low rates of insurance penetration in these areas leave them even more exposed to shifting weather patterns and extreme events.

An increasing portion of uninsured catastrophe costs is being borne by governments and non-governmental organisations (NGOs), but with serious inefficiencies: financing is rarely raised in advance, and when it does arrive on the scene, it is often late. Figures 27 and 28, respectively, show total disaster funding committed by various institutions in nine low-income countries[8] (note the negligible role played by insurance currently) and the widening funding gap between requests for humanitarian aid and actual contributions.

Disaster relief funding is an area ripe for new risk transfer solutions. Not only are governments and NGOs taking on a greater burden of risk at a time of strained public finances, but insurance is underutilised massively for disaster relief funding and there are substantial constraints in meeting current demand. In fact, the proportion of aid contributions relative to total humanitarian needs fell to a new low last year, resulting in a shortfall of close to USD 20 billion.

[8] Democratic Republic of Congo, Haiti, Indonesia, Kenya, Lesotho, Mozambique, Nepal, Peru and Vanuatu.

Figure 27: Disaster funding by institution type in select low-income countries – 2015 to 2020[8] (Source: Centre for Disaster Protection)

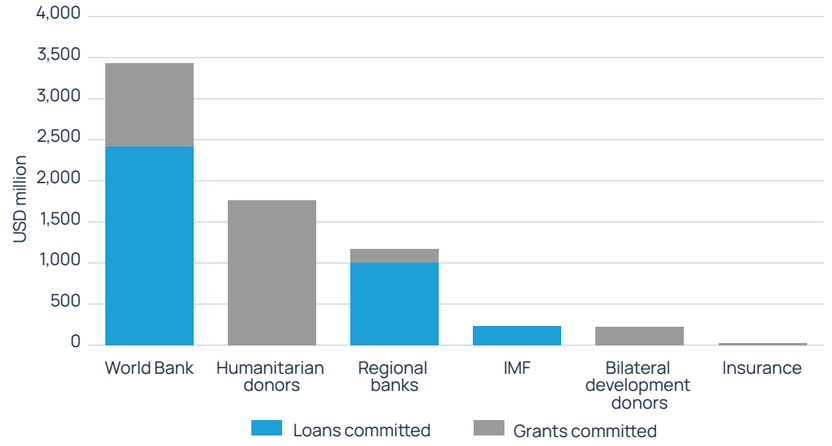
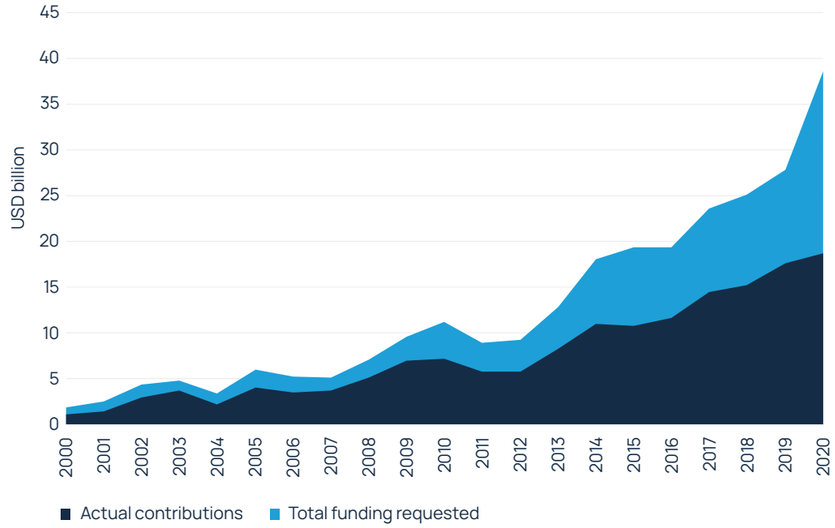


Figure 28: Humanitarian funding gap – 2000 to 2020 (Source: OCHA FTS, HX Analytics)



By attracting and deploying new capital to this space, insurance can play a vital role in reducing the disaster relief funding gap. This is not an issue that can be solved by tweaking at the margin, as some believe. Budgetary constraints within low-income countries often preclude any adequate disaster insurance and risk management planning: more of the same is not going to move the dial. The magnitude of the issue (and opportunity) requires a far more imaginative and innovative response that rethinks how disaster relief functions – and even how premiums are funded – with risk transfer at its core. This is about scaling up the risk transfer market into areas where no insurance solutions exist currently.

After the reputational hit taken by the insurance sector through the COVID-19 crisis, this is an opportunity for insurance to become synonymous with economic advancement and long-term recovery / resilience for some of the world's most vulnerable populations.

Addressing the disaster relief gap

Humanitarian aid charities spend billions of dollars each year on disaster relief. Whilst cost-benefit considerations may not be at the forefront of donors' minds when making contributions, charities' ability to respond quickly and effectively post-disaster can be a matter of life and death. Sitting on cash donations in anticipation of the next disaster, or asking for money after an event has occurred, are not the most effective ways of leveraging funds.

This raises an exciting opportunity for the risk transfer sector and charities to come together to better manage / distribute disaster relief. Howden is at the forefront of this initiative and started to work with the Red Cross earlier this year to explore enhancing the deployment of donations by using insurance-linked securities (ILS) as a means to pre-fund disaster relief.

This brought about the launch of the world's first volcano parametric catastrophe bond in March. By using advanced modelling developed by Mitiga Solutions and blockchain technology developed by Replexus, the bond will raise humanitarian funds in advance, and allow aid to be released more quickly and effectively. It also offers uncorrelated returns for investors.

Although relatively small in size at USD 3 million, the gearing achieved by this bond has an impressive multiplier effect: in the event of a total payout, for instance, every dollar donated would be worth USD 20 of disaster relief. Its parametric trigger (measured in the first instance by the height of the ash plume and then wind direction / ash cloud dispersion) also facilitates automatic and immediate payment, meaning that, in the event of trigger, the proceeds would be accessible before most other sources of funding available to the Red Cross.

This catastrophe bond provides an excellent proof of concept for a multitude of other disaster and climate risks in this space. By using private (re)insurance capital to cover specific risks, charities are able to proceed with the certainty needed to release funds for other urgent, 'here and now' causes without depleting reserves held for future disasters. Or, in other words, insurance should be seen by charitable organisations as a cash release mechanism for disaster relief that will ultimately help alleviate hardship for low-income communities and, equally important, build long-term resilience.

Such efficient use of insurance capital has the potential to revolutionise disaster relief funding. The pool of opportunity is vast – international humanitarian response for natural disasters worldwide is estimated to cost between USD 6.5 billion to USD 20 billion every year[9] – and the scalability of the concept is being demonstrated with the planned issuance of another disaster relief catastrophe bond early next year, this time for USD 100 million. There is much more in the pipeline.

The drive for innovation in the disaster relief space sends a powerful message at a time of deep concern about the impact of climate change on poorer countries: not only does it demonstrate the unrivalled risk management expertise within the insurance industry but also the considerable value (re)insurance brings when looking to tackle the big challenges of today. By spearheading the innovation charge for disaster relief, Howden is proud to live up to our reputation as the challenger broker that delivers pioneering solutions and pushes the boundaries of insurability.

> INSURANCE SHOULD BE SEEN AS A CASH RELEASE MECHANISM FOR DISASTER RELIEF

[9] IFRC, *World Disaster Report 2020: Come Heat or High Water* https://www.ifrc.org/sites/default/files/2021-05/20201116_WorldDisasters_Full.pdf.

03

Building resilience

Resilience is a core function of (re)insurance. Putting aside its position as a large, long-term investor in infrastructure projects and businesses, the sector facilitates innovation and growth. It also creates safety and stability for policyholders during times of crisis. There would be no investment, trade or economic advancement without (re)insurance.

The sector therefore has a crucial role to play in building a more sustainable future. This is a course fraught with difficulties, but also opportunities: every entity, asset class and investment portfolio is exposed in some way to climate risk. Communities, businesses, governments and NGOs face no bigger issue.

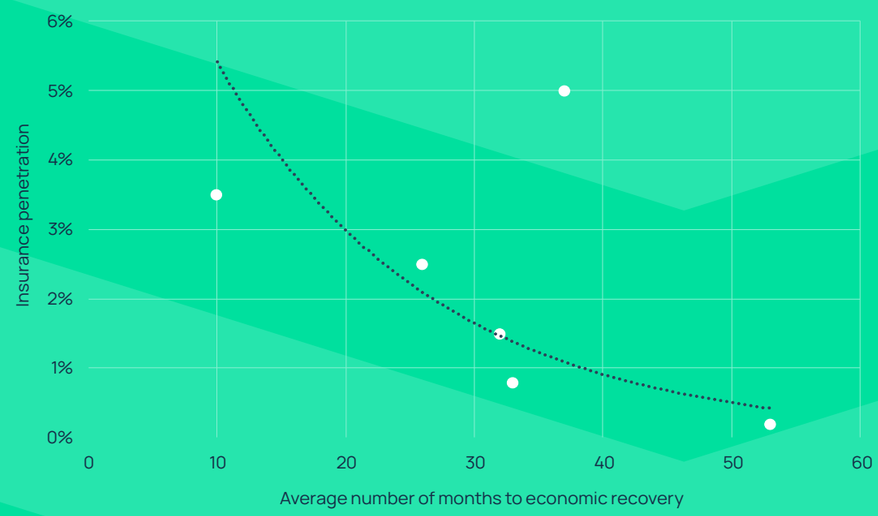
(RE)INSURANCE HAS A CRUCIAL ROLE TO PLAY IN BUILDING A MORE SUSTAINABLE FUTURE

Post-disaster recovery

This is why Howden is dedicating so much resource and investment to its Climate Risk and Resilience practice. The specific mission to extend protection to communities most vulnerable to disaster and climate risks not only has the potential to create new premium pools for the sector, but, more importantly, provide a force for social good by helping communities rebuild and strengthen resilience to future extreme weather (and geophysical) events.

Figure 29 shows how higher levels of insurance penetration in mostly developed countries have accelerated the speed of economic recovery by several months or even years following recent major natural catastrophes. According to AXA and the Centre for Risk Studies, each percentage point increase in insurance penetration equates to roughly one year improvement in recovery time.

Figure 29: Insurance penetration vs post-disaster economic recovery
(Source: AXA XL, Cambridge Centre for Risk Studies Analysis)



The series of earthquakes in New Zealand in 2010/11 showcase how insurance can make a real difference to alleviating hardship and economic pain. Despite the financial magnitude of the earthquakes, with total economic and insured losses exceeding USD 35 billion and USD 29 billion, respectively, the rapid payments of claims were instrumental in assisting rebuilding efforts and accelerating economic recovery.

Looking at overseas reinsurance payments alone, nearly USD 16 billion in earthquake claims have been paid to date, with three-quarters settled within 60 months of the first event (see Figure 30). Figure 31 shows how the payment of claims and commencement of rebuilding enabled New Zealand's economy to recover lost output just 18 months after the first event.

Figure 30: Overseas reinsurance claims from the 2010/11 New Zealand earthquakes
(Source: Stats NZ, HX Analytics)

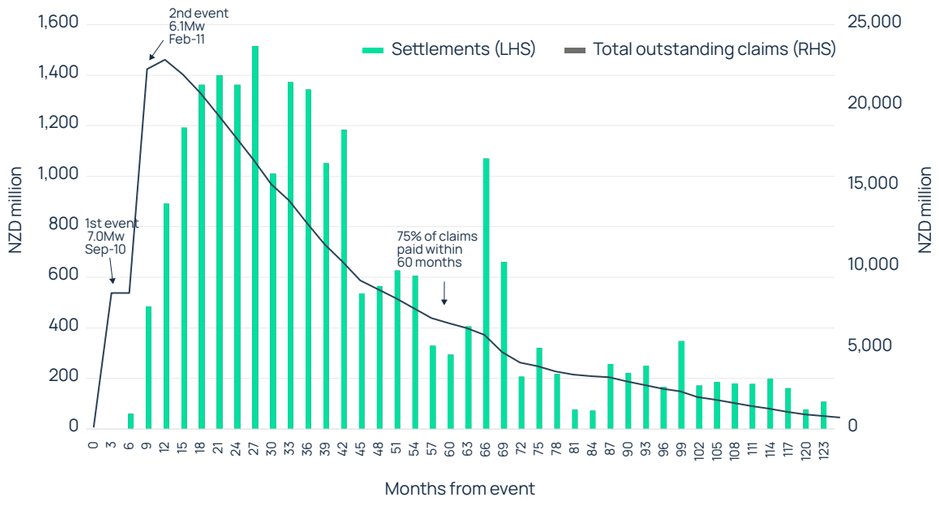
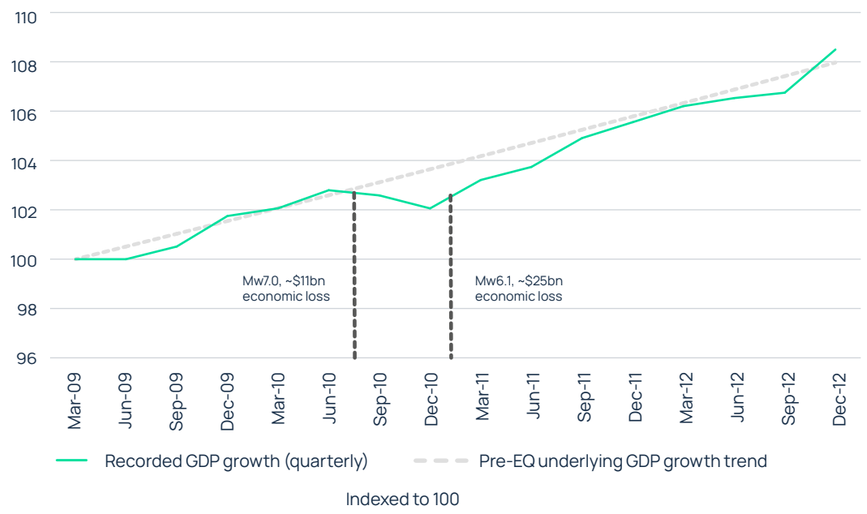
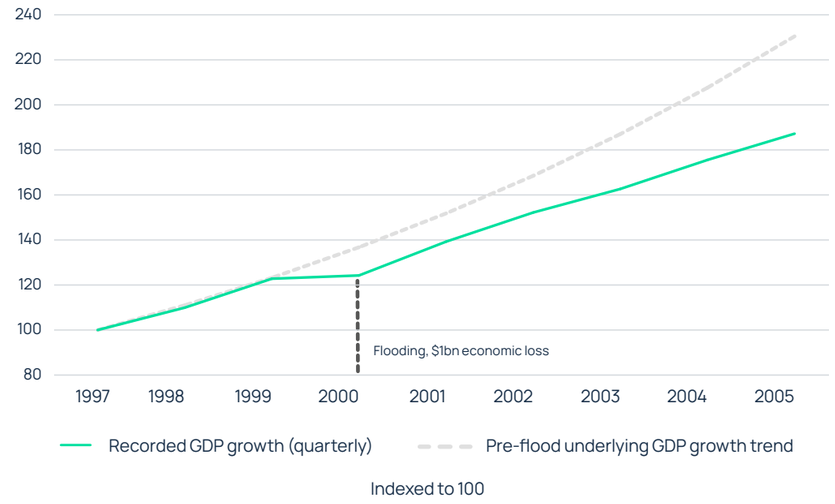


Figure 31: New Zealand GDP actual vs underlying trend – 2009 to 2012
(Source: Stats NZ, HX Analytics)



Contrast this with the floods in Mozambique (2000, 2019) or the earthquake in Haiti (2010), for example, where low insurance penetration saw GDP fail to return to their respective pre-event trajectories. Figure 32 shows the extent of potential economic activity lost in Mozambique in the first five years following the 2000 floods. The impacts of such economic setbacks endure for economies like this, where poverty and hardship are already prevalent.

Figure 32: Mozambique GDP actual vs underlying trend – 1997 to 2005
(Source: World Bank, HX Analytics)



The New Zealand example is testament to the economic value (re)insurance brings to post-disaster recovery. It applies to both advanced and developing economies, as well as climate-related perils. As public and private entities confront the reality of climate change, along with an already strained public purse, increased demand for disaster relief risk transfer is already materialising, presenting the (re)insurance sector with a real opportunity to step up and finally fill the long discussed loss gap.

THE IMPACTS OF LOST ECONOMIC ACTIVITY FOLLOWING NATURAL DISASTERS ENDURE FOR LONGER IN DEVELOPING COUNTRIES, WHERE POVERTY AND HARDSHIP ARE ALREADY PREVALENT

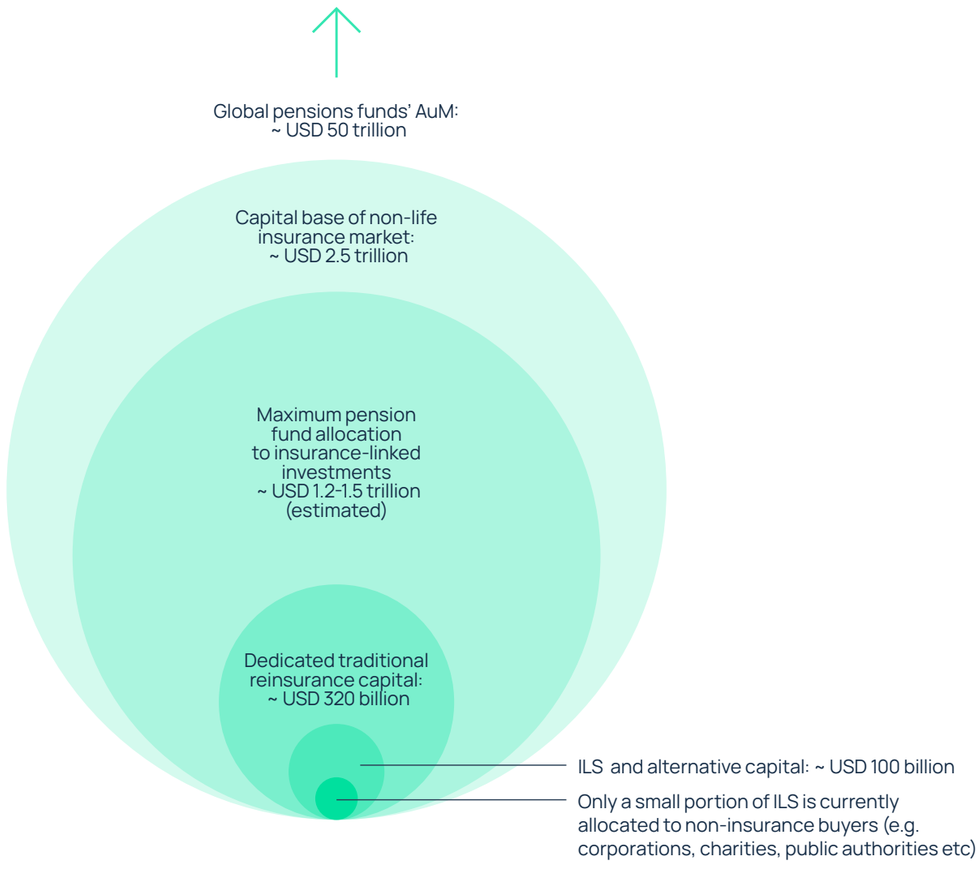
New sources of capital

Servicing new demand, especially at a time of heightened risk aversion, is a test that the sector cannot fail. It will require innovative thinking around products and sources of capital in order to meet changing needs – in the same vein as the volcano catastrophe bond referred to earlier.

The pool of supply provided by the ILS market for non-insurance market sponsors specifically has the potential to grow significantly. Figure 33 attempts to put this into context by visualising assets under management (AuM) for global pension funds, which today are worth an estimated USD 50 trillion, together with various components that make up the total capital base of the non-life (re)insurance market. ILS and alternative capital is currently estimated at close to USD 100 billion, equivalent to just 4% of overall insurance and reinsurance capital, and the lion's share of this is accessed by insurance companies.

Howden estimates that as much as USD 1.5 trillion of total pension fund capital could be available to deploy in the (re)insurance space, highlighting the considerable capacity potential that sits within capital markets for both non-insurance and insurance market sponsors. The ILS market holds considerable appeal for investors currently, given the relatively strong rates of return (for the level of risks assumed), its uncorrelated and diversifying nature as well as the opportunity to invest in an asset class recognised (genuinely) for its environmental, social and governance (ESG) credentials.

Figure 33: Global pension funds' AuM and total capital base of non-life insurance sector
(Source: HX Analytics, PwC)



Promoting better behaviours

In addition to sourcing and matching capital to risk, it is incumbent on brokers and carriers to raise awareness of the impacts changing weather patterns will bring, as well as offering insights and products that influence behaviours, incentivise mitigation and adaption and strengthen resilience.

The ESG movement is likely to become a major factor in this regard. With increased investor and regulatory focus on high corporate standards, ESG has moved into the public mainstream. Whilst climate sustainability has pushed the 'E' to the forefront, there is a broader push for corporate social responsibility within the 'S' and the 'G'.

Quantifying the impact of businesses' ESG credentials to profitability is still early in the making, but given factors like climate sustainability, decarbonisation, talent attraction / retention, employee wellbeing, reputation and good corporate governance are all integral to long-term performance, ESG-friendly companies are more likely to outperform less sustainable competitors, all else being equal.

Understanding the relevance of ESG in relation to insurance underwriting was until recently an equally underdeveloped area of research, prompting Howden and Parhelion to conduct an in-depth study around companies' ESG regimes and claims experience. The basis of the research and its conclusions are laid out in more detail overleaf, but the key takeaway is clear: companies with strong ESG behaviours and frameworks are 'better' companies from an insurance risk perspective.

Not only does this evidence provide carriers with some predictive levers to offer protection at more advantageous terms for 'higher quality' risks, it also highlights the influential role that the insurance sector can play in helping to create a more sustainable future by driving the importance of risk management and, over time, incentivising less ESG-compliant companies to change behaviours and, ultimately, limit or prevent losses.

COMPANIES WITH STRONG ESG BEHAVIOURS AND FRAMEWORKS ARE 'BETTER' COMPANIES FROM AN INSURANCE RISK PERSPECTIVE

The ESG effect on underwriting

The basis of this research, undertaken by Howden on behalf of Parhelion[10], was founded on the supposition that companies with strong ESG frameworks generate better underwriting results for insurers. Or, in other words, the premise was that companies with strong ESG regimes are likely to result in lower insurance claims or better insured loss performance (lower loss ratios) than less ESG-friendly companies.

The study set out to test this hypothesis and quantify any ESG impact to underwriting loss ratios. The exercise was conducted in two phases:

1. Cross matching company ESG ratings within two external ESG databases – S&P Global Ratings ESG and Refinitiv ESG – against insureds captured by Howden's transaction data.[11] The combined output produced a total of close to 2,000 company matches, which equated to 23,800 policies (spread across multiple business lines), GBP 4.5 billion of premiums and GBP 2.9 billion of claims.
2. For each matching insured, the policies and claims data were extracted as recorded and projected to ultimate using actuarial (chain ladder) techniques.

Minimal manipulation was performed on the data, except to focus the analysis on classes of business that returned most matches whilst outsized accounts and 2020 data were excluded. Matching companies were classified into composite ESG score levels according to both the S&P and Refinitiv ESG models.

Figures 34 and 35 show a selection of the results, aggregated across all lines of business and distributed by different grouping levels. The results from both ESG databases, which use (very) different scoring methodologies, confirm that higher ESG scores bring corresponding improvements to loss ratios, with the S&P results exhibiting a steeper trend line in both instances.

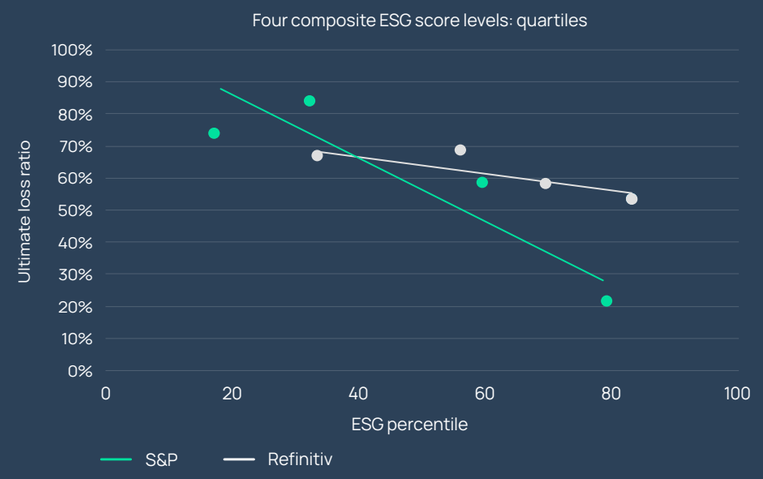
Whereas the S&P results for the three composite score levels point to a loss ratio decrease of 0.99% for every one point increase in ESG score, the Refinitiv results show a more modest benefit of 0.26%. A similar range (89% vs 29%) is provided for the four composite score levels. Irrespective of where the more realistic representation lies, the loss ratio impact is meaningful.

[10] All rights reserved.

[11] The data captured premium and claims information across a large portfolio of primary commercial insureds over several years, underwritten by multiple carriers using their own underwriting criteria. Actuarial analysis was used to project ultimate loss ratios, which relies in part on expert judgement, particularly for more recent calendar year results in liability / casualty lines of business.

Figure 34: Three composite ESG scores and ultimate market loss ratios aggregated across nine lines of business (Source: Howden, Parhelion)

Figure 35: Quartile ESG scores and ultimate market loss ratios aggregated across nine lines of business (Source: Howden, Parhelion)



The detail provided here is just a snapshot of the full results, which also drill down into specific lines of business and geographies. Tellingly, property lines returned the strongest loss ratio improvements relative to ESG scores. The consistency of the results is overwhelmingly positive from an underwriting perspective and provides an affirmation of the original hypothesis: that higher ESG credentials are indeed correlated to lower loss ratios.

The research undertaken for this study is original and unique, and whilst the results perhaps do not come as a huge surprise – superior risk management has, after all, long been known to reduce loss probability – it does arm (re)insurers with new insights into how ESG indicators can mitigate risks and improve underwriting performance, as well as be used to incentivise more sustainable business behaviours.

04

Delivering a sustainable future

Bringing all this together talks to the huge opportunities on offer for the risk transfer market. As the implications of climate change and ESG collide, every company is now thinking about how to navigate a path forward, and are naturally turning to their insurance partners for advice and solutions. The market's record and expertise in understanding, measuring and mitigating risks will be in high demand, as clients consider the utility and cost efficiencies of risk transfer in managing and financing their respective paths to net-zero.

(Re)insurance capital is likely to (over time) deviate away from carbon intensive companies towards more sustainable business models and greener industries. New risks will emerge and client needs will change, and it is crucial to the long-term success (and relevance) of the sector that insurance providers respond with actions, as well as words, by providing the solutions and capacity required.

As an intermediary, we are conscious of our position in the market and our responsibility to inform and lead the discussion by putting forward the interests of clients and promoting areas of opportunity. This paper attempts to do just that. By bringing important trends to the fore – and there is no more important topic than climate resilience right now – Howden aims to raise awareness and push the boundaries of insurability for the benefit of clients and society at large. We look forward to working closely with insurance and reinsurance companies in this endeavour, and supporting clients on their respective journeys to sustainability.

05

Contacts

Howden Analytics

Julian Alovisi
Head of Research
+44 (0)7593 576 024
julian.alovisi@howdengroup.com

David Flandro
Head of Analytics
+44 (0)7719 928 552
david.flandro@howdengroup.com

Man Cheung
Head of Actuarial
+44 (0)7834 178 989
man.cheung@howdengroup.com

Iain Davie
Head of Catastrophe Modelling
+44 (0)7923 2103 45
iain.davie@howdengroup.com

Mark Shumway
Head of Advisory
+44 (0)7761 516 537
mark.shumway@howdengroup.com

Michelle To
Head of Business Intelligence
+44 (0)7710 705 627
michelle.to@howdengroup.com

Climate Risk and Resilience

Charlie Langdale
Head of Climate Risk and Resilience
+44 (0)7464 699 444
charles.langdale@howdengroup.com

Stuart Martin
Associate Director
+44 (0)7523 908 647
stuart.martin@howdengroup.com

Victoria Maynard
Account Executive
+44 (0)7710 705 572
victoria.maynard@howdengroup.com

howden

One Creechurch Place, London, EC3A 5AF

T +44 (0)20 7623 3806
F +44 (0)20 7623 3807
E info@howdengroup.com

www.howdengroup.com