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Evidence that climate change adversely impacts human health is mounting. 2023 was the warmest year on record, with human-induced global warming intensified by natural climatic patterns. Regions around the world experienced extreme heatwaves, and wildfires consumed over 120,000 km² of Canadian forests, resulting in a record 290 megatons of carbon emissions. These wildfires led to the poorest air quality ever recorded in Washington D.C. and prompted multiple states to declare 'code red' and above air quality alerts. With over 40% of the global population living in climate-vulnerable locations, an unfettered escalation of current shocks and patterns may have significant ramifications not just for health, but also the social determinants of health.

In insurance, understanding of the risks related to climate change is mostly concentrated in property and casualty (P&C) business lines as well as investments. While the short-term consequences for health and life (H&L) insurers have so far been modest, this may change in the longer term as climate events become more frequent and severe.

Categorising climate-change-related health risks to insurers

Climate-related health risks can be broken down into four categories.

- **Acute risks** stem from the impacts of extreme weather – such as heatwaves, floods and severe storms – on mortality and morbidity.
- **Chronic risks** are those emerging from prolonged exposure to adverse climate and environmental patterns.

- **Transition risks** may result in good or poor outcomes. On the one hand, investment in clean energy may mitigate chronic risks as air quality is improved. On the other hand, the transition from coal to fossil gas, such as shale gas, may also lead to adverse health outcomes.
- **Litigation risks** are those arising from the threat of morbidity and mortality to current and future generations from climate change, with plaintiffs attempting to either compel action on climate mitigation or to prevent actions that exacerbate risks.

Climate shocks and the role of health systems

The impact of climate change on health can be calibrated upwards or downwards by the broader operating environment. As such, the resilience and preparedness of health systems play a pivotal role in tempering these risks by absorbing initial shocks before they spill over to the wider ecosystem. This largely hinges on three key domains:

- Policy, including progress towards universal health coverage (UHC) or developing early warning systems (EWS);
- Financial and technical competence, including workforce availability, training, and investment in infrastructure and supply chains;
- Accessibility of healthcare, specifically, the factors that determine the availability, affordability and quality of care needed.

TABLE 1: THE DIRECT AND INDIRECT INFLUENCES OF EXTREME WEATHER EVENTS AND GRADUAL CLIMATIC SHIFTS ON HUMAN HEALTH

Climatic conditions	Type	Health outcomes					
		Cardiovascular diseases	Allergies	Diarrheal diseases	Malnutrition	Vector-borne diseases	
Extreme events (acute)	Heat extremes	✓	✓		✓	✓	
	Wildfires	✓	✓		✓	✓	
	Flooding		✓	✓	✓	✓	
	Severe weather	✓		✓			
Slow-changing events (chronic)	Droughts			✓	✓	✓	
	Rising temperatures	✓	✓	✓		✓	
	Sea level rise			✓	✓	✓	
	Water availability & quality			✓	✓	✓	
	Ecological changes		✓	✓		✓	
	Environmental degradation		✓		✓	✓	
	Air pollution	✓	✓			✓	
	Food supply	✓		✓	✓		

Source: The Geneva Association

Globally, health systems are likely to face an additional burden of USD 1.1 trillion due to climate change, with floods, droughts, heatwaves and infectious diseases identified as the leading causes.¹ Using the UHC index – which assesses the current coverage and accessibility of healthcare services on a global scale – as a proxy reveals a stark divide between wealthier regions and nations (Europe, Australia, Canada, Japan, Singapore and South Korea) and the rest of the world. It is therefore reasonable to infer that in settings where health systems lack the capacity to address routine healthcare demands and have significant health protection gaps, the likelihood of elevated climate-related health risks is notably heightened.²

Implications for health and life insurance

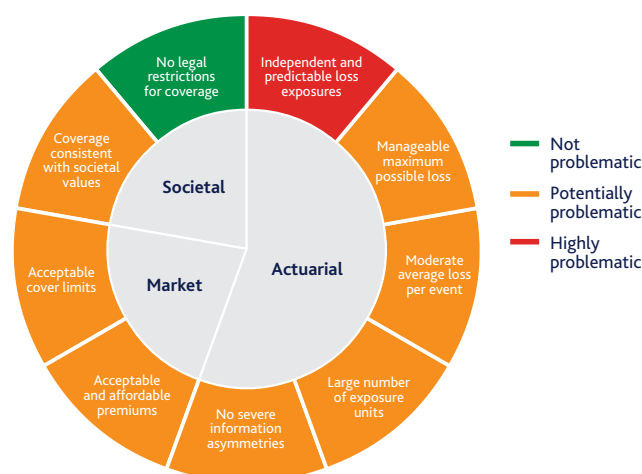
Interviews with 41 key informants spanning 17 global H&L insurance companies as well as experts on how they experience and view the impact of climate change on health, both now and in the future, shed light on the insurability of climate-related health risks. The insights were evaluated taking into account a widely used insurability framework (Figure 1).

The current impact of climate change on H&L insurance products

Most interviewees do not perceive climate change as exerting any immediate impact on the liabilities associated with H&L insurance products, nor do they anticipate short-

term consequences for their insurability and affordability. But there is consensus that this might change due to the increasing scale, intensity and frequency of climate events, particularly with global temperatures likely to surpass the 1.5°C threshold by 2027.³

FIGURE 1: INSURABILITY FRAMEWORK



Source: The Geneva Association, based on Berliner⁴

The interviews also highlighted the risks of extreme events that can affect all population segments. Frequent concerns particularly extend to Southern Europe, notably Spain, and

1 World Economic Forum 2024.
 2 GBD 2019 UHC Collaborators 2020.
 3 WMO 2023.
 4 The Geneva Association 2020; Berliner 1982.

Health outcomes							
	Respiratory diseases	Cancer	Injuries & displacement	Heat-related illnesses	Other chronic illnesses	Degenerative diseases	Antimicrobial resistance
	✓	✓		✓		✓	
	✓	✓	✓	✓		✓	
	✓		✓				✓
			✓	✓			
				✓	✓		
		✓	✓	✓	✓	✓	✓
			✓				
		✓			✓		
	✓		✓	✓			✓
	✓	✓	✓				✓
	✓	✓			✓	✓	✓
		✓	✓			✓	

specific areas in the U.S. that are vulnerable to extreme events as well as regions situated close to the equator. Equally, chronic risks from prolonged exposure to adverse climate patterns (for example poor air quality due to wild-fires) can affect the whole population. The emergence of new vector-borne diseases is also seen as a rising threat from environmental degradation and melting permafrost linked to climate change.

The future impact of climate change on H&L insurance products

Actuarial considerations

Are loss exposures independent and predictable?

This fundamental criterion of insurability is not met with climate-change-induced H&L risks based on the evidence emanating from population-level studies. However, some idiosyncrasies of the health insurance market may mitigate this challenge. For instance, insureds may be more affluent and have white-collar jobs and fewer existing comorbidities, making them less susceptible and more able to adapt.

Is the maximum possible loss manageable and the average loss per event moderate? Current evidence suggests that losses have been manageable to date, partly because of insurers' diversified portfolios. But the outlook is highly uncertain. The absence of consolidated, granular and longitudinal data that can be used to map climate events and patterns against incidences of mortality or morbidity hinders the measurement of risks. As a basis for assessing the consequences of climate change for insurability, H&L insurers need to resolve the actuarial gaps in

understanding by consolidating data and intelligence from P&C business lines, health providers, policymakers and climate scientists.

Is the number of exposure units large enough? While there are potentially many exposure units, their particular exposures may vary widely in their characteristics, making it hard to estimate loss. In other words, a large risk pool may not always buffer future losses if the units are not homogenous. Interviewees acknowledged the heterogeneity of exposure across different geographical regions, both within and across countries, as well as by health conditions (pre-existing morbidities). This makes it hard to identify any specific sources and quantity of loss within a risk pool.

Is there any severe informational asymmetry? The current body of information combining health and climate risks and insurance is limited. However, one reasonable extrapolation may be that an element of informational asymmetry (in favour of the insured) is likely to be present when diseases and care episodes are covered by more than one insurer, e.g. statutory versus supplementary or complementary voluntary health insurance, or within group plans. Considering the absence of data on informational asymmetry, discussions with interviewees largely focused on the need to improve the quality of prevailing 'information' about climate change and health, both on the demand and supply sides, to narrow information deficits.

Market considerations

So far, climate considerations have not played a prominent role in the design and pricing of H&L insurance products.

The prevailing view is that evidence on climate-related liabilities for H&L insurers is limited and discussions on methodologies for assessing climate-related H&L risks are relatively nascent.⁵ Many interviewees emphasised the need to prioritise data-gathering tools to improve understanding of the risks first, before revisiting product design or pricing considerations for market readiness.

However, certain areas of development merit attention, most notably risk prevention and reduction. Many interviewees endorse the promotion of wellness programmes aimed at preventing chronic illnesses, which align with climate-friendly activities through incentives and rewards for making healthier choices. This approach also provides H&L insurers with opportunities to engage with customers through advisory systems.

Parametric insurance is another noteworthy innovation. Under this model, payouts are triggered when specific, measurable and predetermined criteria (e.g. extreme heat or pollution levels) are met. Such features may also be paired with additional risk prevention strategies, including enabling remote work during extreme heat or cold.

Societal considerations

The current level of knowledge does not lend itself to underwriting health risks specifically linked to climate change. In addition to methodological constraints in risk attribution, from a societal perspective such underwriting also inherently conflicts with the insurance industry's sustainability and inclusivity goals. For instance, favouring those who are better able to adapt to extreme heat through air conditioning risks excluding those who may be most in need. There is overwhelming agreement among interviewees that prevention, for example impact underwriting that incentivises greener lifestyles and public education, is the preferred way to preserve insurability.

The way forward

There is currently no evidence to definitively state that climate-related risks are influencing the existing array of H&L insurance products. However, this non-effect is highly likely to be due to the lack of consistent and complete data. Based on these observations, we put forward the following recommendations for H&L insurers:

Assemble data prospectively: To improve understanding of future risks, H&L insurers need to assemble multi-sectoral data, which will require drawing from a wider set of stakeholders. This may include assessing not only the likelihood of heatwaves in a given region, but the number of elderly, frequency of power cuts and prevalence of existing morbidities to develop forward-looking climate and health scenarios.

Invest in innovation: Parametric insurance has garnered attention and holds valuable lessons for the future. But such initiatives would require H&L insurers to homogenise

the risk and quantify its volume and frequency to decide whether shouldering the risk of a mass 'trigger' event is within their appetite, without making premiums unaffordable. Regulatory considerations would also be critical, considering the novelty of innovative approaches.

Play a bigger role in the policy environment: Insurers can play an important role in strengthening public understanding of the full spectrum of health risks related to climate events and implement simple and accessible messaging in their communications with customers. Understanding of climate-related health impacts within the insurance industry also needs to go well beyond Nat Cat.

Public-private collaborations can be stepped up to create an ecosystem of preventative strategies and related actions to implement them. Examples include building EWS and evacuation protocols, or strengthening clinical professionals' training on climate-sensitive health diagnoses. Insurers can also make and incentivise greener investments in health- and care-related assets that would reduce health-related risks; these may include creating green spaces and roofs to reduce overheating of buildings.

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5 The Geneva Association 2022.