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Climate Change Technical Paper for Appointed Actuaries 29 Jan 2024

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Disclaimer

- The speakers are presenting as volunteers of the Actuaries Institute Climate and Sustainability Working Group.
- The opinions we express are not those of our employers.

Why do actuaries need to consider climate change?

- One of the major challenges facing financial institutions today
- Regulator expectations out of concern about financial stability
- Investor demands for disclosure

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Purpose of the TP and intended audience

- Inform and educate Members about climate risks and opportunities
- Primary audience is AAs and those whose work supports AAs
- Scope is restricted to what an AA needs to know to fulfil statutory obligations
- Appendix includes selected resources to support actuaries in broader climate-related roles (e.g. scenario analysis, measurement and reporting of emissions, climate risk management, external disclosures)

Requirements for AAs

- The TP interprets existing APRA standards and guidance in the context of climate change, but doesn’t introduce new requirements
  - Prudential Standard CPS320 Actuarial and Related Matters.
  - Prudential Standard CPS220 Risk Management.
  - Prudential Standard CPS510 Governance.
  - Prudential Practice Guide CPG229 Climate Change Financial Risks.
- But be aware that regulations and expectations of financial institutions are continuing to evolve rapidly

CPG229

Source: https://www.apra.gov.au/sites/default/files/2021-11/Final%20Prudential%20Practice%20Guide%20CPG%20229%20Climate%20Change%20Financial%20Risks.pdf

- Evidence of climate risk management
- Expectation to work with customers and counterparties to improve climate risk profile
- Practices varying depending on size, business mix and complexity of the institution

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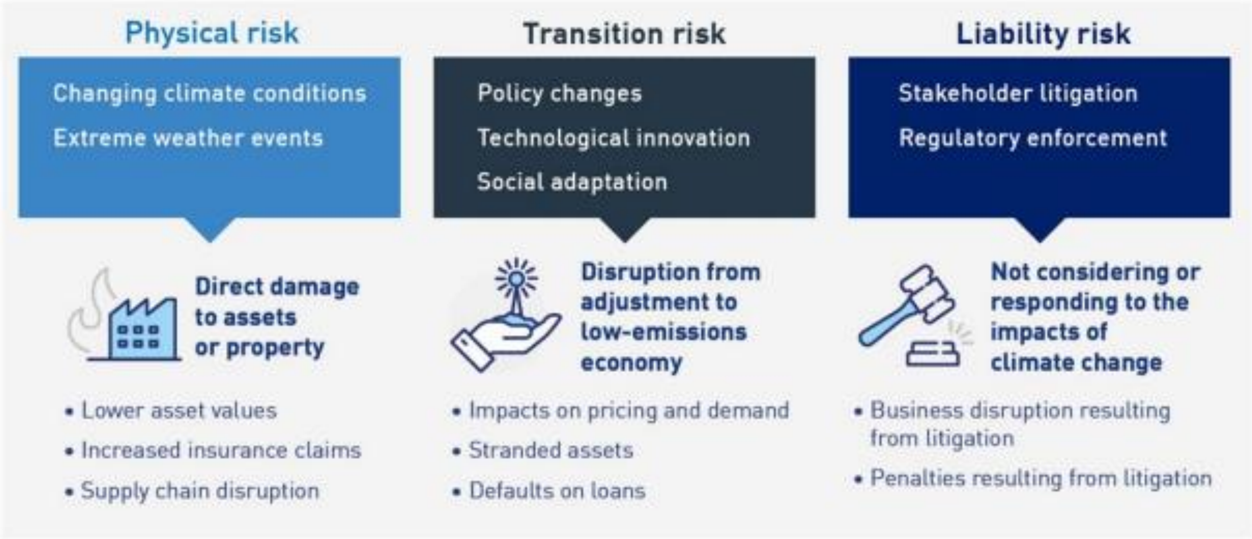
APRA Climate Vulnerability Assessment

- CVA on banks (2021-22) showed a measurable impact on bank lending losses, however the participants would likely be able to absorb these impacts
- APRA CVA for general insurers is now underway, with a focus on insurance affordability



Source: https://www.apra.gov.au/sites/default/files/2022-11/Information%20Paper%20-%20Climate%20Vulnerability%20Assessment%20Results.pdf

Disclosure standards

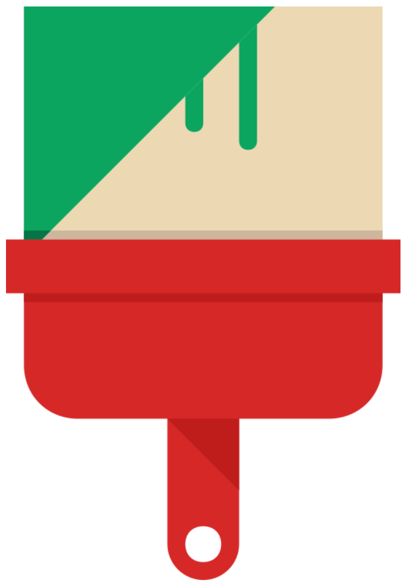
Governance	Strategy	Risk Management	Metrics and Targets
Disclose the company's governance around climate-related risks and opportunities.	Disclose the actual and potential impacts of climate-related risks and opportunities on the company's businesses, strategy, and financial planning where such information is material.	Disclose how the company identifies, assesses, and manages climate-related risks.	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.
Recommended Disclosures	**Recommended Disclosures**	**Recommended Disclosures**	**Recommended Disclosures**
a) Describe the board's oversight of climate-related risks and opportunities.	a) Describe the climate-related risks and opportunities the company has identified over the short, medium, and long term.	a) Describe the company's processes for identifying and assessing climate-related risks.	a) Disclose the metrics used by the company to assess climate-related risks and opportunities in line with its strategy and risk management process.
b) Describe management's role in assessing and managing climate-related risks and opportunities.	b) Describe the impact of climate-related risks and opportunities on the company's businesses, strategy, and financial planning.	b) Describe the company's processes for managing climate-related risks.	b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.
	c) Describe the resilience of the company's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the company's overall risk management.	c) Describe the targets used by the company to manage climate-related risks and opportunities and performance against targets.

- TCFD
- IFRS S1 and S2
- AASB exposure draft
- Australian Treasury mandatory climate disclosures

Source: https://assets.bbhub.io/company/sites/60/2022/02/TCFD-Fundamentals-Workshop.pdf

Greenwashing

- *"the potential for funds to overrepresent the extent to which their practices are environmentally friendly, sustainable or ethical… or overstating green credentials that are not sufficiently reflected in their operations."* (ASIC 2021)
- Businesses are expected to provide robust evidence for their 'green' claims



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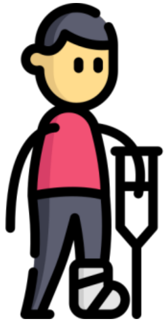
Climate considerations by insurer type

General Insurance

Life Insurance



Health Insurance

- An AA should consider the risks, but not necessarily comment on all of them
- For material risks, assess the effectiveness of risk mitigation options
- If deemed necessary, comment in the FCR

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General insurers

Types of risks for general insurers, and how they affect product design, underwriting, pricing, and reserving

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General insurance - examples

Physical	Transition	Liability
• Extreme heat • Cyclone • Rainfall • Coastal inundation • Bushfire • Supply chain impacts	• Shifts in industries due to transition to a low carbon economy • Technology e.g. EVs, batteries	• Directors' duties • Greenwashing claims

General insurance considerations for AAs

- Pricing, underwriting and product design
  - Annually renewable contracts
  - Affordability of premiums
  - Design and pricing of any new products
- Reserving
  - Central estimates and risk margins
  - Some reserving methods may rely on consistency in underwriting and claim practices
- Natural hazards catastrophe modelling
  - Possible use of long term historical averages for calibrating rare events
  - Allowance for factors other than direct damage e.g. demand surge, business interruption
  - Possibility of climate tipping points

Health insurers

Types of risks for health insurers, and how they affect product design, underwriting, pricing, and reserving

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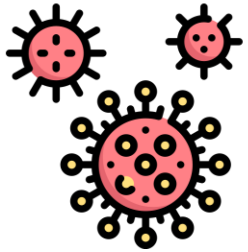
Impacts of climate change on health

Rising temperatures and heatwaves affects the population through heat-related illnesses

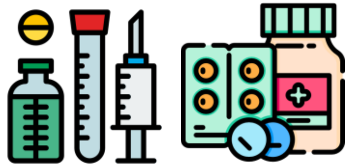


Changes in temperature, rainfall, and humidity affect optimal conditions for spread in disease

Extreme weather events can lead to physical injuries, respiratory problems, and psychological distress

More bushfires and changes to ozone worsen air quality

Disruption to supply chains, healthcare operations or access to healthcare facilities



Icons made by nawicon, juicy_fish, Freepik, Good Ware, Karyative, Skyclick, and Vector Squad, from www.flaticon.com

Impacts on health insurers from climate physical risk

- Worsening health outcomes: heat-related illnesses, increase prevalence of chronic conditions, deteriorating air quality; increased demand for mental health services
- Particularly affects subgroups of the population, such as the elderly, people with disabilities and pre-existing health conditions, as well as the First Nations communities
- Patterns of healthcare demand and utlisation can alter e.g. rural regions experiencing more bushfires will have different health care needs compared to regions affected by changing disease pattern
- Over a short time horizon, effects may be limited due to hospital contracting
- Over a longer period, claims cost likely to increase as longer hospital stays are required with more patient co-morbidities e.g. a member who needs a hip replacement may need to be hospitalised for longer if their respiratory function is compromised

Private Healthcare Australia. (2023). PHI membership at all time high but inflation and overpriced medical devices threaten affordability. https://www.privatehealthcareaustralia.org.au/phi-membership-at-all-time-high-but-inflation-and-overpriced-medical-devices-threaten-affordability/

Impacts on health insurers from climate transition risk

- Transition to a low carbon economy will have impacts on investment, claims costs, risk exposure, and membership
- A disorderly transition may cause disruptions to job stability in some sectors which could have impacts on claims incidence arising from mental health e.g. workers do not have the opportunity to reskill or retain.
- Transition risks affect economic activity, supply chains, business practices and consumer behavior
- Rising energy costs (and other shocks) can strain household budgets and leave less disposable income, could lead in a drop in PHI participation

Australia: Liddell coal power station closes, cutting jobs and raising supply concerns

Martin Scott
26 April 2023

The Liddell coal-fired power station will shut down permanently this week, impacting around 140 workers and hundreds more contractors in the Hunter region of New South Wales (NSW).

News article source: https://www.wsws.org/en/articles/2023/04/27/tkst-a27.html

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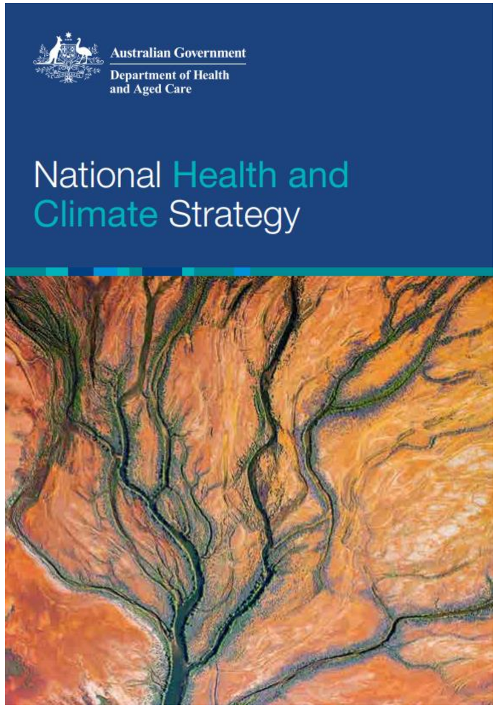
National Health and Climate Strategy

- Australia launched its National Health and Climate Strategy in Dec 2023
- The Australian Government will publish baseline emissions estimates for the health system (inclusive of health and aged care) in 2024 and will publish regular emissions estimates thereafter to track progress in emissions mitigation efforts
- By 2025, the Australian Government will develop a health system decarbonisation roadmap encompassing all levels of the health system (inclusive of aged care); includes scope 1, 2, and 3 emissions plus patient travel
- The Government will seek to develop this roadmap in partnership with private providers, industry, and suppliers
- The Australian Government is also considering developing and implementing National Australian Built Environment Rating System (NABERS) tools for private hospitals and medical centres



Commonwealth of Australia, National Health and Climate Strategy, 2023, https://www.health.gov.au/sites/default/files/2023-12/national-health-and-climate-strategy.pdf

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Impacts on health insurers from climate liability risk

Elevation of liability risk since the original 2016 Hutley opinion due to:

- Coordinated engagement from financial regulators
- Reporting frameworks (TCFD, ISSB)
- Pressure from investors, customers, suppliers
- Advances in scientific knowledge
- Increased litigation risks

- Insurers have a fiduciary duty to stakeholders to address financial and strategic risks, including climate change
- In 2019, Noel Hutley SC and Sebastian Hartford Davis provided an updated legal opinion that the need for directors to consider climate risks and opportunities continues to rise and reinforced the urgency of improved board-level governance of this issue

> *"In our opinion, these matters elevate the standard of care that will be expected of a reasonable director. Company directors who consider climate change risks actively, disclose them properly and respond appropriately will reduce exposure to liability.* ***But as time passes, the benchmark is rising"***
>
> - Supplementary opinion of Hutley & Harford Davis (2019); https://cpd.org.au/2019/03/directors-duties-2019/; p2

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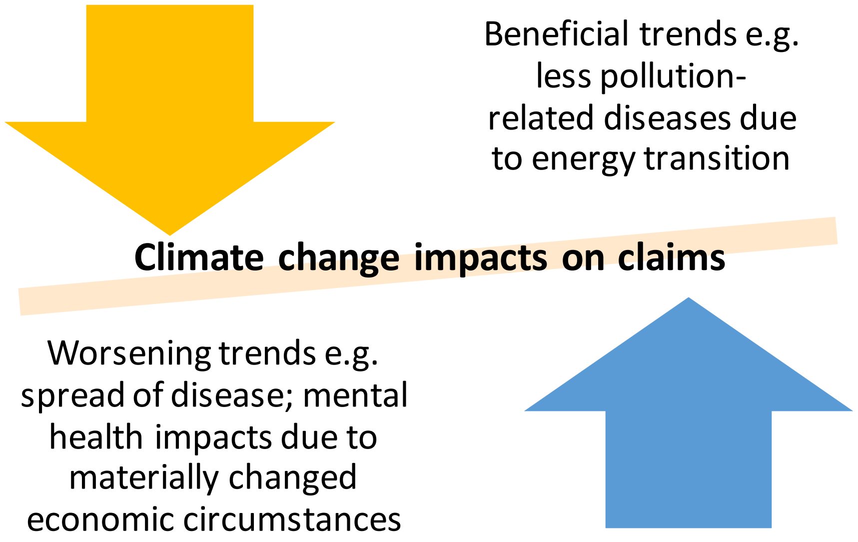
Climate change impact on PHI product design, underwriting, and pricing



- Health insurance contracts are repriced annually and are community rated based on the benefits offered rather than the risk exposure of individuals
- If the worsening trends outweigh the beneficial trends, then premiums may need to increase at a higher rate to ensure solvency and capital adequacy of health insurers; but reputational and regulatory issues may arise when increasing premium trends persist
- Impacts from extreme weather events (frequency and severity) are expected to change, so need to adjust if there is an existing allowance for extreme events in pricing
- Impacts are not uniform over time (e.g. temporary offsetting benefit if event impacts ability to access health services, but can have longer-term impacts)
- Impacts also not uniform across ages and risk profiles (e.g. older people or those with pre-existing conditions more vulnerable to heat stress)

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Climate change impact on PHI reserving

- Reserving for PHI typically short tail and incorporates an allowance for the Risk Equalisation Special Account
- Expected value of claims cost can be impacted by:
  - Engagement from Australian governments about health risks from climate change (see figure for many policies and policy areas that health touches)
  - Medical inflation from climate change impact on supply chains, damage to physical sites, climate-related illnesses
  - Underlying exposures of customers to new and emerging employment and technologies
  - Concentration risk and demand surge affecting access to cost of health care since extreme weather events occur more frequently; flow-on effects from the public health system to private

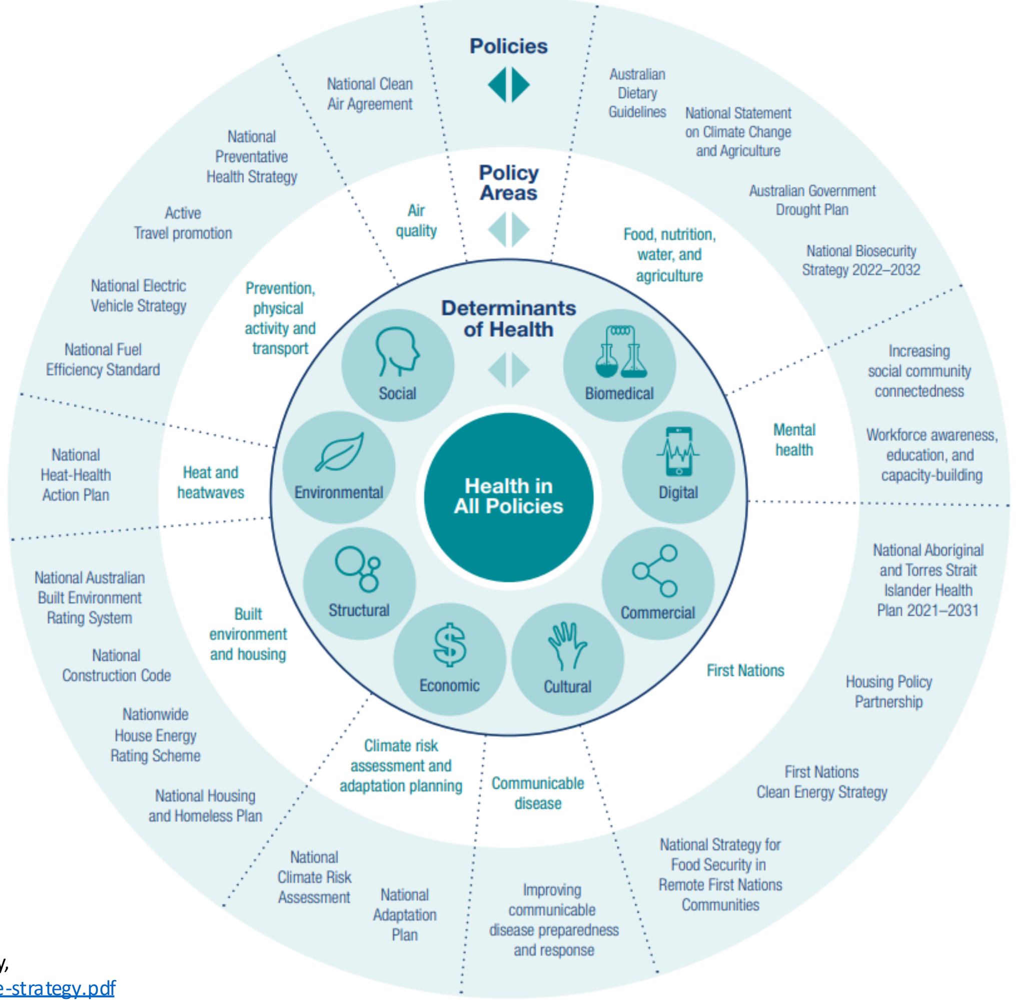

Figure from Commonwealth of Australia, 2023, National Health and Climate Strategy, https://www.health.gov.au/sites/default/files/2023-12/national-health-and-climate-strategy.pdf

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All insurers

Capital, reinsurance, and investments

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Capital management and stress testing

While physical climate change impacts may occur over a longer period than a 3-year time frame, transition and liability risks may occur more quickly, for example, due to legislative or regulatory change

- Review stress margins for target capital to allow uncertainties from climate change
- Considerations for stress testing:
  - Correlations across risk types
  - Premium and investments could be impacted by regulatory or technological change under different climate scenarios
  - Climate change can change geographical distribution of natural hazards risk
- Remember: Purpose is also to identify management actions as part of the scenario

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Reinsurance and credit rating agencies

- The largest global reinsurers have exposure to climate risks too
- Reinsurers recognised climate change for some time and have managed their assets considering transition risk (e.g. stranded assets) and managed their accumulation to risk
- Similarly, credit rating agencies are also considering material climate risks in their credit rating determinations e.g. via disclosures made by each entity
- The AA could consider the impact and materiality of:
  - any climate change impacts that affects the price and availability of reinsurance over the medium to longer term
  - Forward looking risk modelling that looks at long-term climate trends (rather than only relying on past data)

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Investment management

Climate change impacts on investments can come from:

- physical risk
- policy and regulatory uncertainty
- changing customer preferences
- product substitution
- disruptive technological shock
- businesses models and costs change

ESG considerations are important considerations in long term investment strategies. For investments, the AA could consider:

- applying climate change scenarios in stress testing to understand the exposure to material climate risks and the potential impact of the investment strategy
- policy responses (and other transition risks) in the portfolio
- appropriateness of investment strategy considering global efforts to achieve net zero by 2050 i.e. a 20 to 30-year investment horizon from today
- appropriateness of investment manager's approach to incorporating climate risks into investment analysis and decision-making

? What is the portfolio's exposure to potentially stranded or degraded assets?

? Will investment strategy meet customer expectations? For example, net zero emissions would need to be achieved within the lifespan of anyone currently under 65 and the success or otherwise of the transition will directly affect their superannuation balances

Life insurers

Types of risks for life insurers, and how they affect product design, underwriting, pricing, and reserving

Why does it matter to life insurance?

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Why does it matter to life insurance?

- How would you evidence that climate change does (not) matter given the size, business mix and complexity of your institution?
- Are the repricing mechanisms reliable? Too reactive?
- Directors may become obliged to do more due to expectations from shareholders, investors and policyholders – they may ask the AA
- Guidelines from APRA – CPG229
- Join in the conversation and help future proof our jobs

Life Insurance types of climate risks

Physical	Transition	Liability
• Financial hardship due to climate events • Adverse mortality and morbidity due to single climate events or ongoing climate patterns • Asset portfolio	• Disruption to job stability in non-renewable or declining sectors • Short-term uncertainty about occupation mix as renewable industries grow and others shrink • Positive health outcomes due to shifting toward cleaner energy and impacts of social trends	• Directors could be held liable for losses due to climate change • Inadequate assessment • Inadequate disclosure

Life Insurance considerations for AA

Pricing, UW and Product Design	Limitations of repricing	Reserving
• Uncertainty of emerging risks with little historical data • Changing consumer needs • Repricing mechanisms as key risk mitigant	• On going claims • Feasibility and affordability • Shock lapse and reputational risk	• Data • Modelling techniques • Assumption setting • Uncertainty around long-term nature and level of climate change impact

Summary Matrix

Considerations	General	Life	Health
Physical Risk	Insurable events	Adverse mortality and morbidity	Worsening health
Transition Risk	Divestment and reduced maintenance of fossil fuel industries, and uncertainty of new technologies	Financial hardship and job instability in some sectors	Transition to a low carbon economy, impacts on jobs, mental health, and household budget
Liability Risk	Greenwashing	Directors may be held liable for inadequate assessment and/or disclosure	Company director failing their fiduciary duty to address climate change
Pricing, UW and Product Design	Affordability	Limitations of repricing	Balancing impacts of worsening trends and beneficial trends
Reserving	Risk margins and CAT modelling	Uncertainty around long-term nature and level of climate change impact	Claims cost impacted by government policies on health and climate change

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Resources for actuaries

- International Actuarial Association (IAA) climate series
  - Raise awareness, Increase recognition, Develop capabilities
- Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report
  - summarises past 7 years of scientific, technical, and socio-economic information
  - 5 climate scenarios
- Papers on the topic of communication of assumptions and uncertainties
- Other Climate related groups in Australia
  - CMSI, ASFI, NRTF, CCAC

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Thank you

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