

2022 ALUCA Turks Life Insurance Scholarship

1st Runner-Up

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Climate Change and Life Insurance

Recent extreme weather events have provided governments and policy makers with the impetus to take real action on climate change. In a recent Global Risks Report by the World Economic Forum, it was stated that climate change was a global emergency that will increase 'loss of life, social and geopolitical tensions and negative economic impacts'. What short and long term challenges does climate change pose to the Australian life insurance market? Are there steps or policies life insurers can adopt to manage or reduce any impacts? Can positive climate action create new opportunities for life insurers and how they interact with their customers?

All over Australia we are feeling the effects of climate change, some of us personally. Scenes like that in Figures 1 and 2 below are the most obvious results of climate change. Fire and flood are big impact events, but they won't be the only challenges that we will have to contend with as the impact unfolds of the short, medium, and long term.



Figure 1 - Police officers and road workers survey the floodwaters in the Sydney suburb of Windsor on March 22. © Reuters [Source](#)



Figure 2 – 2021 bushfires - https://campaign24.in/wpcontent/uploads/2020/01/BushFire_Australia.jpg

It's General, rather than Life that people think of when they consider insurance and climate change. For most people there will be an assumption that General Insurance will bear most of the risk, and they are likely correct, as floods and fire become more frequent and as water levels rise, impacting the integrity of buildings. It would though be remiss to ignore the likely impacts on Life Insurance. This paper will explore the changes that climate change will bring, consider their effect on Life Insurance, and suggest some opportunities it may bring.

Is climate change really a risk for Insurance?

Is climate change really a risk? Yes. The Actuaries Climate Index (an objective measure of changes in extreme weather and changes in sea level relative to the base period of 1961 through 1990) which acts in a similar way to the consumer price index, considers climate change to be the number one emerging risk due to its ability to increase average temperatures, increase temperature extremes, increase the frequency and intensity of natural disasters, and increase extreme weather events and ground level ozone (Society of Actuaries, 2021). The World Economic Forum agrees, and highlight that climate change will cause 'loss of life, social and geopolitical tensions, and negative economic impacts' (Global Risks Report 2022)

How much could climate change cost Australia and Australian Life Insurance? Prof Tom Kompas of The University of Melbourne (Kompas, 2020) notes that accurate estimates are difficult and depend on the models used, however estimates indicate that the cost to Australia of not meeting the Paris accord (limit global warming to well below 2, preferably 1.5 degrees Celsius, compared to pre Industrial levels) will be \$1.19 trillion and whilst much of this will be due to infrastructure damage, impact to human health is estimated to cost \$368 billion. The Life Insurance industry should be prepared to take a cut of this cost. More worryingly is that this cost doesn't consider the impact of extreme weather events such as bushfires. Recent bushfires were estimated to have cost between \$4.4 billion and \$100 billion which includes the impacts on human health both physical and mental.

The most top of mind impacts of climate change, that of increased natural disasters, have a clear impact on mortality, but is climate change going to affect the sustainability of life insurance – possibly, it is very hard to model, but we can be confident that to some degree we will be impacted both medically and financially, and so will our customers.

What are the direct and indirect impacts of climate change?

Increased temperature

The thing most people think of when they consider climate change is increased temperatures and they would be correct in doing so. The impact of increased temperatures is in general, reasonably obvious. The seriousness of heatwaves is underscored by the recent addition, by the Bureau of Meteorology (BOM), of a heatwave warning service alerting Australians to upcoming heat hazards. The BOM commented that

“Heatwaves are Australia's most dangerous environmental hazard, resulting in more community deaths than bushfires, floods, cyclones and severe storms combined.”

Heatwaves increase the risk of stroke, aggravate breathing conditions, heart conditions and kidney issues, as well as psychiatric illness (RACGP, N.D). The Medical Journal of Australia (Ying Zhang, 2018) found a linear correlation between higher temperatures and greater mortality in Sydney, Melbourne and Brisbane, and warned that large cities are particularly vulnerable to increasing temperatures and associated health issues. There will also be a potential financial impact.

Increased temperatures can cause heat stroke, heat exhaustion, and may make it very difficult to work outside in many areas of Australia (Harvard University, 2022). We already know that workers compensation claims increase (by 6.2% for outdoor workers) during heatwaves and its predicted that the number of days where manual labour will be dangerous outside will rise from 1 to 26 days a year (Xiang J, 2014) (Maloney SK, 2011). So we may see more claims Income Protection claims as people struggle to work outside and maintain business continuity.

Interestingly increased temperatures also impact mental health. Let's look at that now.

Mental Health and climate change

You can see in Figure 3 below how climate change, including heat events, flood, drought, and wildfire, can impact mental health and create and/or exacerbate issues including stress, anxiety, and suicidal behaviour.

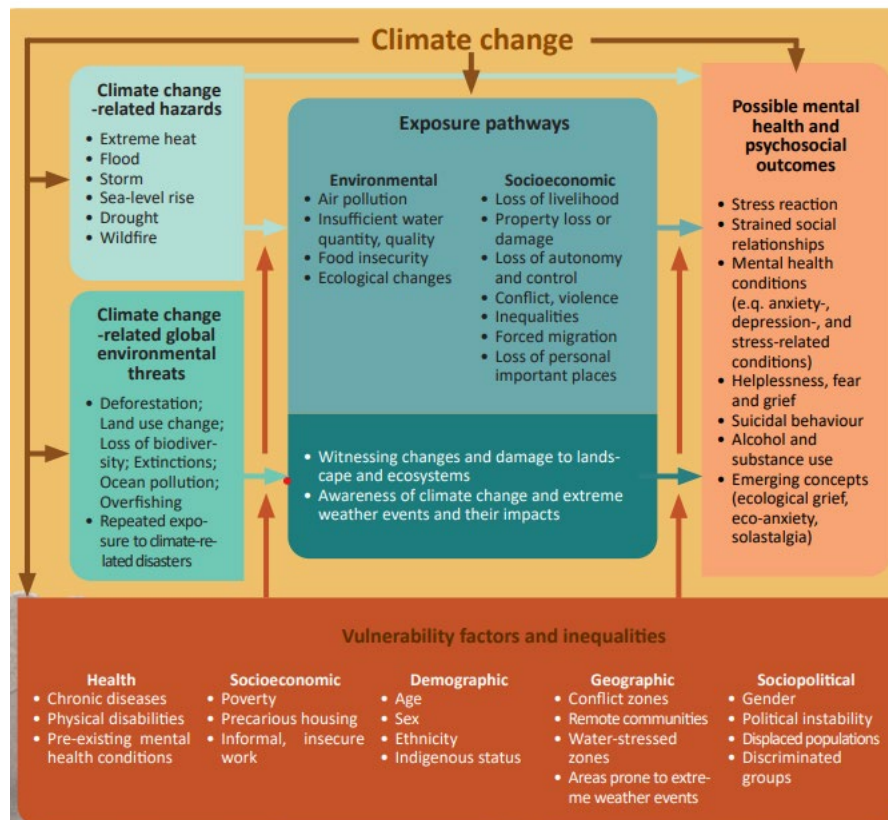


Figure 3- Main interlinkages between climate change and mental health, WHO 2022

Climate change acts on mental health in a range of ways, affecting people both directly and indirectly by creating emotional distress, triggering new mental health conditions, and exacerbating existing ones (WHO, 2022). The direct affects are easy to imagine – people who have lost homes, possessions or loved one to fire and floods will be vulnerable to mental health issues. The indirect effects include economic impacts, something life insurance is already acutely aware off, and the loss of green spaces and landscapes.

The bushfires in 2019/2020 and the more recent floods are good examples of the physical and emotional distress that people suffer because of climate change events. Whether you are a first responder witnessing the events unfolding or if you have suffered a loss such as a home or your farm, , stress sets in along with fatigue , you can go from the heightened state of fight or flight to a deep sense of loss and disruption very quickly (Younger, N.D) . These effects can last well beyond the initial incident, in fact evidence shows that the effects of the Victorian Black Saturday bushfires where still causing elevated rates of mental ill health 5 years after the fires (Bryant, 2018)

Less well known is the effect of rising temperatures and worryingly hot days increase self-harm and suicide rates, particularly for men and those living in the Northern Territories (Williams MN, 2016). Figure 4, below, graphically illustrates rising suicide rates in line with temperatures.

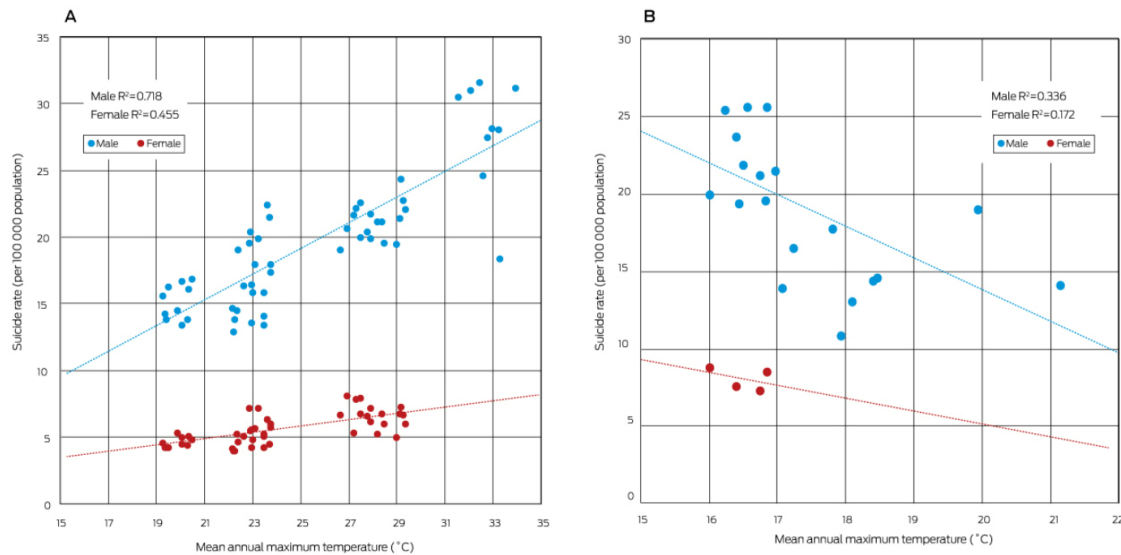


Figure 4= Association between mean annual maximum temperature and suicide rate, by sex, in warmer (A) and cooler(B) Australian states and territories 2007 – 2016 (Ying Zhang, 2018)

Recent floods have also caused high levels of psychological distress, The Black Dog Institute (2021) noted that “A global systematic review of 83 studies (5) identified that risk of experiencing post-traumatic stress disorder (PTSD), psychological distress, depression, and anxiety is heightened in flood-affected areas compared to unaffected areas.” And they also noted a potential link between suicidal ideation and homes/ business being inundated.

Of course, and we have seen this in recent years, extreme events do not happen in isolation or only to a person once in their lifetime. Issues and impacts overlap. Bushfires, floods, COVID-19, economic issues, health issues, and family issues can all come together to create a toxic mental health environment which can be difficult to work through or recover from. In fact, so acute is the risk from mental health issues that both the World Health Organisation (WHO) and the Intergovernmental Panel on Climate Change (IPCC) have suggested that climate change be “a rising threat to mental health and psychosocial well-being; from emotional distress to anxiety, depression, grief, and suicidal behaviour.” (WHO, 2022). The emotional impact of extreme events is clear, but there are other more subtle impacts, such as air pollution, which we will discuss next.

Particulates & Pollen Production

With 2 La Nina events behind us and another in front of us, it may feel like flooding is the big risk right now, however bushfires remain an ever-present, and an increasing danger. Research carried out by The Commonwealth Scientific and Industrial Research Organisation, CISRO (2021), has shown that temperature’s continue to increase, and that a combination of rapid increases in extreme heat events and a decline in average rainfall is driving greater numbers of bushfires, with The Royal Society (2016) noting that bushfires frequency has increased by 40% over the last 5 years.

Bushfires generate many toxic substances, including acrolein (a lung irritant), carbon monoxide and PM2.5 particles (Harvard University, 2022). PM2.5 exposure causes heart attacks, strokes and exacerbates existing medical conditions such as asthma, and increases mortality (Health.gov.au, n.d)

Asthma may also worsen due to lengthened seasons meaning increased pollen production (Harvard T.H Chan School of Public Health, N.D)

Income Protection and Critical Illness are most likely to be affected by particulate and pollen with chronic diseases becoming more common and more severe. More opportune and acute disease also has the impact to effect risk. Infectious disease is one such risk.

Infectious disease

Infectious disease also has the potential to increase with global temperatures, floods and drought. Shortages of clean water can cause cholera, standing water can encourage malaria, and higher rainfall supports dengue outbreaks. NPS MedicineWise (Inglis, 2009) research and modelling suggest an increase in both Ross River virus and dengue infections are likely in Australia. Heavy rainfall can also promote waterborne disease including hepatitis A, cryptosporidiosis, *Vibrios*, and leptospirosis as well as enteric pathogens, such as *E. coli* that causes diarrheal disease (Harvard University, 2022). You can see the disease pathways and factors affecting the infection rate of malaria in Figure 5, below.

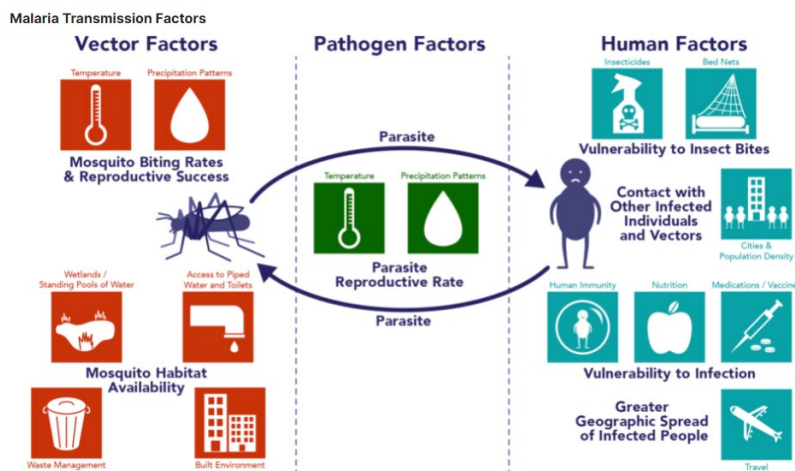


Figure 5 - Malaria transmission vectors, Harvard, 2022

Nutrition

Like infectious disease, nutrition is also a less well-known consequence of climate change.

It is possible that lower crop yields, or higher food prices, driven by lower average rainfall, rising sea temperatures (affecting fish) and increased drought may cause issues with sufficient nutrition globally (Harvard University, 2022). Australia is less likely to be impacted than countries such as India and China however if you look at Figure 6 below, you can see that already water consumption in Australian exceeds availability in nearly every area, in some areas for 12 months of the year. Whilst Australia is reasonably food self-sufficient, if drought does become a major factor and it becomes necessary to rely on imports, you only need to consider the impact of COVID-19 on transport and supply of food and other necessary goods, to see how fragile the global supply system is and imagine how Australia’s food security may be impacted. Poor nutrition affects life expectancy and this, coupled with respiratory issues, cardiac issues and circulatory issues may decrease life expectancy and increase critical illness claims.

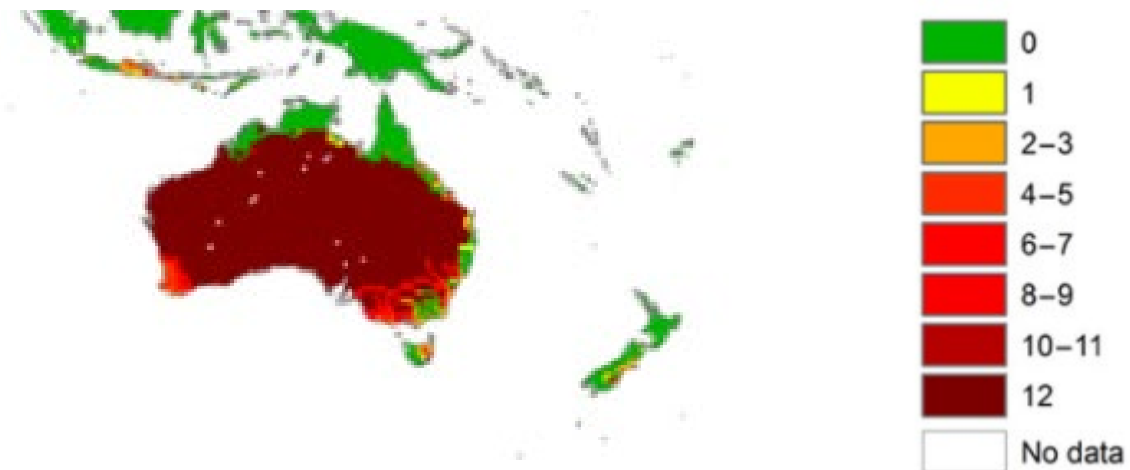


Figure 6 - Number of months where current water consumption exceeds availability (Harvard University, 2022)

Summary of impacts

Even in this short outline of the impacts of climate change you should be able to see that climate change is a health, financial and wellbeing issue. To further highlight the impact, Figure 7 below looks at the potential impact by benefit, as you can see, there is an affect for them all.

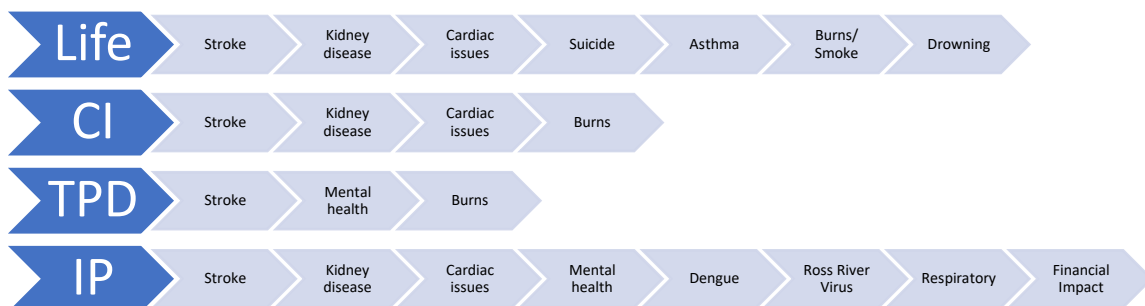


Figure 7 - Potential impacts by benefits

Despite climate change clearly being a health, and a public health issue, there is little governmental support for research or solution development. In the USA the National Institute of health spends only 0.05% of its total budget of \$37.3 billion on climate-change-related health research (Harvard University, 2022) and in Australia the impact of health from climate change is only skimmed over in State and National strategies (Ying Zhang, 2018).

With a lack of governmental focus, could this be an opening for life insurers to take the lead and drive a discussion? Whilst the General insurance industry takes the obvious brunt of floods, bushfires and droughts, the life insurance industry can help create change for themselves and their customers.

Here are some suggestions for creating opportunities.

- Take climate change impacts into account when designing health and mental health support packages
- Educating customers on the risk of hot weather, extreme events, and infectious disease so they can best manage their own health, wellbeing and businesses.

- Using risk modelling skills to proactively assist people with warnings for medical emergencies and risks, enhancing the work already being done by agencies such as the BOM
- Encourage community-based approaches to support for those affected, perhaps by partnering with, or sponsoring, local and regional agencies.
- Design green policies, which encourage climate positive actions and only invest in carbon neutral (or negative) portfolios.
- Providing advice and support for employers and businesses, including Financial Advisers, dealing with climate impacts

Of course, as well as educating and supporting we also need to mitigate to ensure sustainability and long-term viability. Suggestion includes

- Lobbying for government action on climate change
- Support efforts to reduce global temperatures and achieve carbon neutrality, for example utilising carbon neutral buildings, reducing energy costs, and reducing waste
- Consider their investment portfolios and ensure they are taking the environment into account
- Join the UN-Convened Net Zero Insurance Allianz (NZIA), members of which have committed to transitioning portfolios to net-zero (UN Environment Program, n.d.).
- State based pricing which consider the additional hazards according to region, fire, flood, infectious disease, mental health etc.
- State based underwriting manuals and training which take different regional affects, such as the suicide rate in hot areas, UV exposure, dengue fever, and economic impacts and into account.
- Consider future proofing contracts. What we sell today may still be on the books in 50 years, thinking ahead is vital. Could contracts perhaps include a “failure to follow government advice clause” – like the failure to follow medical advice but applied in situations, such as COVID, where the Government insisted on COVID vaccinations, which lead to claims from people who could no longer work.
- A more radical suggestion may be withdrawing support from carbon creating sectors, such as the mining industry and promoting support of green energy sectors.

Climate change is global issue which will have very serious local and global effects. Australians and Australians businesses need to be aware of the risks, the effects and ensure they are ready to tackle the challenge. Starting early and preparing is key particularly in an industry which is all about future proofing risks.

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