Submission on the Review of Tasmania's Climate Change (State Action) Act 2008 & Climate Change Action Plan

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Doctors for the Environment Australia

Doctors for the Environment Australia (DEA) is a voluntary organisation of Medical Doctors and Students in all states and territories. We work to address the diseases and ill health – local, national and global – caused by damage to the earth's environment. The World Health Organisation estimates that one quarter of global disease and one third of that in children is due to modifiable environmental factors.

The medical profession has a proud record of service to the community. This record not only includes personal clinical care, but also involvement in global issues that threaten the future of humanity. We aim to use our scientific and medical skills to inform governments and industry, the public and our colleagues, in order to highlight the medical importance of our natural environment.

To our patients we try to be a role model in the care of the environment as part of a preventative health ethos.

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Executive Summary

In this document DEA Tasmania outlines a pathway for Tasmania's Climate Change Act and Climate Action Plan to address the complex interrelated problems of climate change and health.

Key themes are:

- Developing and implementing a holistic and systematic **Climate and Health Strategy for Tasmania**
- Focusing on health equity, and the social, cultural, environmental and economic wellbeing of current and future Tasmanians.
- Operating within planetary boundaries whilst optimising human health and thriving
- Valuing inclusion of a diversity of voices, from youth, indigenous and marginalised groups in decision making.

Within these themes our key recommendations address specific needs raised in the Discussion Paper on Tasmania's Climate Change Act:

- The need to harness the health co-benefits of climate action
- The need for coordinated health sector strategy
- The need to address the issue of climate anxiety

Recommendations

1 Legislation and policy be informed by the understanding that climate and health are inherently related issues.

2 Indigenous Tasmanians be acknowledged as the traditional custodians of the land, recognised for their expertise, and specifically included in discussions relating to climate change and health.

3 The Act be amended to mandate consideration of Climate and Health in all Policies.

4 The Action Plan should include a directive to develop and implement a Climate and Health Strategy for Tasmania during its next phase.

5 The Action Plan should require the next 'Healthy Tasmania 5 Year Strategic Plan' to incorporate Climate and Health within its scope.

6 The Act be amended to include considerations of health equity, and the social, cultural, environmental, and economic wellbeing of current and future Tasmanians.

7 Recognise the need to operate within planetary boundaries whilst optimising human health and thriving, through establishing a range of indicators to judge the quality of actions and measure our success.

8 The Action Plan contain a directive to undertake further research onto the projected health impacts of climate change for Tasmanians.

9 The Act and the Action plan incorporate measures to specifically reduce existing inequalities within the Tasmanian community.

10 LULUCF emissions should be treated separately, with the protection of carbon dense forests and forestation and reafforestation initiatives recognised as essential contributors to future carbon drawdown efforts.

11 The new Act contain a target of 50% reduction in emissions on 2005 levels across all sectors by 2030. This should be coupled with annual monitoring and reporting and reviews of progress every five years.

12 Reinstate a Climate Action Council for Tasmania with expertise in scientific and technical aspects as well as representations of vulnerable populations, Aboriginal Tasmanians and youth.

13 Appoint an independent commissioner for future generations, whose role it is to consider the health, social, cultural, economic and environmental impacts of governmental decisions on future generations.

Introduction

Climate Change has been described by the World Health Organisation as the greatest threat to global health in the 21st Century[1]. However, tackling climate change has also been described as the greatest global health opportunity[2]. As Tasmania attends to addressing this threat in the next critical decade, we consider it essential to take a holistic approach, underpinned by the understanding that human health is intrinsically connected to, and indeed entirely dependent upon, the health of our environment and climate. For example, the burning of fossil fuels for energy and transportation has been linked to much cardiovascular and respiratory illness in Australia, as well as being responsible for significant greenhouse gas emissions.

Actions taken to reduce Tasmania's emissions will directly benefit the health of our population, who are more vulnerable to climate change in a number of important ways compared to the Australian average (see appendix 1). Inequality is a key driver of many aspects of this vulnerability such as chronic disease burden and socio-economic disadvantage. Indigenous Tasmanians are disproportionately represented in these groups and remain uniquely vulnerable to the impacts of climate change. Reducing health inequality with the goal of improving health for all Tasmanians will lessen the harms and increase our resilience to the impacts of climate change. This aligns with The Tasmanian Government's statement *"that Health and Wellbeing is the foundation of a successful and bright future for all"* [3] and the Draft National Preventative Health Strategy[4] for 2021-2030. However, if the interdependence of climate and health is not well considered in policy, we risk exacerbating existing inequalities to the detriment of all Tasmanians.

In this submission we seek to highlight that Tasmania has the opportunity to simultaneously address the complex issues of health and climate in complementary ways across multiple areas of mitigation and adaptation legislation and policy. We recommend a systematic and coordinated approach be taken to ensure success in this endeavour.

1. Healthy planet, healthy community

1.1 Interdependence of Human Health and the Environment: Learning from Indigenous Wisdom

A healthy environment is essential for humans to thrive. While there is frequent and appropriate discussion of the social determinants of health, less attention is given to the environmental determinants of health, and the extent to which social and individual health parameters depend on these. The reciprocal relationship between humans and their environment is complex and multi-faceted yet is inherently understood by many cultures across time and location and implicit in indigenous concepts of wellbeing. Acknowledgement should be given to Indigenous concepts of health in which the crucial dependencies between people and place are foundational.

> *"The land cannot work for itself or speak for itself, that's why it needs us to work and speak for it … In the big picture, the land and its people belong to one another, and so we need to take care of the health of our people if we are going to look after the land."*
>
> Makungun Marika, Indigenous ranger (quoted in Colyer 2017)[5]

There is a strong rationale for incorporating a more expansive approach to health and wellbeing, inclusive of our environment, into all aspects of health and climate policy. This is outlined in the 2020 report from the Climate and Health Alliance (CAHA): 'Healthy, Regenerative and Just: Our Vision for a Better Future'[6] which states that a national response to the climate crisis must include: "Recognising the value of, and benefits from, being guided by the unique insights and wisdom available from First Australians' traditional cultural knowledge and practice".

RECOMMENDATION:

1. Legislation and policy be informed by the understanding that climate and health are intrinsically connected.

2. Aboriginal Tasmanians be acknowledged as the traditional custodians of the land, recognised for their expertise, and specifically included in discussions relating to climate change and health.

1.2 Establishing Coordinated Health and Climate Policy for Tasmania

DEA recommends that the Climate Change Act be amended to legislate for the dual consideration of health and climate impacts in all government policies. In seeking to adopt a cohesive policy plan we recommend that the next Action Plan undertakes to build on the work of the Climate and Health Roundtable convened by the Department of Health in 2019[7] with a commitment to adopt a Tasmanian Climate, Health and Wellbeing Strategy, informed by the CAHA Framework for a National Strategy for Climate, Health and Wellbeing[8] (see Fig.1). This robust framework was developed with input from national experts and key stakeholders in 2017 and has recently been extended to include an additional policy area of 'thriving ecosystems' in recognition of our critical dependence on healthy, thriving ecosystems[6].

Figure 1: Framework for a National Strategy on Climate, Health and Well-being for Australia[6]

The adoption of a systematic and coordinated health and climate strategy will drive the required changes across the eight policy areas, with guiding principles, outlined in the above framework:

1. Supporting Healthy and Resilient Communities
2. Health-Promoting and Emissions-Reducing Policies
3. Emergency and Disaster-Preparedness
4. Education and Capacity Building
5. Leadership and Governance
6. Research and Data
7. A Sustainable and Climate-resilient Health Sector
8. Thriving Ecosystems

Every policy area includes opportunities to address both mitigation and adaptation, whilst harnessing a range of health co-benefits. Health co-benefits are defined as additional health gains related to activities which also reduce emissions (see Fig A3 in appendix). We further expand upon these policy areas in section 3 of this submission.

Some examples of how a comprehensive climate and health strategy for Tasmania could apply include:

- Development and promotion of active transport options to simultaneously reduce emissions and improve cardiovascular health, with focus on universal access and supporting uptake amongst disadvantaged community members.
- Increasing thermal efficiency and energy independence of health infrastructure through energy efficient upgrades and greater uptake of rooftop solar and battery storage. This will

not only reduce emissions from energy use, particularly in the event of energy supply disruption due to the projected increase in extreme weather events, but also improve thermal comfort and reduce cold and heat stress for patients and staff in these facilities.

- Reducing smoking rates for Tasmanians will reduce the impact of embodied emissions associated with cigarette production whilst simultaneously improving the cardiovascular and respiratory health of Tasmanians which in turn increases resilience to increased heat and bushfire smoke.

This Strategy should be adapted to local needs, informed by expert opinion, and underpinned by research specific to the Tasmanian context.

RECOMMENDATION:

3: The Climate Change Act be amended to mandate consideration of Climate and Health in all Policies.

4: The Action Plan should include a directive to develop and implement a Climate and Health Strategy for Tasmania during its next phase.

5: The Action Plan should require the next 'Healthy Tasmania 5 Year Strategic Plan' to incorporate Climate and Health within its scope.

1.3 Adopting a Holistic Approach to the Wellbeing of all Tasmanians

The highly complex and far-reaching nature of climate change impacts on human and planetary health require a much more holistic framework to guide good decision making and action.

Alongside economic factors both in the short and longer term, policy and legislation should consider social, health, environmental and cultural costs of decisions which may only become evident over a longer timeframe. Unfortunately, it is common to discount future risk while underestimating future costs. Similarly short-term costs are often overstated in comparison to long term benefits. Short electoral cycles tend to favour these biases. However, stronger legislation provides opportunity to counteract this through establishing the need for urgent action, holistic decision making and a clear trajectory for emissions reduction and adaptation responses.

Given the current health trajectory of fellow Tasmanians, responses that focus too narrowly on mitigation potential and growing gross domestic product (GDP) may make little contribution toward improving future population health outcomes. International research by Wilkinson et al.[9] highlights that per capita GDP bears no relationship to the important indicators of population health and wellbeing. However, a clear correlation exists between greater wealth inequality and poorer population health outcomes. Legislation and policies which prioritise the goal of reducing wealth inequality will improve the health and wellbeing of the whole population.

Extending on our call to couple climate and health legislation and policies we advocate for the adoption of holistic frameworks that capture the ecological and social determinants of health. Doughnut economics[10] (see Fig.2) is one such model in which the outer ring defines our planetary boundaries, the life supporting systems we must protect in order to sustain human civilisation and the many millions of other species with which we share the planet. The inner ring defines the basic needs for a good life and for human flourishing. Many of these considerations are mirrored within the UN Sustainable Development Goals[11].

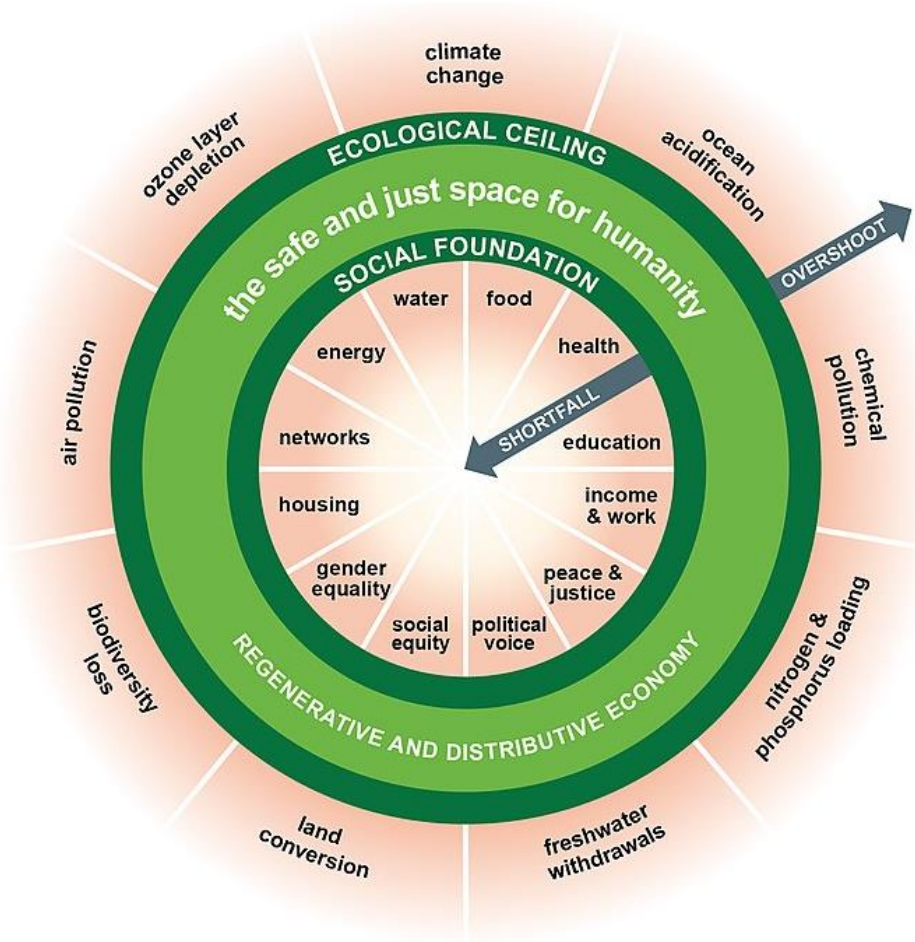

Figure 2: The Doughnut of social and planetary boundaries[12]

There are emerging international examples in which many of these considerations are being incorporated into legislation. For example, the Wellbeing of Future Generations (Wales) Act 2015[13] mandates consideration of the social, economic, environmental and cultural wellbeing of future generations in all government policy. Underpinning the Doughnut economic model is the need to move away from the narrow and increasingly redundant focus on GDP growth and move toward a more holistic dashboard of indicators, by which we judge the quality of current and future actions.

RECOMMENDATION:

6: The Act be amended to include considerations of health equity, and the social, cultural, environmental, and economic wellbeing of current and future Tasmanians.

7: Recognise the need to operate within planetary boundaries whilst optimising human health and thriving, through establishing a range of indicators to judge the quality of actions and measure our success.

1.4 Health Impacts of Climate Change for Tasmania

Climate change is a health emergency, contributing to deaths, illness and injury through direct effects of extreme weather events and heat, as well as the indirect effects of environmental, social and economic destabilisation[14,15,16] (See Fig.3). Climate change does not create new illnesses, instead it is best understood as an amplifier of current illness and disease. In order to minimise this threat, it is critical to limit warming to 1.5 degrees[17]. Current emission reduction pledges from around the world put us on track for a 3.2 degree temperature rise, which is considered incompatible with

current human civilisation[18]. Understanding the particular effects on the health and wellbeing of Tasmanians requires insight into projected changes in our climate and consideration of the unique health and demographic profile of the Tasmanian population. More detailed exploration of climate and health impacts in Tasmania is included in Appendix 1.

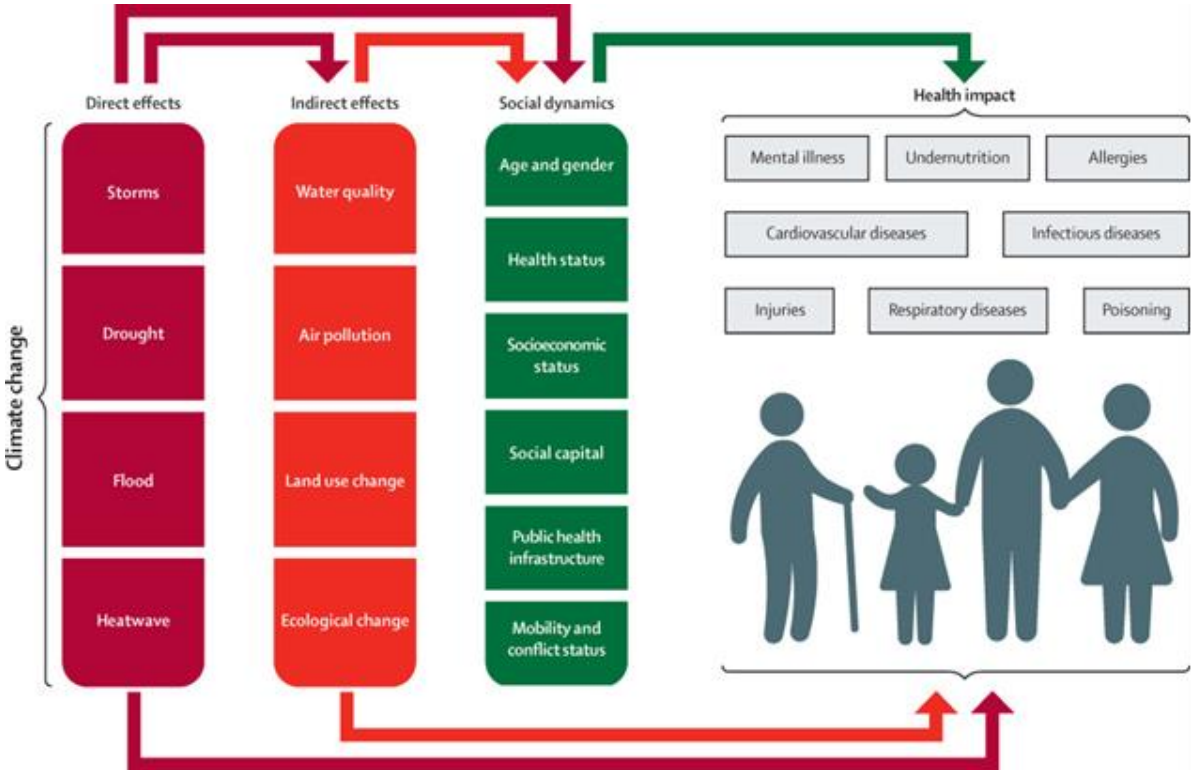

Figure 3. The direct and indirect effects of climate change on health and wellbeing[2]

Research consistently demonstrates that the spectrum of the health impacts of climate change are more severely experienced by certain groups and in certain locations, often described as vulnerable populations[19]. The Tasmanian population is potentially among the most vulnerable populations to climate change. The State of Public Health Tasmania 2018 Report[20] demonstrates that Tasmania has an elderly population with a high chronic disease burden and large socioeconomic disparities.

Tasmania also has the highest proportion (33%) of people living in the most disadvantaged areas ranked Australia wide (See appendix 1 for further elaboration). Although the Tasmanian population is at higher risk of ill health, tackling climate change presents a unique opportunity to improve our future health and wellbeing, if we act with urgency and make the right choices which prioritise better health outcomes. Further research is needed to understand the unique impacts of climate change on the health of Tasmanians (see section 3.7 for more information).

RECOMMENDATION:

8: The Action Plan contain a directive to undertake further research onto the projected health impacts of climate change for Tasmanians.

9: The Act and the Action plan incorporate measures to specifically reduce existing inequalities within the Tasmanian community.

2. Further Recommendations for the Climate Change Act Review

2.1 Sectoral Targets including land use, land use change and forestry (LULUCF)

Tasmania is in the enviable position of claiming carbon neutral or climate positive status. However, we echo the concerns of others that this reputation of climate leadership is based almost exclusively on a reliance on land-based carbon credits related to carbon sequestration in forests that were historically heavily logged. Heavy reliance on land-based carbon credits has masked a lack of progress in reducing greenhouse gas (GHG) emissions within the major emitting sectors of the Tasmanian economy. The assumption within the carbon accounting methodologies is that these regrowing forests and plantation estates will sequester progressively less carbon over time. Coupled with projections for increased fire risk and intensity we cannot assume these forests or plantations will continue to be a reliable means to offset emissions from other sectors.

Recommendation
10: LULUCF emissions should be treated separately, with the protection of carbon dense forests and forestation and reafforestation initiatives recognised as essential contributors to future carbon drawdown efforts.

2.2 Interim Targets

Intergenerational equity will be contingent on urgently reducing GHG emissions and robust positive adaptation strategies. An updated Climate Change Act for Tasmania containing strong emissions reduction targets, transparent reporting and frequent reviews of progress will be required if we are to make a leading contribution to limiting global warming to 1.5 °C.

The capacity for each major sector, including agriculture, energy (non-transport), industrial processes and transport to urgently reduce emissions will vary. However, we argue that uniform sector-based targets will reflect the required urgency and stimulate the necessary research and innovation to place each sector on a genuine lower emissions trajectory.

Recommendation
11: The new Act contain a target of 50% reduction in emissions on 2005 levels across all sectors by 2030. This should be coupled with annual monitoring and reporting and reviews of progress every five years.

2.3 Inclusion of Key Stakeholders in Decision Making

Climate legislation should be guided by independent scientific and technical expertise. Additionally, provision should be made to include marginalised voices and the opinion of future generations. To ensure that legislation does not impinge upon the right to health of future generations and is safeguarded the appointment of an independent commissioner for future generations as that in Wales[13] is suggested.

Giving young people agency in decision making which affects them establishes trust that institutions and politicians are acting in their best interests, and instills hope [21] in a more positive vision of the future. This will help to address the increasing psychological burden[22] felt by young people in the face of an uncertain future due to climate change. The same can be said for including the voices of Aboriginal Tasmanians, and frontline and vulnerable communities.

Recommendation
12: Reinstate a Climate Action Council for Tasmania with expertise in scientific and technical aspects as well as representations of vulnerable populations, Aboriginal Tasmanians and youth.

13: Appoint an independent commissioner for future generations, whose role it is to consider the health, social, cultural, economic and environmental impacts of governmental decisions on future generations.

3. Recommendations for the Climate Change Action Plan

Within this section we have organised our responses to align with the 8 areas of policy action proposed in the CAHA Framework for a National Strategy on Climate Health and Wellbeing[6] (referred to in section 1.2).

3.1 Health-Promoting and Emissions-Reducing Policies

3.1.1 Active Transport

Active transport reduces reliance on carbon emitting vehicles, improves air quality and provides health co-benefits by supporting a more active population. The Tasmanian Population Health Survey 2016[23] found that 1 in 3 are not physically active enough and additionally 60% of Tasmanians to be overweight or obese; a trend which is increasing (see Fig.4.). The survey also found that 57% of adults had used no active transport during the seven days before their response to the survey; and around a quarter had used active transport on four or more of the past seven days. More young adults (aged 18 to 24 years) and people in the least disadvantaged socioeconomic quintile reported using active transport. Active transport involves walking, running or cycling for 10 or more minutes during the trip to and from work, shopping or other activities.

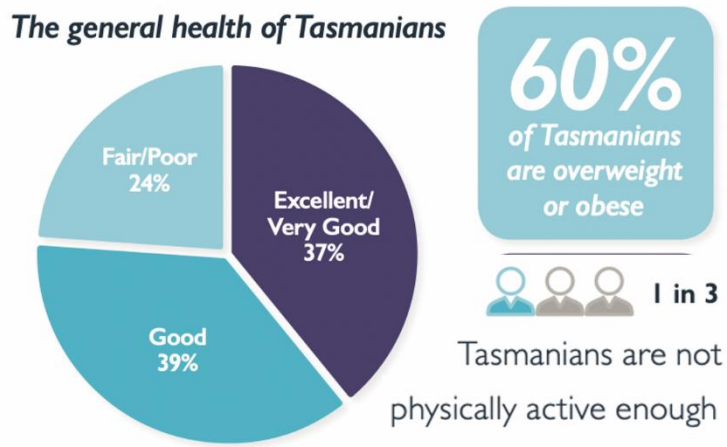

Figure 4: Tasmanian Population Health Survey 2016 Infographic[24]

We believe the **City of Melbourne's Transport Strategy**[25] identifies ways that intersect both good climate and health policy. Current road space allocation is a legacy of car orientated planning. There is significant scope to reallocate road space to focus on creating more conducive conditions for walking, cycling, and public transport. Reallocating road space towards walking, cycling and public transport will achieve the twin goals of lowering GHG emissions from transport and improve health from increased physical activity from active transport means.

Key opportunity

! Transport sector-based emission reduction targets should be underpinned by the expansion and promotion of safe, accessible, active transport infrastructure, including reallocating road space towards walking, cycling and public transport.

3.1.2 Housing and Urban Planning

As already recognised in previous climate action plans, strategies to improve thermal efficiency of homes will translate into improved health outcomes for residents, reduction in demand for

electricity and reduced cost of living pressures[26]. Funding for these initiatives should initially be targeted to support low-income households.

We raise one note of caution here. The design, materials and construction of much of our current housing stock may result in worsening of indoor air quality, such as the buildup of mold, when energy efficiency measures are implemented. For this reason, there needs to be concurrent investment to accelerate research on how to maintain good indoor air quality.

In relation to new housing construction, we would urge the government to raise the Nationwide House Energy Rating Scheme (NatHERS) rating beyond the current 6-star requirement. The rating needs to be applied to the completed home and not simply the specifications within the house plan.

Given the relatively slow turnover of built infrastructure there needs to be a systematic approach to raising the thermal efficiency and livability of all existing housing stock. One mechanism to support this would include mandated Energy Performance Certificate for all homes at the point of sale or lease. This scheme already exists within the UK and prospective buyers are provided with a detailed report on ways in which the home may be retrofitted or renovated to improve thermal efficiency and comfort[27]. This scheme creates a new avenue to expand meaningful work within the housing sector.

Tasmanian research demonstrates a significant health and associated cost burden due to ambient biomass smoke, with three quarters attributed to wood heater smoke[28]. The Department of Health's Report on the Population Health Survey 2019[29] indicated as many as 30% of Tasmanian households rely on some form of wood heating. Further research is necessary to clearly identify how much domestic wood heaters contribute to household GHG emissions. Legislation or regulation around the type of heating installed in new homes, alongside incentives to replace old wood burning heaters with less polluting alternatives will contribute to the co-benefits of reduced emissions and better respiratory health outcomes.

Urban planning

Beyond the quality of individual homes is the need to develop clear planning regulations to enhance adaptation to some inevitable changes in climate. Coastal inundation is a highly predictable risk and planning rules should be applied to prevent housing and infrastructure development in areas identified at future risk. Similarly, preventing urban encroachment into forested and woodland areas will be necessary to reduce the health risks associated with predicted increases in fire danger.

Within urban and suburban environments, the mass of concrete, dark road surfaces and roofs, can lead to much greater temperatures than surrounding areas during hot summer days. This urban heat island effect poses a significant threat to health, with heat waves identified as one of the most deadly climate related extremes[30]. To address this risk and improve the health and livability of our built environments, planning rules must mandate minimum requirements for canopy cover from trees and bushes as well as living groundcover, collectively referred to as green infrastructure. The Central Coast Council in Tasmania is currently developing a green infrastructure policy and support for all councils to develop similar policies and related initiatives will be a valuable climate and health strategy. There are multiple opportunities and co-benefits to be gained from developing statewide green infrastructure policies and initiatives, enhanced food security, flood mitigation, improved mental health, re-established biodiversity, cleaner air and so on.

Key opportunities

Implement initiatives to improve the thermal performance across the entire Tasmanian housing stock, including consideration of an Energy Performance Certificates scheme for homes at point of sale and lease.

Support research aimed at improving and maintaining good indoor air quality

Introduce planning laws to prevent infrastructure development in areas of future climate vulnerability

Introduce planning laws to establish minimum requirements for green infrastructure within the built environment.

3.1.3 Agriculture

The agricultural sector is the largest source of GHG emissions in Tasmania at 28.5%[31]. This is primarily from enteric fermentation from ruminant animals reared for beef and dairy production. Significant opportunities to reduce emissions within the agricultural sector are emerging, ranging from treatments to reduce methane production from cattle, though to better management of nitrogen-based fertilisers. Regenerative agriculture methods may also contribute to the sequestration of carbon in soils and the reintegration of trees and biodiversity corridors within the rural landscape. A combination of regulation and incentives will be required to support farmers in transitioning to more sustainable forms of production.

However, in consideration of the planetary boundaries and human needs articulated within the doughnut economics model there is a clear need to redesign many aspects of our current food system if we are to achieve necessary climate and sustainability goals.

3.1.4 Food and Nutrition

Despite Tasmanian agriculture producing large quantities of fresh food including vegetables, fruit, dairy, seafood and meat, a significant number of Tasmanian families lack access to affordable and nutritious foods[32]. Less than 10% of Tasmanian adults consume the recommended 5 serves of vegetables per day and less than half eat the recommended 2 serves of fruit per day[20].

In relation to climate change, foods associated with better health outcomes, such as fruits and vegetables, are also often associated with lower environmental impacts (see Fig.4).

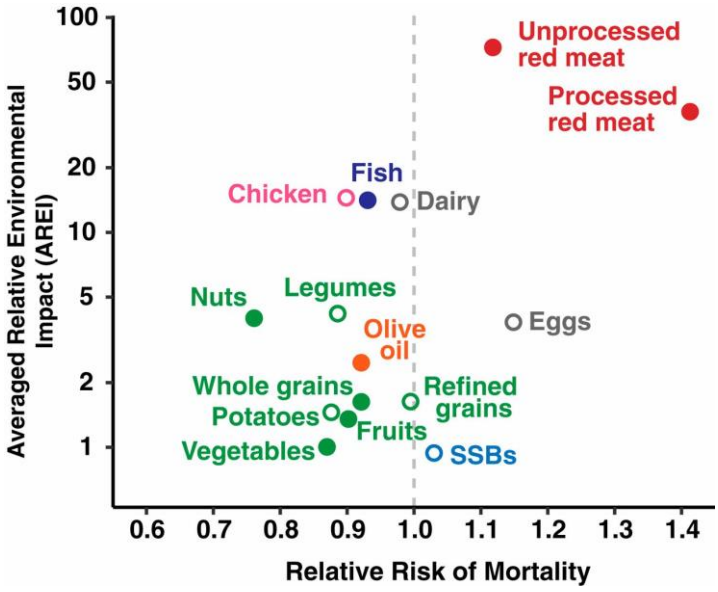

Figure 4: Association between a food group's impact on mortality and its average relative environmental impact[33]

Many Tasmanians are increasingly interested in access to local, seasonal foods; foods that benefit local economies and promote community connectedness as well as health and wellbeing. Planning laws which promote green infrastructure, access to space for community gardens, markets gardens

and markets within close proximity to where people live will enhance food security and community resilience in the face of a changing climate.

Food loss and waste is another important contributor to GHG emissions at a household level. Public education to reduce food waste and statewide infrastructure to better manage food waste are important strategies here.

Encouraging a shift to more plant-based diets will enhance both human and planetary health[34]. Establishing minimum requirements for fresh food accessibility and affordability within school and hospital food services will contribute positively to this goal.

Ensuring that the Tasmanian food system stays within planetary boundaries will require (1) investment in public infrastructure that incentivises farmers to adopt best practices, (2) better regulation of agriculture and water supply, (3) implementing strategies to reduce food waste and loss, and (4) policy measures that support changes towards more plant-based diets[35].

Key opportunity

! Introduce planning laws which enhance access and opportunities for urban and peri-urban food production.

! Investigate a statewide food waste management strategy

! Implement strategies to promote plant based diets and increase consumption of fresh foods within public facilities, including schools and hospitals.

3.2 Emergency and Disaster-Preparedness

Urgent attention must be paid to the health response to natural disasters in order to increase preparedness, responsiveness and resilience of our health systems. This is particularly important given Tasmania's climate projections (see appendix 1) and the risk of compounding disasters with less time for recovery. This response must encompass the entire health sector but specifically we seek to draw attention to primary healthcare. General Practitioners are at the frontline of healthcare provision after natural disasters and continue to provide care to the communities they work in for the long haul of disaster recovery, particularly in regards to the long term mental health impacts of natural disasters. However, the federally funded service model of primary health care can create barriers to effective integration with State level processes.

The Royal Commission into National Natural Disaster Arrangements Report[36] makes several key recommendations in this regard, and we recommend that these be incorporated into the next State Climate Action Plan. Specifically we highlight:

> *Recommendation 15.2 'Inclusion of primary care in disaster management: Australian, state and territory governments should develop arrangements that facilitate greater inclusion of primary healthcare providers in disaster management, including: representation on relevant disaster committees and plans and providing training, education and other supports.'*
>
> *Recommendation 15.3 Prioritising mental health during and after natural disasters: Australian, state and territory governments should refine arrangements to support localised planning and the delivery of appropriate mental health services following a natural disaster.*

Key opportunity

! Tasmania should invest in early warning systems which can anticipate and respond to climate health threats, such as heat waves. Mechanisms should be developed to target this information to vulnerable individuals

! Tasmania should develop arrangements that facilitate greater inclusion of primary health care providers in disaster management, including: representation on relevant disaster committees and plans and providing training, education and other supports

! Investment is required to support locally-led disaster recovery initiatives, such as localised planning and delivery of appropriate mental health services following a natural disaster.

3.3 Supporting Healthy and Resilient Communities

Discussion of resilience building often focuses on infrastructure and services. A healthier population will be more resilient to the impacts of climate change. We wish to highlight the importance of building human resilience at an individual and community level. This can be done by reducing inequalities, targeting modifiable risks such as smoking, obesity and chronic disease burden, and strategies to improve psychological wellbeing through enhanced social connectedness for example.

3.3.1 Health Promotion Case Study - Tobacco

The Tasmanian government needs to redouble efforts to address preventable risk factors for disease. Here we include the importance of greater efforts to reduce the uptake of smoking and increase quit rates. Tobacco smoking reflects the intricate connections between climate change mitigation, adaptation and health and an important example where adopting a climate and health in all policies approach will amplify health co-benefits. The tobacco industry is responsible for 4% of global deforestation, a major contributor to GHG emissions[37].

Furthermore, smoking contributes to the development of cardiac and respiratory diseases that heighten the vulnerability of individuals and their families to climate related extremes, such as heat extremes or exposure to bushfire smoke. The Tasmanian Population Health Survey 2016[23] indicated an overall smoking prevalence of 16%, though disproportionately higher at 25% in the most disadvantaged quintile.

Urgently reducing smoking prevalence will contribute significantly to increasing the resilience of some of the most disadvantaged members of Tasmanian society, reduce the future burden on our health system and liberate resources that will support our adaptation to some inevitable changes in climate.

3.3.2 Addressing the Mental Health Impacts

The discussion paper makes note of the need to address the issue of climate anxiety. It should be noted that climate anxiety does not exist in isolation but should be seen as part of the spectrum of the mental health impacts of climate change (see appendix 1). As our population is increasingly exposed to compounding climate threats, either directly, indirectly, or through an overarching awareness of threat and loss, we can anticipate a substantial increase in psychological distress. It is important for Tasmania to have a proactive response to this challenge. Particularly given the magnitude of the impacts of mental health on our society already, as described in the recent Productivity Commission Report[38], which estimated a cost to the Australian economy of $220 billion annually.

Effective strategies for managing climate distress as individuals include positive re-appraisal of the situation in an ecological, historical and societal context, engaging with personal values, and creating hope and trust. Other key themes to emerge are the importance of connection to others for support and validation, engagement with nature as a source of wellbeing, taking action on climate change as a means of empowerment, and particularly for scientists and environmental workers, strategies for self-care and avoiding burnout.

However, we seek to highlight that focusing on addressing distress at an individual level is helpful but must be accompanied by strong government action to directly address climate change, the cause of the distress itself. Doing so builds trust, hope and positive visions of the future, all of which

are important means of supporting young people and the community more broadly to cope with climate related distress. Critically, without concerted action to limit warming to 1.5 degrees we will experience potentially irreversible and catastrophic effects to the environment on which our lives depend[39]. It cannot be overstated that experiencing distress in the face of this reality is a rational response to a significant threat, and not in itself pathological. One could argue that denial of the level of threat and its urgency is a far more dangerous response.

The Lancet-MJA Countdown report 2018[40] includes the recommendation to 'Invest in research to identify, map and examine populations particularly vulnerable to the mental health impacts of climate change, and to inform the development of appropriate resilience-building measures in all communities.' The Action Plan should ensure that this is addressed for Tasmania.

Priority opportunity

! Acknowledge that addressing climate related psychological distress primarily requires strong global action to reduce emissions and limit warming, thus addressing the root cause of the distress.

! In line with a 'climate in all policies approach', future mental health reform measures should include considerations of climate change impacts within their scope

! The Action plan should support research, development and implementation of targeted interventions for groups at high risk of climate related distress within Tasmania, including young people, Aboriginal Tasmanians, scientists and environmental workers. This should include resource creation (with a focus on co-creation), peer support structures, support within schools and institutions, and professional support.

! The Action Plan should include a recommendation for education and training opportunities for health professionals on climate change and mental health to be developed and implemented.

! Harness the mental health benefits of 'climate-friendly' policies and behaviours such as active transport, urban greening, localised food production and circular economies.

! Consider the mental health benefits associated with demonstrating leadership, inspiring hope and creating positive visions of the future through bold climate change action at state level

3.4 Education and Capacity Building

The urgency to act and critical importance of maintaining a safe climate to support human health necessitates a much more proactive approach to community engagement.

We know that individuals and communities are likely to respond more positively to calls to action when they more fully appreciate the links between climate change and health[41].

An effective climate action plan will require an education campaign to inform communities about the health risks posed by climate change as well as the many benefits that will come from reducing emissions and adopting health-protective adaptation strategies.

Additionally, many health professionals and policy makers are yet to understand the link between climate change and health and these groups must also be engaged on this topic.

Key opportunity:

! Design and implement a proactive community and health professional engagement initiative to improve understanding of, and need to address, the links between climate change and health

3.5 Leadership and Governance

Since the introduction of the Tasmanian Climate Change (State Action) Act (2008) Tasmania has witnessed significant policy churn, with several climate change action plans developed, and then redeveloped with changes in government, or responsible minister. A strong tripartisan Climate Change Act is necessary to establish some level of continuity between successive governments.

Leadership must also be fostered across multiple government portfolios. Our recommendation for a Sustainable Healthcare Unit is one example.

Government policy must also reflect a genuine commitment to a low-carbon future. Avoiding further investment or subsidy of fossil fuel exploration is a necessary first step.

Good governance must not be compromised. Reforms in areas such as political donations will be necessary to minimise the interference of vested fossil fuel interests.

Recommendation:

12 Reinstate a Climate Action Council for Tasmania with expertise in scientific and technical aspects as well as representations of vulnerable populations, Aboriginal Tasmanians and youth.

3.6 A Sustainable and Climate-resilient Health Sector

The health care sector is a significant contributor to Australia's GHG emissions. It is estimated that 7% of Australia's total carbon footprint is attributable to the health care sector[42]. Hospitals and pharmaceuticals are the greatest contributors with hospitals making up 50%, and pharmaceuticals a further 20% of all health care emissions. Specialist medical services and general practice or primary care contribute 6% and 4% respectively. Reducing the emissions of the health sector is an important step to protecting the health of our population[17].

"Health care itself contributes to our collective carbon footprint, yet reducing this footprint is good for our health"[42].

A wide range of opportunities exist to reduce carbon emissions associated with the healthcare sector[43].

Infrastructure upgrades which improve energy and thermal efficiency of facilities will both lower emissions and reduce cold and heat stress for patients and staff. This requirement should extend beyond the State Public Health sector to include primary health care and aged care facilities.

Supporting health services to switch from non-renewable energy sources, such as gas, to renewable sources will contribute to a zero-carbon trajectory. Independent means of energy generation and storage through solar and batteries will enable better continuity of services in the event of the supply disruptions made more likely by extreme weather events, whilst also reducing emissions associated with generators and other methods of backup power supply.

Additional areas with economic and societal benefits include:

- reducing medical waste and unnecessary pathology tests.
- mandating procurement policy which supports the advancement of the Sustainable Development Goals and a transition to a circular economy.

A robust training framework for the current and future health workforce will support both mitigation and adaptation efforts. An urgent priority is to engage health professionals in becoming leaders and contributing to sustainable healthcare initiatives. Ongoing education will also be required to prepare health professionals to recognise, prepare for and respond to the health impacts of climate change.

The Tasmanian health sector will need to adapt to changes in our climate and associated increased intermittent demand on services as described in the appendix. This will require an increase in the workforce in some areas, education, training and research, as well as infrastructure upgrades.

The potential increases in demand on hospitals will be lessened through greater support and improved delivery of primary health care services. The COVID-19 pandemic has demonstrated a capacity and willingness to engage in alternative models of healthcare delivery such as telehealth. Further research around best practice approaches to these alternative health care delivery models will identify ways to maintain high standards of care, while reducing the demand on carbon and resource intensive tertiary hospital services.

3.6.1 A Sustainable Healthcare Unit for Tasmania

> *The National Health Service (NHS) in the UK is leading the field globally on climate change and sustainability in healthcare. Following the passage of the UK Climate Change Act in 2008, the NHS established a Sustainable Development Unit (SDU) the same year to guide its carbon reduction efforts. The UK SDU is now well-established and has developed policies, tools and training specific to the health sector in the UK, but which can be adopted and adapted for other countries. Sustainability Units are involved in the development of system wide policy, planning and research, monitoring of the health sector's carbon footprint and actively supporting health service providers through tools and training.*

Increasingly, jurisdictions in Australia are establishing or considering Sustainable Development Units based on the NHS model. For example, Victorian Government established a Sustainability Unit[44] and a recent Climate Health Inquiry in Western Australia[45] has recommended that such a unit be. Establishing a Tasmanian Sustainable Healthcare Unit in the Tasmanian Department of Health is necessary to ensure a standardised and consistent approach to health care emission reductions and implementation of sustainable health care delivery across the State. This will lead to economic and health co-benefits for the Tasmanian population.

Importantly there is already significant momentum toward advancing sustainability initiatives within the Tasmanian Health Service. A dedicated Green Health committee has been established within the Royal Hobart Hospital, which has led to the RHH becoming a signatory to the Global Green & Healthy Hospitals network (GGHH). Membership of the GGHH network requires a commitment to research and instigate sustainable practices within the workplace and gives access to a global network pioneering innovative approaches to sustainable healthcare.

Formative steps are now being taken to establish a similar staff-led committee for the Launceston General and North West Regional Hospitals.

The health sector has a clear responsibility to reduce its carbon footprint and many opportunities to lead in creating a more sustainable future. In recognising this, DEA has produced the 'Net Zero Carbon Emissions: responsibilities, pathways and opportunities for Australia's healthcare sector'[17] report, articulating the rationale and key requirements to support the transition to a healthy, low-carbon future.

Priority opportunity

! Set a health sector specific emissions reduction target of 80% reduction by 2030 and zero by 2040.

! Establish a Sustainable Healthcare Unit in the Tasmanian Department of Health.

3.7 Research and Data

The 2019 review of Climate Change Research On Tasmania[46], which was undertaken to address Action 1.1 of Climate Action 21 to "Undertake a review of climate change modelling and identify research gaps and opportunities", highlights that further assessment of projected impacts of climate change on health for Tasmania is a significant gap in current research.

Specific data and research gaps to address as a priority include:

- Transparent Tasmanian sectoral emissions data, which includes comprehensive evaluation of Tasmanian health sector emissions
- Defining current and predicted health impacts of climate change on the Tasmanian population, with reference to demographic and geographic vulnerabilities, utilising a comprehensive set of climate change and health indicators, drawing on the work of the **MJA-Lancet Countdown report**[47].
- Specific evaluation of current and predicted future mental health impacts of climate change on Tasmanians.
- Developing evidence based, targeted interventions for groups at high risk of climate related distress within Tasmania, including young people, Aboriginal Tasmanians, scientists and environmental workers.
- Economic impact of extreme weather events inclusive of the health impacts
- Barriers and enablers to uptake of emissions-reducing strategies for individuals and communities

Priority opportunity:

! Provide resources and support to coordinating strategic, local research into the projected health impacts of climate change for Tasmanians, in order to inform update future legislative and policy responses.

3.8 Thriving Ecosystems

Tasmania's current conservation laws do not include provision for threats posed by climate change, and do not adequately protect biodiversity and ecosystems to the extent necessary to support the health of our community into the future. Tasmania is fortunate to have substantial, unique and highly biodiverse regions both land based and marine. Unfortunately, some of these have already been substantially degraded much to the detriment of our collective wellbeing[48].

Priority opportunity:

! Establish priorities and targets for restoring and revegetating forests, rivers and wetlands on private and public lands, prioritising bushfire and drought-affected regions, as well as metropolitan, suburban, peri-urban and rural areas.

! Support the promotion of biodiversity and human health in urban environments, through the creation and expansion of green corridors, green roofs and green spaces

! Recognise and promote the health co-benefits associated with activities of environmental conservation

! Invest in capacity building initiatives to expand Aboriginal and Torres Strait Islander conservation initiatives, including Indigenous Ranger programs, and ensuring Aboriginal and Torres Strait Islander participation in climate adaptation and resilience initiatives, such as bushfire prevention, water management, and carbon farming, which will benefit all Australians.

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Appendix 1 - Health Effects of Climate Change in the Tasmanian Demographic

Based on an Australia wide assessment of climate change impacts on health, the MJA-Lancet Countdown Australian Countdown[49] on Health and Climate Change delivered its third annual report in 2020, which provides a broad overview of current research in this area. Figure A1 summarises the broad categories of health impacts. Figure A2 highlights many of the direct and indirect health effects of climate change and the pathways through which these impacts are mediated. Recognising the ways in which impacts are mediated is important for understanding why many individuals and subpopulations are likely to be more severely harmed by a changing climate. For these reason we have chosen to include within this appendix a more detailed profile of the demographics and health profile of the Tasmanian population. Importantly, figure A3 highlights the many health co-benefits that we stand to gain from effective and well targeted climate mitigation and adaptation strategies.

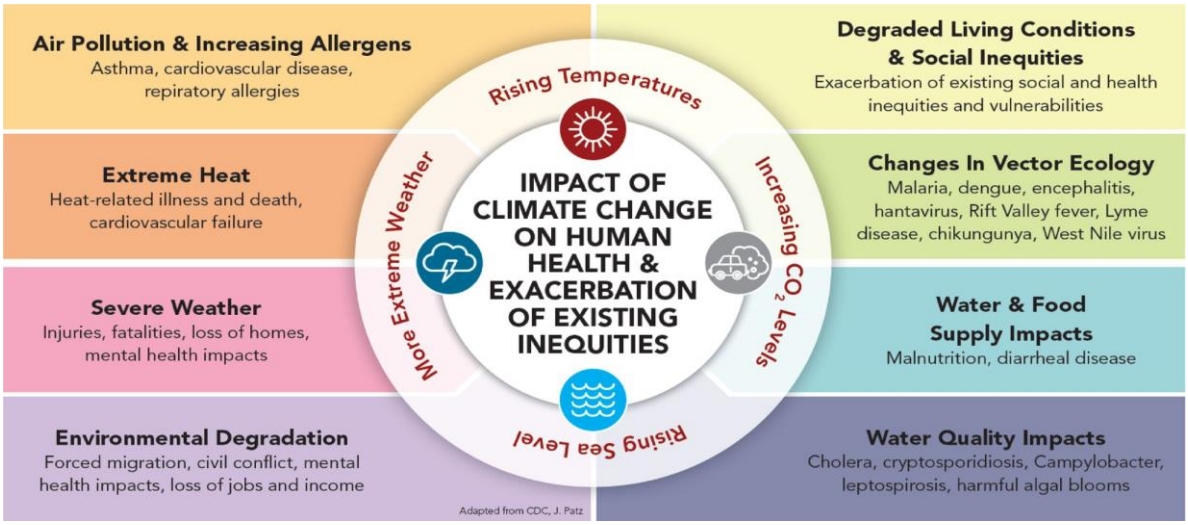

Figure A1: Impact of Climate Change on Human Health & Exacerbation of Existing Inequalities

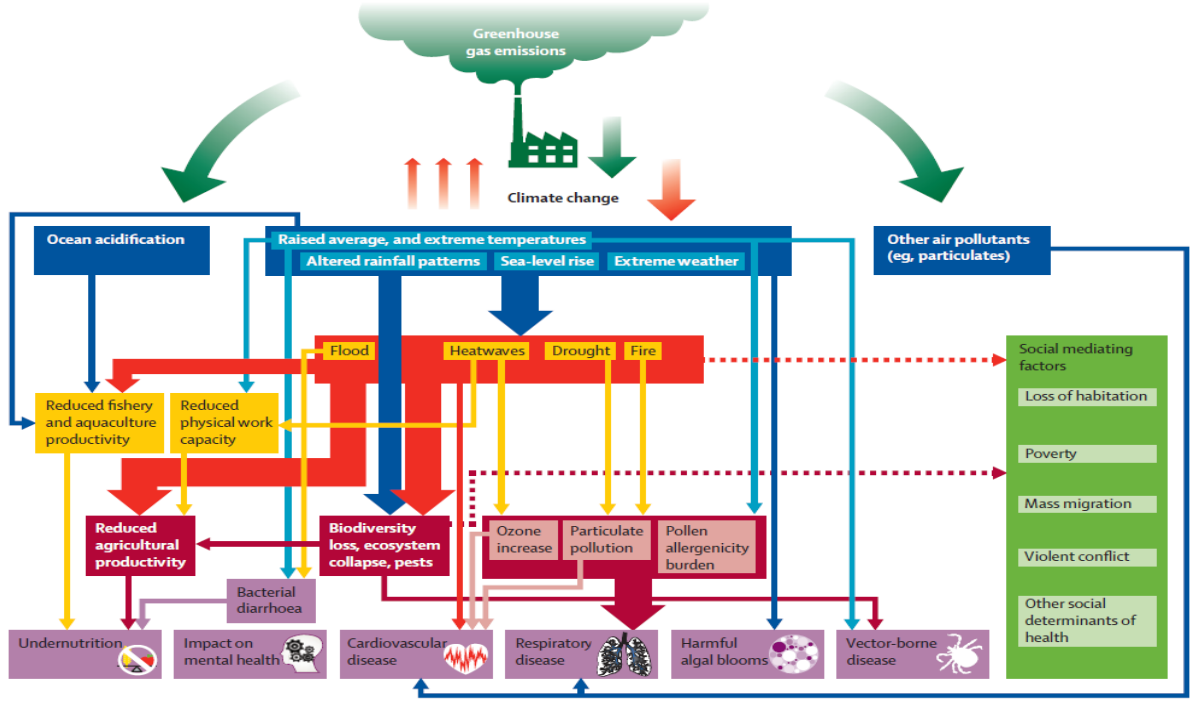

Figure A2: Health effects of climate change.

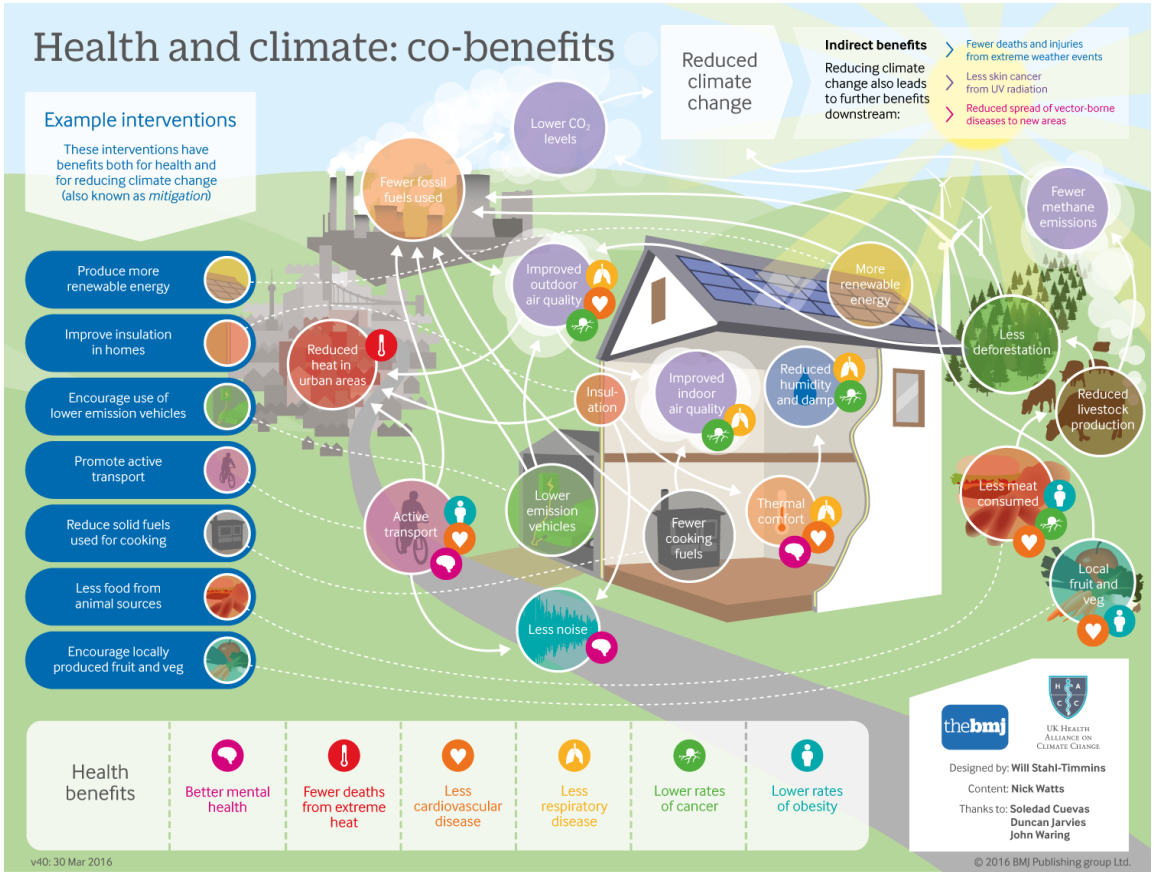

Figure A3: Health co-benefits of climate mitigation and adaptation interventions[50]

Climate projections for Tasmania

Modelling of climate change in Tasmania shows that Tasmania will become more vulnerable to extreme weather events such as heatwaves, bushfires, storms and floods. Temperature is predicted to rise in Tasmania between 2.5 and 4 degrees °C by 2100.

There are predicted to be more hot days and warm nights, more extreme wet days, increase in intense rainfall events combined with more dry days[51]. Overall, the number of rain days across the whole of Tasmania is likely to decrease. Modelling for rain events shows that in some places, the 1:200 year event becomes a 1:20 year event. Changes to flood flows in rivers of the Mersey, Forth and Huon Rivers are projected to increase significantly through to the end of the 21st century. A rise in mean sea level due to global warming of between 5 cm and 14 cm, is projected to occur by 2030 under a high emissions scenario. Such a rise could lead to the water levels associated with a 1-in-100 year storm tide event occurring as frequently as once every 50 years by 2030[51].

There is an anticipated doubling to tripling of summer days >25 °C by the end of the century and heatwaves (defined as three or more consecutive days where the maximum temperature is above 28 °C) may occur twice a year, which is about four times more frequently than we have experienced.

Heat worsens physical and mental wellbeing. Physically we see increased rates of cardiovascular and respiratory events and exacerbation of chronic kidney disease. Heat is associated with increased aggression, domestic violence and emergency presentations with mental and behavioral disorders including self-harm.

Tasmanian research into the health impacts of heatwaves demonstrates that:

- In Tasmania, ambulance dispatches increase by 34% during extreme heatwaves, by 10% during severe heatwaves and by 4% during low-intensity heatwaves. Significant associations exist for the elderly, the young and for regions with the greatest socio-economic disadvantage (Campbell et al. In review).
- Hospital emergency presentations increase by 5% across the whole population, by 13% for children 15 years and under, and by 19% for children 5 years and under (Campbell et al. 2019).

Bushfire risk projections for Tasmania indicate a steady increase in fire danger, especially in spring with the average area categorised as 'Very High Fire Danger' during spring projected to increase by at least 250%. This is a 20% increase per decade[51]. There will be a lengthening of the fire season with the total number of days per year categorised as 'Very High Fire Danger' projected to increase by at least 120%. This is about a 10% per decade increase to 2100. Regions currently with the greatest risk of fire are projected to get worse most rapidly.

Local research on current impacts indicates that there are estimated increases in mortality, asthma emergency presentations, cardiovascular disease hospital admissions and respiratory hospital admissions attributed to planned burns and bushfires.

- The annual cost of these impacts is $16m for mortality and >$140k for hospital costs.
- These estimates double in extreme fire smoke years (2016 and 2019).

Key demographic and health profile of the Tasmanian population:

- Indigenous status: 4.5% of Tasmanians are Aboriginal, Torres Strait Islander or both Aboriginal and Torres Strait Islander population. This is higher than the national figure of 2.8%, and higher than any state or territory beside the Northern Territory. Indigenous Tasmanians may be uniquely vulnerable to the psychological and cultural impacts of climate change given the importance of connection to place in aboriginal concepts of wellbeing. Additionally, aboriginal Australians are over-represented in all the other vulnerable populations discussed in this section, with the exception of the aged population due to their lower life expectancy.
- Disadvantage and health inequality: Tasmania has the highest proportion (33%) of people living in the most disadvantaged areas ranked Australia wide. Those at socioeconomic disadvantage consistently have poorer health outcomes and in this regard climate change is a 'threat multiplier'. There are many negative consequences that arise for disadvantaged Tasmanians including:
    - Decreased access to thermally efficient, well ventilated housing to limit exposure to extreme heat
    - Less likely to have air-conditioning, and subsequent inability to avoid bushfire smoke exposure
    - Limited capacity to relocate from floods and bushfire prone areas
    - Less able to bear costs of recovery from extreme weather events - including under-insurance due to rising premiums associated with climate risk.
    - Less likely to have access to active and public transport options
    - Experience food insecurity as poorer suburbs are less likely to have accessible, affordable, nutritious food choice
    - More likely to be living in suburbs with fewer trees and open green space.

- Disadvantaged Tasmanians may lack the economic, educational and social capital which enables resilience to climate change. There is serious risk that climate change will drive greater inequality through these mechanisms, unless more urgent action is taken to address many of the underlying social determinants of health.
- Age: Tasmania's median age was 42 years, above the national median age of 38 years and this is increasing faster than any other state or territory with the proportion of Tasmanians aged 65 and over expected to grow from 19% in 2017 to 25% by 2050.
- Chronic Disease: In 2014-15, 56% of Tasmanians aged 15 years and over reported having three or more chronic health conditions, while 15% reported none. The age standardised prevalence of three or more chronic conditions was the highest of any Australian jurisdiction (vs 42% nationally), while the age standardised prevalence of none was the lowest (vs 21% nationally).
- Disability: In 2015 26% of Tasmanians reported that they were living with a disability. This includes 8% who had profound or severe core activity limitation. The age standardised prevalence of disability was 23%, higher than for Australia overall (17%).
- Mental Health: In 2014-15, 21% of Tasmanians reported having a long term mental or behavioural problem. This age standardised prevalence was the highest of all jurisdictions and slightly higher than for Australia overall (17%). In 2012-13, 27% of Tasmanian Aboriginal people reported high or very high levels of psychological stress.
- Obesity: In 2014-15 61% of Tasmanian adults were overweight or obese, as were 28% of children aged five to 17 years. The age standardised prevalence of overweight or obesity among Tasmania adults (66%) was the highest of any Australian state or territory.

The current trajectory for many of these important population health indicators continues to worsen, such as the proportion of the adult population living with chronic disease. The quality of our choices in regard to mitigation and adaptation actions will greatly influence this trajectory in future. For example, electrification of private motor vehicles, without a considerably greater emphasis on developing active transport options and improved urban planned, will lead to continued dependence on private motor vehicles and sedentary lifestyles that contribute to a heavy burden of chronic cardiovascular disease.

Additionally, careful consideration needs to be given to how different mitigation and adaptation actions may reduce or widen wealth inequality. For example, large scale renewable energy projects, owned by international investors will contribute to the leaky bucket phenomenon, whereby regional income leaks away from the general population and accumulated by wealthier individuals. To counter this, considerable emphasis also needs to be placed on creating opportunities for locally owned, distributed renewable energy generation, coupled with significant energy efficiency upgrades for the most disadvantaged members of society to support permanent reductions in the costs of living.

To be clear, we are not opposed to large scale renewable energy projects and electrification of transport options. These examples are given to illustrate how the choices made may positively or negatively affect the future health, wellbeing and prosperity of fellow Tasmanians.

Appendix 2 – Mental Health Impacts

The impact of climate change on mental health merits specific discussion and has been highlighted as a key concern to emerge from consultation informing the discussion paper on Tasmania's Climate Change Act.

Mental health consequences of climate change can be considered under three broad categories:

1. **Direct impacts of extreme weather events and heat:**

   Psychological distress can manifest in many ways in individuals and communities exposed to natural disasters. There is a spectrum of severity ranging from mild transient distress which resolves without external intervention, to severe mental illness requiring long term involvement of specialist services. The timeframes for presentations of these conditions can vary and may demonstrate a long tail. Manifestations of psychological distress such as increased domestic violence, alcohol and substance abuse have been shown to increase following extreme weather events. Mental illnesses such as PTSD, anxiety disorders, depression and increased suicide have also been demonstrated. Australian research following the Black Saturday bushfires demonstrated PTSD rates, depression rates, alcohol misuse rates. Climate change adds an interpersonal dimension to natural disasters as individuals may perceive human influence in the occurrence of such events due to many years of global inaction on climate change. This interpersonal dynamic can increase PTSD and worsen recovery trajectories. Studying the mental health impacts of these types of events is more straightforward than attributing indirect or overarching impacts, however, what is not well understood is the impact of compound events, which are more likely due to climate change, where multiple disasters intersect with less time for recovery and erosion of resilience factors. Heat is associated with increased aggression, domestic violence and emergency presentations with mental and behavioural disorders including self harm. The mental health impacts of extreme heat are equivalent to the mental health impacts of unemployment, with these effects being more significant for women. Australian data shows an overall trend towards increased suicide rates with increased annual temperatures (Zhang et al 2018), however, Tasmania is somewhat anomalous with a trend showing an increased suicide rate associated with colder mean temperatures.

2. **Indirect impacts:**

   Flow on consequences of extreme weather events, along with subacute and chronic climate and environmental changes such as drought and sea level rise can impact mental health via social, economic and cultural consequences which can be challenging to quantify and attribute. Examples of this would include the impacts of food and water shortage on social unrest, conflict and displacement. These responses are complex, emerge over wide ranging timeframes and at locations which may be distant to the antecedent events. Australian research has identified an increase in suicide for men in rural farming communities following prolonged drought.

3. **Overarching impacts:**

   Even without direct exposure, the mere awareness of the unfolding threat of climate change has mental health impacts. Given the worldwide reach of news reporting and the ready access to information afforded by the internet there are many avenues through which individuals may be exposed and thus psychologically affected by climate change. These responses commonly include feelings of anxiety, fear, grief, helplessness, hopelessness, frustration and anger. It must be acknowledged that these emotions are not necessarily pathological and may be considered a rational response to the emerging reality. Nonetheless, they may create substantial distress and functional impairment which, for some individuals, may lead to clinically significant anxiety or depression. The term "psychoterratic syndrome" has been coined to describe the specific

emotional responses to climate change and environmental degradation. This includes phenomena such as eco-anxiety, eco-paralysis and solastalgia, which is the emotional response to the negative transformation of a loved home environment.

Across all of these areas, some groups are more likely to be affected and be particularly vulnerable to the overarching impacts described above e.g. individuals with pre-existing mental illness, those from poor socio-economic circumstances, Indigenous peoples, the young and the old.

Children and adolescents are especially vulnerable to mental illness and distress as a result of climate change and experience PTSD, anxiety, phobias, sleep disorders, attachment disorders and substance abuse as a result. They may be additionally affected by climate related mental illness and psychological distress in their caregivers. This can impact the developmental trajectory and can result in learning difficulties, cognitive and language delays and difficulties with emotional regulation. Many young people experience hopelessness, despair and anger, they are fearful of what the future holds and that the world will end in their lifetime. In a September 2020 UK survey of child and adolescent psychiatrists 57% reported seeing patients who were distressed about environmental and ecological issues in the preceding year. Surveys done by Mission Australia suggest that Australians between age 15 and 19 increasingly see the environment as one of the most important issues facing the country today, and Tasmanian young people are more concerned than their national peers. More than four in 10 (44.1%) young people from TAS indicated that the environment is one of the most important issue in Australia today (versus 29.8% nationally).

A conceptualisation of the mental health impacts on children and adolescents is shown in Fig A4 from IPCC MH impacts on children scoping report.

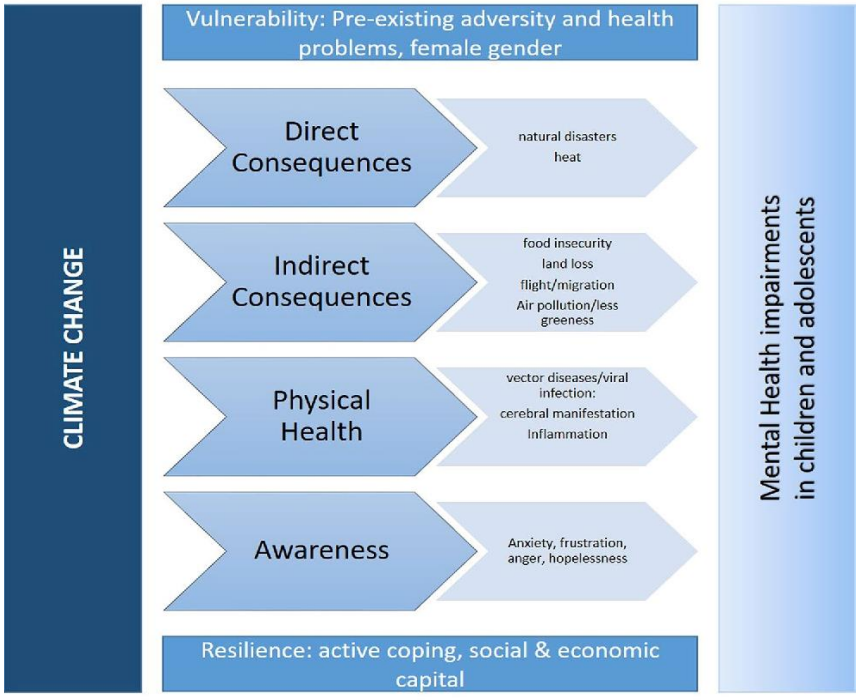

Figure A4: Mental Health impacts on scientists and environmental workers

Scientists, environmental workers, conservationists and others who work closely with the environment have been identified as vulnerable to increased climate related distress. This has been described as 'pre-traumatic stress', in that they are dealing with evidence and predictions of frightening realities on a daily basis. Tasmania has comparatively high populations of these groups due to the presence of UTAS, CSIRO, IMAS and the Australian Antarctic Division in the state. This expertise is to be valued, and the particular mental health needs of this group should be further explored and supported.