

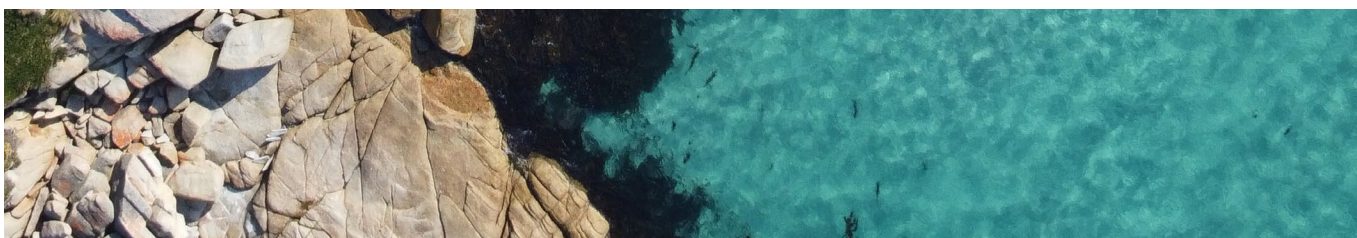


Department of Premier and Cabinet
Tasmanian Climate Change Office

Independent Review of the *Climate Change (State Action) Act 2008*

Final Report

June 2021



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Independent Review of the *Climate Change (State Action) Act 2008*

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Acknowledgement of Country

Jacobs acknowledges and pays respect to the Tasmanian Aboriginal people as the traditional and original owners, and continuing custodians of this land and acknowledge Elders – past and present.

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EXECUTIVE SUMMARY

Jacobs was commissioned to conduct this third independent review of the *Climate Change (State Action) Act 2008 (the Act)*. The Act provides Tasmania's legislative framework for action on climate change and includes a requirement for an independent review to be carried out every four years. Previous reviews were undertaken in 2012 and 2016. The terms of reference for this review reflect legislative requirements and additional matters of interest specified by the Minister. The findings and recommendations of the review are presented in this Final Report.

Context for the review

Since the previous review of the Act in 2016, there has been further evidence of the implications of climate change and growing public awareness of this issue. While the engagement has not been universal, communities, governments, and corporations from across the world have rallied around efforts to mitigate greenhouse gas emissions (hereafter referred to as emissions) and build resilience to potential climate change impacts. The landmark 2015 Paris Agreement saw most national governments recognise the urgency of action on climate change and commit to targets for emissions reductions.

Australia's National Greenhouse Accounts 2019 indicate that since 2013 (with the exception of 2014), Tasmania has achieved net zero emissions¹. This reflects Tasmania's predominantly renewables-based electricity grid and net carbon sequestration by its native forests and forestry plantations.

Government responses to climate change are typically driven by emissions reduction pledges and targets. Tasmania is one of four Australian States or Territories to enshrine such targets in law. The Act (in 2008) specified the State's target to reduce emissions to 60% below 1990 levels by 2050. In line with other Australian jurisdictions (and the 2015 Paris Agreement), the Tasmanian Government subsequently committed to achieving net zero emissions by 2050.

Nationally, and internationally, the transition towards low carbon economies is accelerating. This transition will result in supply chains decarbonising and rising expectations, and demand, for low carbon products and services. Countries that are seen to be lagging on climate action may face limits placed on their carbon intensive exports and having stranded assets as a result.

Greater awareness and scientific evidence of the implications of a changing climate has highlighted the importance of resilience within our communities, economies, and natural environments. Adaptation to current and projected impacts caused by climate change is critical to improving resilience and ensuring societies, natural environments and the economy can thrive long term.

The independent review

This independent review was conducted according to terms of reference based on Section 18 of the Act and to meet additional requirements for analysis by the Minister. The terms of reference require the review to address:

- ♦ The extent to which the objects of the Act are being achieved.
- ♦ The extent to which additional legislative measures, if any, are considered necessary to achieve the targets set by the Act within the periods contemplated by the Act, including the introduction of performance standards or other mandatory requirements.
- ♦ Consulting on options to revise Tasmania's emissions reduction target, based on the outcomes of the update to Tasmania's Emissions Pathway Review.
- ♦ Examining whether the Act provides a sound foundation for action on climate change mitigation and adaptation by Tasmania's government, businesses and community.
- ♦ Examining whether the Act provides a sound framework for consideration of climate-related risks and opportunities.

The review was asked to consider these requirements in the context of international, national and State developments in climate change policy. The Terms of Reference for the review are provided in Appendix B.

Consistent with the Act, the review was undertaken in consultation with representatives of relevant business, scientific and environmental organisations, as well as members of the broader Tasmanian community.

Two phases of consultation were undertaken. Phase one focused on the role of the Act, emissions targets, transition to and opportunities in a low carbon economy, and impacts as a consequence of climate change. Engagement was undertaken through a survey, targeted discussions with key business, industry and community groups and online

¹ Tasmania first achieved net zero emissions in 2013 but recorded net-positive emissions in 2014.

community workshops. The second phase included the release, for public consultation, of a Discussion Paper that canvassed issues pertinent to the review.

The review team consulted directly with over 200 individuals through this process and have received 54 submissions in response to the Discussion Paper. Stakeholder feedback was considered and, as appropriate, incorporated into this Final Report.

Key themes from stakeholder consultation

Key themes from submissions and engagement with stakeholders that are relevant to this review's terms of reference include:

- ♦ A 2050 net zero emissions target is conservative. Decarbonisation should be pursued to the extent possible across all sectors and not just rely on the land use, land use change and forestry (LULUCF) sector. Targets must align with the best available science, reflect an appropriate level of ambition that drives action and innovation, and take into account the potential and complexity of emissions abatement opportunities across sectors.
- ♦ To be effective in responding to climate change, government policies and decisions must give balanced and equitable consideration to climate change mitigation and adaptation.
- ♦ Climate change action is a shared responsibility between the private sector, communities, and all levels of government. As such, action should be conducted in partnership.
- ♦ The State Government should provide leadership and support collaboration for action on climate change and facilitate adaptive capacity for the Tasmanian community.
- ♦ Funding and incentives for low carbon solutions are necessary for Tasmania's transition to a low carbon future.
- ♦ Tasmania's low carbon transition should be equitable. This transition must be carefully executed to minimise any adverse effects, particularly on more vulnerable communities and businesses, and to minimise any unnecessary burden on future generations.
- ♦ Climate change threatens at least some of Tasmania's unique ecosystems. Apart from the loss in intrinsic environmental values, this would have profound knock-on effects on wellbeing, tourism and the economy.
- ♦ Communities and health and emergency services are insufficiently prepared and resourced for the scale and immediacy of the expected consequences of climate change. Mental health and wellbeing of all Tasmanians, most notably vulnerable communities, is likely to decline due to the impacts of climate change.

Review findings

Findings of this independent review are based on research and analysis of legislation, policy, strategy and leading practices on climate change internationally, nationally and locally. These were supplemented by ideas and perspectives that were communicated through stakeholder engagement.

Findings from our research and analysis and inputs from stakeholder consultation that are relevant to this review's terms of reference include:

- ♦ The Act does not include mechanisms that explicitly drive action on climate change mitigation or adaptation. Rather, the Act provides a narrative and broad framework to promote and support endeavours.
- ♦ With support from the Tasmanian Government, the scientific community has continued to develop its understanding of Tasmania's potential future climate. This positions the State to implement adaptation measures and build resilience to climate risks.
- ♦ Emissions abatement has not been achieved at scale in the energy (i.e. transport and fossil fuel use), waste, agriculture, and industrial processes and product use sectors². Despite the value produced per unit of emissions increasing significantly since 1990, overall emissions in these sectors have grown by 1.2%.
- ♦ Tasmania is a clear leader on renewable energy generation and storage in Australia, which will be enhanced by the Tasmanian Renewable Energy Target of 200% renewable energy generation by 2040. However, Tasmania has been only marginally successful in positioning itself as a provider of low carbon products and services and capitalising on its renewable energy capacity³, at this time.

² Tasmania's position of net negative emissions has come from a decline in and sequestration of emissions in the land use, land use change and forestry (LULUCF) sectors.

³ The Review notes the efforts of the Tasmanian Government to develop a green hydrogen economy as being a step in this direction

- ♦ Ambition on climate change is gaining momentum abroad, emphasising the accelerating transition to a low carbon future. Tasmania will need to continue its transition to remain in-step with a changing national and international landscape on climate action.

Reducing Tasmania's emissions

Tasmania has achieved net zero emissions decades ahead of the State Government's original 2008 commitment and is likely capable of maintaining this status for years to come. Net carbon sequestration by the State's native forests and plantations should be maintained for some time under current settings although its magnitude is likely to taper beyond 2030, as modelled by the Tasmanian Emissions Pathway Review (TEPR).

However, there are risks to this favourable position. For example, a major bushfire event or succession of such events could result in losses of carbon stored in the State's forest estate. The State's net zero emissions status may not be quickly regained following such losses. The vulnerability of native forest carbon stocks should be considered in setting an emissions target for the State and should drive action to reduce emissions in other sectors. Other external factors that present risks to maintaining net zero emissions include shifts in market and consumer demand, changes to commodity prices and disruptions to supply chains, and implementation of new technology.

Emissions from the energy, agriculture, waste, and industrial process sectors have been more or less stable since 1990. While the State has been largely successful in decoupling economic growth from emissions (e.g. the gross value of agricultural production increased by ~143% between 2004 and 2019 but emissions only increased by 1.4% during this period), it has not been able to drive at-scale emissions reductions in sectors outside LULUCF.

Decarbonisation of all sectors is being pursued by various government and industry bodies globally to make the transition to low carbon economies. Although Tasmania has achieved net zero emissions, it will need to pursue decarbonisation outside of the LULUCF sector if the State is to remain in-step with other leading jurisdictions, and to ensure that its current net zero emissions status is maintained in the event of shocks in the LULUCF sector.

The State target and sectoral decarbonisation

Tasmania shares the same net zero 2050 commitment as all other Australian States and territories. However, unlike those other jurisdictions, Tasmania has achieved net zero emissions for several years. A future net zero target for Tasmania does not instil urgency nor necessitate further climate action as the Paris Agreement and stakeholder feedback received in this review has called for. It also implies an allowance for emissions to rise above their current levels.

The Paris Agreement calls for efforts to limit atmospheric warming to 1.5°C above pre-industrial levels by reducing emissions into, and drawing down carbon from, the atmosphere. Aligning to the goal of limiting atmospheric warming through continued emissions cuts, and the best available climate change science, the review recommends **Tasmania commit to net zero emissions from 2030** and **collaborative sectoral decarbonisation** in the non-LULUCF sectors. Robust, sectoral planning and actions, in partnership with local government, business, industry and the community should help the State to realise meaningful emissions reductions in non-LULUCF sectors at pace consistent with technology and the sector's capacity for transition.

Improving Tasmania's resilience

Tasmania's future climate is projected to be characterised by increased temperatures, changes to rainfall patterns and an increase in the frequency of extreme weather events. Sea level rise and ocean acidification and warming are also projected to occur. With these come elevated risks of bushfire, disruptive extreme weather, flooding, coastal erosion and heat stress for Tasmanian communities, industries, and natural environments.

Tasmania's ability to anticipate and adapt to climate extremes and future climate change is underpinned by the level of climate resilience in its natural, economic and social systems. Climate resilience is a risk-based approach involving analysis of climate change projections and impacts and the prioritisation and implementation of measures to better cope with climate risks.

Tasmania holds world-class climate-related scientific knowledge and expertise that continue to provide a sound understanding of climate change impacts to social, economic, and natural systems. **A State-wide risk assessment** would consolidate and utilise these understandings and provide a robust basis for

prioritised investment in climate adaptation planning and resilience building. **Sectoral adaptation planning** undertaken in partnership with stakeholders will drive effective action towards embedding resilience into communities, the economy, and natural environments.

A clear and robust *Climate Change (State Action) Act 2008*

The Act provides a narrative for how government responds to climate change. Like similar legislation in other jurisdictions, it sets a target for overall emissions for the State and advocates for action on emissions abatement and climate change adaptation. While the Act provides a narrative for action by government, business and the community, it has minimal capacity to drive such actions.

The review considers that the Act should be modified in several key areas to strengthen and clearly direct action on climate change in an effective, equitable, and collaborative manner. Areas for modification identified by this review include the following.

Consolidated Objects

Other than the target, the objects are the key expression of the State's position on climate change. The ten objects overlap and do not provide clear guidance on how climate change should be considered in decision-making. There is scope to reword and consolidate the objects to clarify the purpose of the Act and provide a robust framework for evaluating its effectiveness.

Principles to guide climate action

A set of guiding principles in the Act would establish expectations and inform decision-making to deliver on the objects and targets of the Act appropriately and effectively.

Relevant policies and strategies informed by climate change

The formation of government and agency policies, strategies and plans that have implications on the State's emissions profile, influence exposure to climate risk, and affect its adaptive capacity to climate change should incorporate appropriate consideration of climate change.

Climate Action Plan

The formation of government and agency policies, strategies and plans that have implications on the State's emissions profile, influence exposure to climate risk, and affect its adaptive capacity to climate change should incorporate appropriate consideration of climate change.

Review recommendation #1

Net zero emissions from 2030

- ♦ A nation-leading target.
- ♦ Aligned to the best available climate science which suggests continued emissions cuts are required to avoid dangerous climate change.
- ♦ Achievable, but requires considerable climate action to occur leading up to and beyond 2030 to cut emissions throughout the economy and reduce reliance on the LULUCF sector.
- ♦ Manages uncertainty, through sectoral decarbonisation planning, of untried and complex low carbon technologies and practices and their potential transitional impacts to Tasmanian businesses and communities.
- ♦ Consistent with Tasmania's clean and green brand.

Review recommendation #2

Consolidate the Objects of the Act

- ♦ The current Objects of the Act are not explicit, overlap, and are poor at guiding effective climate action.
- ♦ Simplifying and restructuring the Objects provides:
 - clarity on the purpose of the Act;
 - a clear narrative for climate action; and
 - a robust framework for evaluating the effectiveness of the Act.

Review recommendation #3

A set of Principles to guide climate action

Sets expectations and guides decision-making to deliver on the Objects and target of the Act in an equitable, appropriate and effective manner:

- ♦ Sustainable development and social equity;
- ♦ Transparency and reporting;
- ♦ Science-based approach;
- ♦ Integrated decision making;
- ♦ Risk management;
- ♦ Community engagement; and
- ♦ Complementarity with national and international climate change developments.

Review recommendation #4

Relevant policies and strategies guided by climate change

The formation of government and agency policies, strategies and plans that have implications for the State's emissions profile, influence exposure to climate risk, and affect its adaptive capacity to climate change should incorporate appropriate consideration of climate change. This should be through consideration of policies and planning that are closely linked to the objectives and targets of Decarbonisation & Resilience Plans.

Review recommendation #5

Climate Action Plan

Development of a Climate Action Plan as a statutory requirement by the Act, will set a consolidated State Government approach to climate action, providing visibility and confidence to Tasmanian communities, businesses, and industries.

Review recommendation #6

State-wide climate change risk assessment

Assess and identify significant and critical risks to Tasmanian communities, economy, natural environment and ecosystems as a result of the projected impacts of climate change.

Review recommendation #7

Decarbonisation & Resilience Plans

Ensure climate change mitigation and adaptation is addressed and acted upon in a manner that is consistent with the opportunities and challenges climate change presents to any specific system, sector, or community in Tasmania. Drives informed action on emissions abatement that is consistent with a sector's capacity to transition. Builds resilience into economic sectors and communities to develop a climate-ready and low carbon economy and society.



Introduction to the independent review

1. INTRODUCTION TO THE INDEPENDENT REVIEW

In December 2020, Jacobs was commissioned by the Department of Premier and Cabinet to conduct this third review of the *Climate Change (State Action) Act 2008 (the Act)*. The Act provides Tasmania's legislative framework for action on climate change and includes a requirement for an independent review of the Act to be carried out every four years. The first review of the Act was carried out in 2012 and the second review was carried out in 2016. The terms of reference for this independent review (Appendix B) are based on the legislative requirements and additional matters of interest to the Minister for Climate Change.

The review addressed its terms of reference in the context of international, national and State developments in climate change legislation and policy. Consistent with the Terms of Reference, the review was undertaken in consultation with relevant business, scientific and environmental organisation representatives, as well as members of the broader Tasmanian community.

Two phases of consultation were undertaken. Phase one of focused on the role of the Act, emissions targets, transition to and opportunities in a low carbon economy, and impacts as a consequence of climate change. Engagement was undertaken through a survey, targeted discussions with key business, industry or community

groups and on-line community workshops. The second phase included the release for public consultation of a Discussion Paper (in March 2021) that canvassed issues pertinent to the review. The Discussion Paper addressed the review's terms of reference, posed a set of questions (Appendix C) and invited submissions from interested organisations and members of the public. Stakeholder submissions to the Discussion Paper are listed in Appendix D.

The review followed two main workstreams, based on the Terms of Reference, as illustrated in Figure 1.

The review team consulted directly with over 200 individuals through phase one of the consultation process and in addition to receiving 54 submissions in response to the Discussion Paper. Stakeholder feedback was considered and, as appropriate, incorporated into this Final Report.

This Final Report, comprising findings from consultation and the review team's own research and analysis, together with recommended actions for consideration by the Tasmanian Government, will be tabled in both Houses of Parliament in 2021.

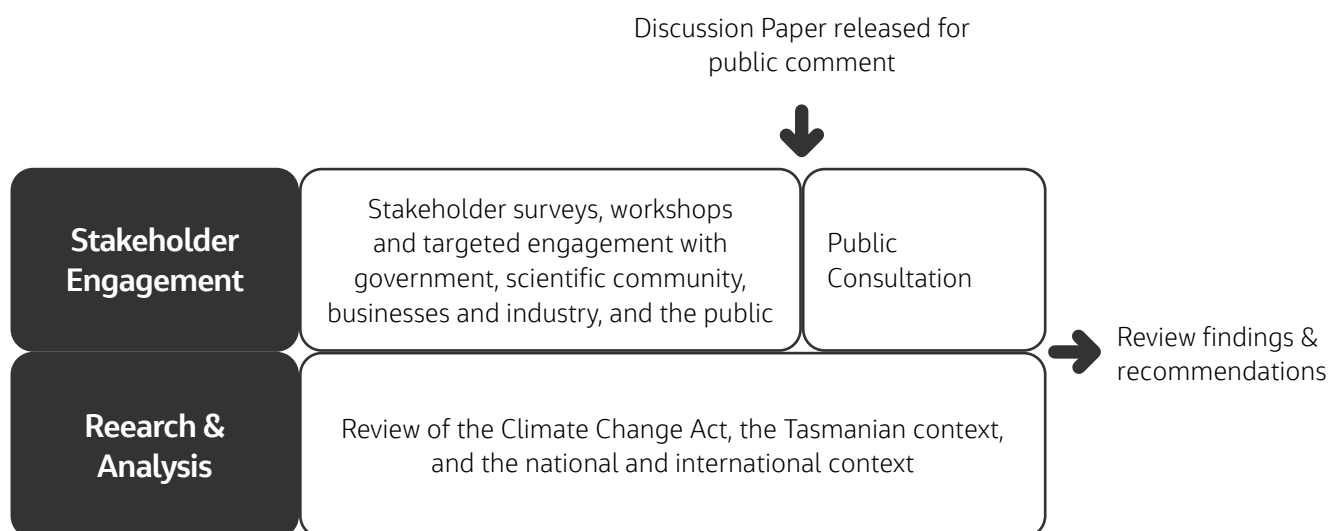
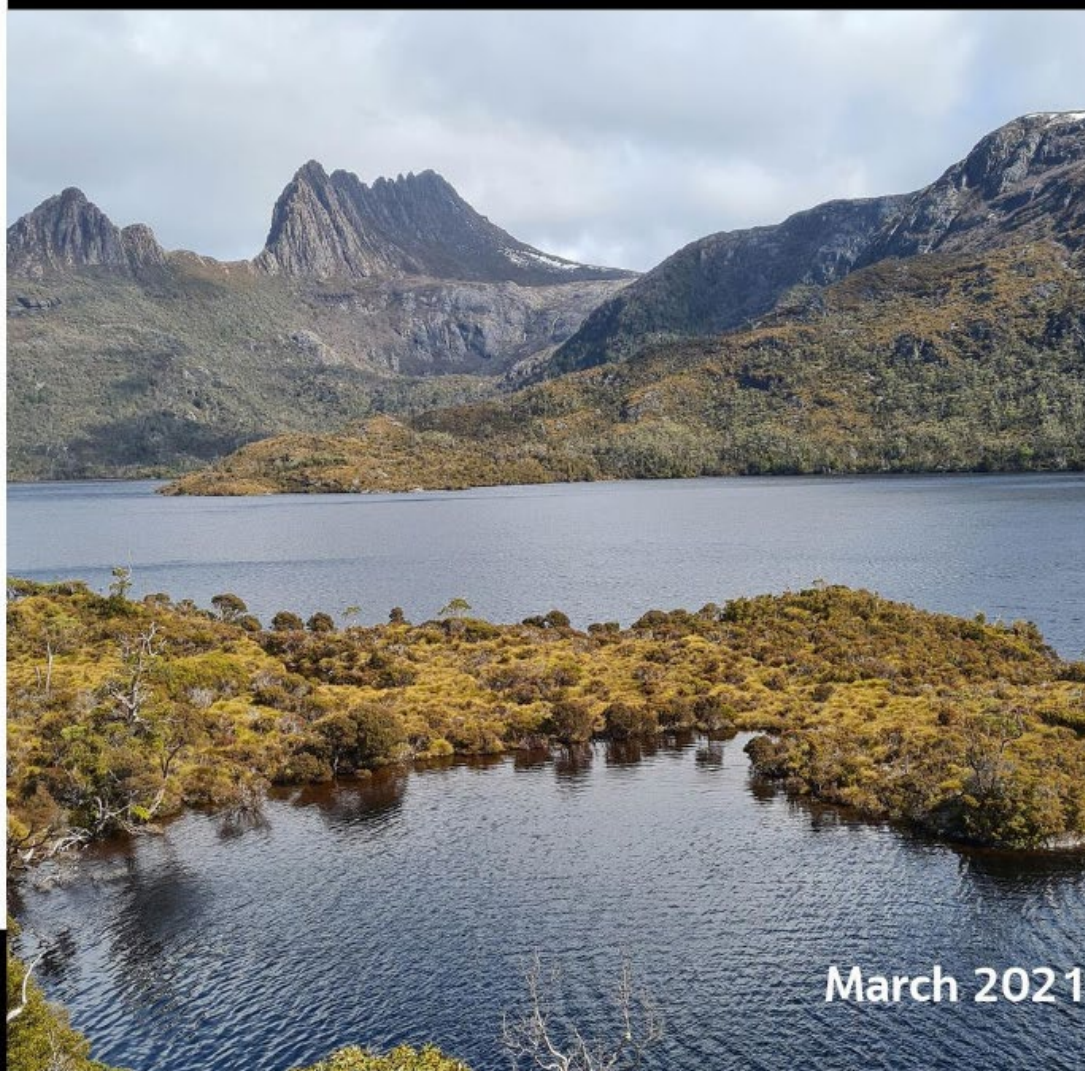


Figure 1. Process undertaken for the independent review

Jacobs

Discussion Paper on Tasmania's Climate Change Act

*Independent Review of the
Climate Change (State Action) Act 2008*



March 2021

Figure 2. Discussion Paper released for public comment on the review



About the *Climate Change (State Action) Act 2008*

2. ABOUT THE *CLIMATE CHANGE (STATE ACTION) ACT 2008*

The Act provides the legislative framework in Tasmania for action on climate change. Its primary objectives are to set and support action to achieve a target for greenhouse gas emissions reduction, as part of the national and international response to climate change. The Act includes provisions for regulation, measurement and reporting of emissions.

The Act has three main components: a set of 10 objects (Appendix A); a State-wide 2050 greenhouse gas emissions reduction target; and regulation-making powers.

The Act is intended to help Tasmania respond to the challenges of climate change by providing for the setting of a target for the reduction of greenhouse gas emissions in the State, and providing for the setting of regulations for the purpose of climate action. The Act addresses climate change adaptation through its objects, although there are no specific targets, regulations or reporting requirements for this theme.

The themes of mitigation and adaptation have been carried through the review and have been used to frame some of the discussion questions for the review's public consultation processes.

2.1 Tasmania's emissions reduction target

The Act includes an emissions reduction target to reduce, by 31 December 2050, Tasmania's greenhouse gas emissions to at least 60% below 1990 levels. Tasmania has exceeded this target for several years, achieving net zero emissions status in all but one year since 2013. The State Government in 2017 committed to net zero emissions by 2050.

2.2 Regulations

The Act provides for the making of regulations. To date, only one set of regulations has been made under the Act, *the Climate Change (Greenhouse Gas Emissions) Regulations 2012*. These establish Tasmania's emissions baseline and provide a method for measuring changes in the State's emissions, based on data from the Australian National Greenhouse Gas Inventory (NGGI). They require the relevant Minister to publish greenhouse gas figures each year, providing a mechanism to track the State's progress on achieving the legislated emissions reduction target.

The Act also allows for regulations to be made to facilitate or promote emissions offset programs, and for general activities, including: the collection, provision and release of information, establishing notifying activities, setting of emission reduction targets for government agencies and the power to set penalties for failure to comply with the regulations.

2.3 Objects of the Act

The objects of the Act provide a narrative for how the State addresses climate change. The existing 10 objects are:

- a. *to help Tasmania respond to the challenges of climate change by addressing issues associated with that phenomenon and, in particular, by providing for the setting of a target for the reduction of greenhouse gas emissions in the State as part of the national and international response to climate change; and*
- b. *to promote a commitment to action on climate change issues in Tasmania by providing for the development of –*
 - *interim State targets for the reduction of greenhouse gas emissions in the State; and*
 - *suitable targets and interim targets, having the same aim, for specific sectors of the State's economy; and*
- c. *to help Tasmania take advantage of the new social, economic and environmental opportunities that climate change will present; and*
- d. *to provide for reporting and Parliamentary oversight of progress being made towards achieving the State's 2050 target and other targets; and*
- e. *to promote energy efficiency and conservation; and*
- f. *to promote research and development in the development and use of technology for reducing or limiting greenhouse gas emissions or for dealing with and adapting to the expected consequences of climate change, including technology for removing greenhouse gases from the atmosphere; and*
- g. *to promote and facilitate business and community consultation and early action on climate change issues; and*

- h. to identify, promote and support measures to help Tasmania deal with and adapt to the expected consequences of climate change; and*
- i. to promote a Tasmanian response to climate change issues that is as far as practicable consistent with national and international schemes addressing those issues, including any schemes for emissions trading and emissions reporting; and*
- j. to enhance Tasmania's willingness and capacity to contribute and respond, constructively and expeditiously, to national and international developments in climate change issues.*

2.4 The role of sub-national climate change legislation

The Paris Agreement recognises the important role of sub-national governments in responding to climate change. State and Territory governments in Australia have some control or influence over many of the areas where mitigation action is possible, such as the use of energy by government agencies and statutory authorities, energy generation, rail and road transport, energy efficiency in the built environment, vegetation based carbon sequestration, water and wastewater treatment and waste management. Collectively, State and local governments are responsible for: land use, infrastructure and environmental planning; water and natural resource management; and the provision of health and emergency management services. They also manage a number of assets, including critical infrastructure that can have

exposure to the impacts of a changing climate. As a result, they play an essential role in building the resilience of communities, the economy and natural environments to climate change.

Sub-national jurisdictions in Australia are responsible for many areas where action on climate change mitigation and adaptation can occur. Climate change legislation is one mechanism available to them to support such actions. It is also a means by which they can frame a narrative for action on abatement, climate resilience and transitioning to low carbon economies. That narrative may be for both internal and external audiences: in Tasmania's case it has the potential for climate change leadership, driving innovation, and preserving the clean and green brand the State holds.

2.5 The role of Tasmanian businesses and communities

While the public sector holds significant influence on efforts directed towards climate change mitigation and adaptation, bottom-up action from the private sector and communities can deliver significant progress and provide meaningful and lasting change that can lead to positive social, economic, and environmental outcomes.

Successful mitigation of, and adaptation to, climate change will require businesses and communities to adjust to changes brought about by the low carbon transition and the expected impacts from a changing climate.

Local government is the second domain of sub-national governance in Australia and is the level of government which is most closely connected with the community. The important opportunities local government has to influence emissions abatement and build climate resilience within local communities were emphasised in submissions by the sector to this review and the development of Tasmania's next Climate Change Action Plan. The sector also advocated for their role in climate change responses to be clarified and more explicitly supported.

The Act does not explicitly recognise local government or refer to its role in addressing the challenges Tasmania faces from climate change. However, several of the Act's objects potentially lead the State Government to engage with local government and other sectors of the community in action on emissions reduction and climate adaptation.



Responses to climate change

3. RESPONSES TO CLIMATE CHANGE

3.1 Key developments from climate change science

Scientific evidence of the need to act on climate change and reduce greenhouse gas emissions associated with human activities has been building for decades. In their *Fifth Assessment Report (AR5)*, the Intergovernmental Panel on Climate Change (IPCC) asserted that there is “unequivocal” evidence of increased concentrations of greenhouse gases in the atmosphere and consequent warming of the climate system. Most observed changes in the global climate system since the mid-20th century are attributable to human influences. The IPCC found that continued emissions of greenhouse gases will cause further warming and changes in all components of the climate system. Global warming of more than 2°C above 1850–1900 levels is considered to constitute “dangerous climate change”.

The IPCC released its *Special Report: Global Warming of 1.5°C* in 2018 on the level of warming which is likely to be reached, on current trends, between 2030 and 2052. It is also the “stretch” target for the 2100 limit on warming for the Paris Agreement. The report highlights the differences in climate characteristics and impacts, even between 1.5°C and 2°C of warming. These include:

- ♦ Robust differences in climate characteristics (increased mean temperatures, hot extremes in most inhabited regions, increased rainfall intensity, increased drought conditions).
- ♦ Greater impacts to marine and terrestrial biodiversity and ecosystems, including species loss.
- ♦ Increased climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth.
- ♦ Heightened adaptation needs that may be countered by limits to adaptation and adaptive capacity for some human and natural systems.

The modelled emissions pathways that would limit warming to 1.5°C have net emissions declining by about 45% from 2010 levels by 2030 and reaching net zero by about 2050. These pathways require rapid and far reaching transitions in energy, land, urban, infrastructure, and industrial systems and imply deep emissions reductions in all sectors. They all include varying degrees of removal of carbon dioxide from the atmosphere.

The IPCC is set to release the Synthesis Report for its *Sixth Assessment Report (AR6)* in May 2022. Reporting will update science on the physical basis of climate change, climate change impacts and adaptation and climate change mitigation.

3.1.1 Australia's climate science

The biennial *State of the Climate Report* authored by CSIRO and Bureau of Meteorology synthesises the latest climate science to describe Australia's climate data on a year-to-year basis. It offers a detailed analysis across a range of climate indicators and provides future climate projections to a 20-year time horizon.

The report found the following key points:

- ♦ Australia's climate has warmed on average by 1.44 ± 0.24 °C since national records began in 1910, leading to an increase in the frequency of extreme heat events.
- ♦ There has been a decline of around 16% in April to October rainfall in the southwest of Australia since 1970. Across the same region May to July rainfall has seen the largest decrease, by around 20% since 1970.
- ♦ In the southeast of Australia there has been a decline of around 12% in April to October rainfall since the late 1990s.
- ♦ There has been a decrease in streamflow at the majority of streamflow gauges across southern Australia since 1975.
- ♦ Rainfall and streamflow have increased across parts of northern Australia since the 1970s.
- ♦ There has been an increase in extreme fire weather, and in the length of the fire season, across large parts of the country since the 1950s, especially in southern Australia. There has been a decrease in the number of tropical cyclones observed in the Australian region since 1982.
- ♦ Oceans around Australia are acidifying and have warmed by around 1°C since 1910, contributing to longer and more frequent marine heatwaves.
- ♦ Sea levels are rising around Australia, including more frequent extremes, that are increasing the risk of inundation and damage to coastal infrastructure and communities⁴.

Figure 3 illustrates what Australia's projected climate is expected to resemble.

⁴ *State of the Climate (2020)*, Commonwealth Scientific and Industrial Research Organisation, Australia



Figure 3. Projections of Australia's future climate for the next 20 years, based on climate data. (State of the Climate 2020)

3.1.2 Tasmania's climate science

There are three main sources of scientific information used by the Tasmanian Government to understand climate change impacts and risks. One of these sources, *Climate Futures for Tasmania*, provides modelling and projections as described in the text box below. *LISTmap* (Land Information System Tasmania) provides map overlays of climate change projections, natural hazards, biodiversity, primary industries and geology in an interactive map, for three time periods and for differing carbon emission scenarios. The *RiskReady* platform utilises LISTmap data to communicate up-to-date climate hazard information in an accessible and understandable format, while providing advice to users on how to mitigate impending risks.

The University of Tasmania (UTAS) conducts research into the future climate of Tasmania through its Climate Futures Research Group. The Tasmanian Policy Exchange at UTAS have explored climate policy within the Tasmanian context. The Institute for Marine and Antarctic Studies (IMAS) is an internationally recognised centre of excellence at the University of Tasmania specialising in research of:

- ♦ fisheries and aquaculture;
- ♦ ecology and biodiversity;
- ♦ oceans and cryosphere

UTAS offers strong research expertise within Tasmania and provides up-to-date, localised climate science for Tasmania through working with government agencies and industry across Australia. This science is used to support decision-making and climate change adaptation by governments and other organisations.

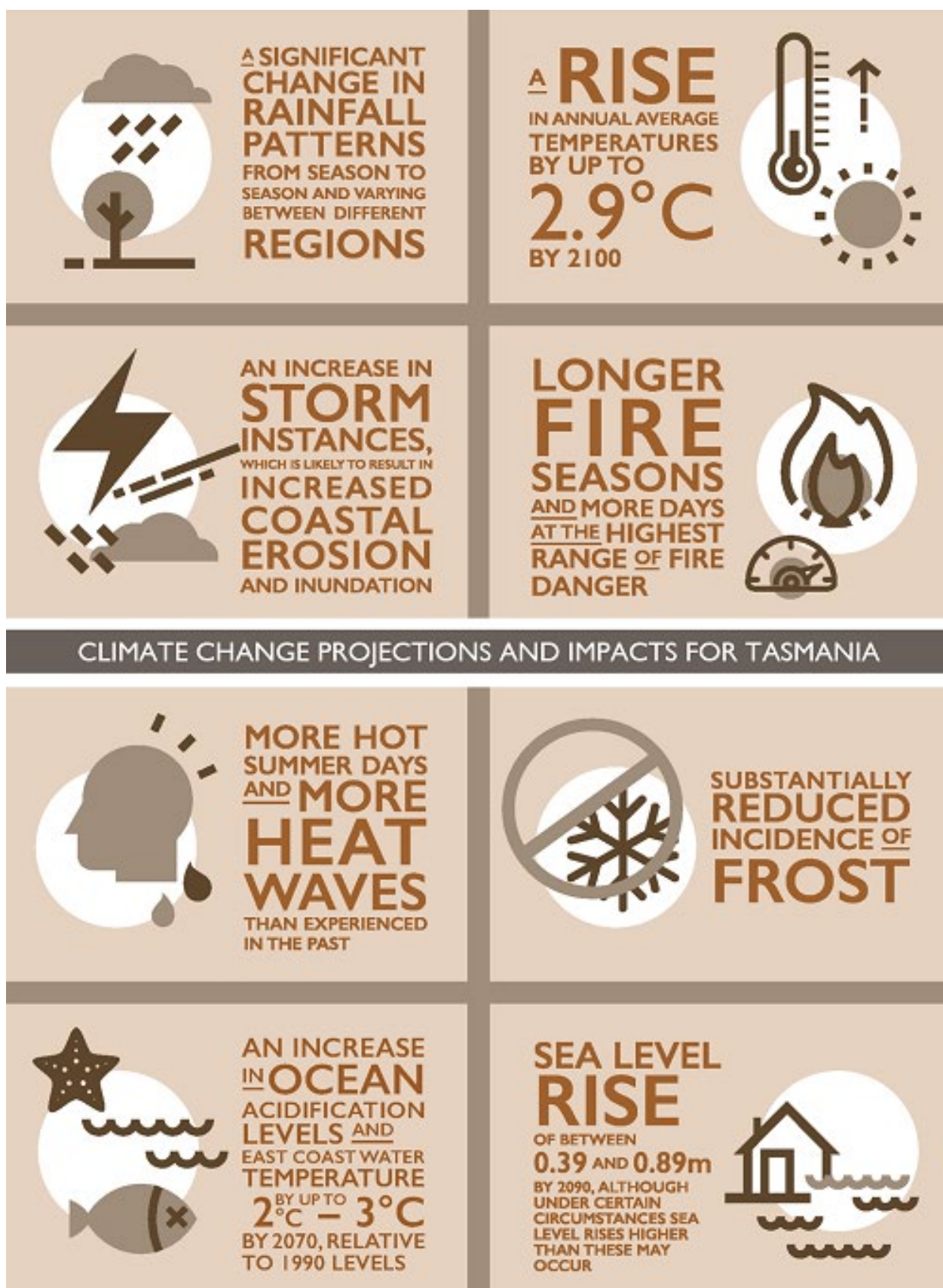


Figure 4. Tasmania's climate projections under a high emissions scenario (Department of Premier and Cabinet, 2017)

In addition to the impacts shown in Figure 4, UTAS and its research partners recognise more specific impacts Tasmania may face as a result of the potential consequences of climate change:

- ◆ Increase of 1.5 °C to 3°C temperature rise across all locations with more than 4°C in alpine regions by 2100.
- ◆ Gradual decrease in rainfall, with changed seasonality of rainfall and areas of rainfall.
- ◆ Increasing episodic droughts, especially on the east coast.
- ◆ Gradual decrease in soil moisture.
- ◆ Steady increase in fire danger, with increased acceleration in the latter half of the century – an 8-fold increase in fire risk.
- ◆ Continued threats and some irreversible impacts to animal and plant species and their ecosystems.
- ◆ Continuing warming of waters and heatwaves around Tasmania with effects including incursion of northerly species, destruction of giant kelp forests and reefs, decrease in size and production of abalone, salmon and lobster.
- ◆ Impacts on health and wellbeing, including injury and death from direct effects, and illness and death from exacerbations of common chronic conditions, such as heart and lung disease.

Climate Futures for Tasmania: Climate change projections for Tasmania

Projected climate change to 2030 is effectively locked in by greenhouse gases already in the atmosphere and the carbon intensity of existing industrial and transportation systems. The opportunity exists to contain the change in global mean temperature to less than 2°C, but only through quite stringent global reductions in greenhouse gas emissions, in line with the Paris Agreement. However, even if the drive to abate the growth in greenhouse gas emissions is successful, significant action will still be required to adapt to the direct and indirect impacts of even a 2°C increase in temperature.



3.2 Responses by governments

3.2.1 Climate change legislation

National and sub-national governments globally have enacted various kinds of legislation in response to climate change. Leading examples of climate change legislation commonly include:

- ◆ Overarching objectives, such as to contribute to limiting global warming to 1.5°C and/or to adapt to the expected effects of climate change.
- ◆ Requirements to periodically develop economy wide or sectoral climate change mitigation and adaptation plans or strategies.
- ◆ An economy-wide net zero emissions target to be achieved by a specified date and interim targets that demonstrate progress towards this target. Carbon budgets may also be set over specified periods as a means of measuring and maintaining progress.
- ◆ Guiding principles to be used in government decision-making and policy formation.
- ◆ An advisory committee on climate change, typically composed of independent experts.

Characteristics of examples of leading national climate change legislation are summarised in Table 1.

Table 1. Examples of international climate change legislation

Legislation	Key legislative features or mechanisms
Climate Action & Low Carbon Development Act 2015 (Ireland)	Development of a National low carbon transition and mitigation plan, including sector-specific planning, every 5 years Development of a climate change adaptation framework to inform the development of sectoral adaptation plans
The Climate Act 2019 (Denmark)	A comprehensive Climate Programme that must pass through Parliament annually. Considers both climate change mitigation and adaptation, research and development, and the latest climate science

Legislation

Key legislative features or mechanisms

Climate Change Response (Zero Carbon) Amendment Act 2019 (New Zealand)	Explicitly considers impacts to First Nations and incorporates First Nations representatives into the development of national emissions reduction plan and national adaptation plan
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Tasmania is one of four Australian jurisdictions (with South Australia, Victoria and ACT) with specific legislation to promote action on climate change. While there are differences in the scope and emphasis of legislation in each jurisdiction, they share at least some of these features:

- ◆ *Economy-wide greenhouse gas emissions reduction targets:* several jurisdictions set additional targets, with South Australian legislation specifying a renewable energy generation target and ACT legislation setting interim and per person targets. Victoria makes use of a carbon budgeting process to set interim emissions reductions.
- ◆ *Common objectives:* legislative or policy objectives have consistent themes of target-setting, assisting communities and business to take action and capture opportunities, reporting on progress, and alignment with national and international developments. The objects of South Australian climate change legislation are similar to Tasmania's in respect of energy conservation, R&D and consultation with community and business to facilitate action. Victorian climate change legislation places particular emphasis on managing risk, building resilience and adaptation.
- ◆ *Inter and intra-generational equity:* South Australian and Victorian legislation are underpinned by the concept of equity within and between generations, with decisions to be based on the precautionary principle and best available science.
- ◆ *Governance:* South Australian, Victorian and ACT legislation, to varying extents, specify the functions of the Minister and how they are required to discharge their responsibilities under their Acts. Legislation in South Australia and ACT also establish independent bodies to advise the Minister on climate change issues.
- ◆ *Sector agreements:* for emissions reductions and climate adaptation are provided for under ACT and South Australian climate change legislation. Victorian legislation provides for "pledges" by State government to reduce sectoral emissions and for local government authorities to pledge to reduce their own emissions.

- ♦ *Parliamentary reporting*: legislation in each jurisdiction requires that progress on climate change periodically report to parliament. This reporting includes reports on greenhouse gas emissions and operation of their respective Acts.

A summary of climate change targets and commitments are provided in Table 2. Victoria has recently updated its targets to 28 to 33% by 2025 and 45 to 50% by 2030.

Table 2. State and Territory climate change targets and commitments (UTAS submission to the independent review, 2021)

Jurisdiction	Legislated targets and commitments	Non-legislated policies/ commitments	Sectoral targets	Other
New South Wales	No legislated emissions reduction commitments	Net zero emissions by 2050, with an interim target of 30% reduction by 2030. "Aspirational" target of 10% hydrogen in NSW's gas network by 2030.	No sectoral targets	NSW has a \$450 million fund supporting businesses who adopt low emissions processes or technology
Queensland	No legislated emissions reduction commitments	Net zero by 2050, interim target of 30% reduction by 2030. QLD also set (and met) a target of 3000MW of rooftop solar generation by 2020 (about 1 million rooftop systems).	No sectoral targets	QLD has established a \$15 million hydrogen industry development fund.
Victoria	Net zero by 2050, with five-yearly interim targets	The 2019 Independent Expert Panel report recommended interim targets of 32-39% below 2005 levels by 2025, and 40-50% below 2005 levels by 2030	5-yearly ministerial 'pledges' outline sectoral emissions reduction strategies	Victoria has legislated 'systems-based' adaptation targets alongside mitigation/ abatement targets
South Australia	60% below 1990 emissions by 2050	SA targets include net zero by 2050, and a 50% reduction on 2005 levels by 2030	Voluntary sectoral agreements	Legislated adaptation targets
Western Australia	No legislated emissions reduction commitments	Net zero by 2050, interim target of 50% reduction by 2030	No sectoral targets	Proponents of major projects must outline how proposed developments fit within emissions reduction targets..
Northern Territory	No legislated emissions reduction commitments.	Net zero by 2050, with periodic reviews of progress. Target of 50% renewable energy by 2030.	No sectoral targets	Only 3% of total Australian emissions, but highest gross emissions per capita
Australian Capital Territory	ACT has committed to net zero by 2045, structured according to 5 interim targets	Target of 100% renewable energy by 2020, with 36MW of energy storage by 2020. Both these initial targets have been met. Target of zero emissions bus fleet by 2040	Like SA, the ACT act has voluntary sectoral agreements, though none have yet been made	The ACT Act provides for monitoring and periodic reporting on progress towards targets

3.2.2 National and International climate change policy

The 2015 Paris Agreement aimed to strengthen the global response on climate change. Signatories to the agreement have been developing, or accelerating, policy responses in a bid to meet the objective to limit the rise in global mean temperature to no more than 1.5°C. Emissions targets and pledges and policies on climate change mitigation and adaptation have been introduced, with a notable surge in ambition in recent years. Most recently, the Earth Day Summit in April 2021 called by newly elected US President Joe Biden, saw the US and other major economies express increased ambition to reduce emissions.

The COP26 talks in Glasgow in November 2021 are expected to be the most significant Conference of the Parties since the Paris Agreement in 2015 as nations reflect on what progress has been made and discuss what needs to be achieved, potentially leading to renewed ambition and commitments.

There is currently no national, specific climate change legislation, however climate change related policies and initiatives have been introduced by the Australian Government that seek to reduce emissions and address the impacts of climate change. These include:

- ♦ The Nationally Determined Contribution (NDC) which States Australia's commitment under the Paris Agreement. This includes the setting of the national target of reducing emissions by 26 to 28% below 2005 levels by 2030.
- ♦ The Climate Change Authority, an independent statutory body that provides expert advice to the Australian Government on climate change matters.
- ♦ The Climate Solutions Package which includes the Climate Solutions Fund (formerly the Emissions Reduction Fund) which provides financial incentives for businesses, landholders and communities to reduce emissions, support towards energy efficiency measures across homes, businesses and communities, funding toward a national strategy for electric vehicles, and further support for national scale renewable energy projects such as Marinus Link and the Battery of the Nation.

- ♦ The Technology Investment Roadmap which has seen its first release through the Low Emissions Technology Statement (2020) which outlines low emissions technologies identified to provide cost-effective, emissions reduction outcomes for Australia.
- ♦ The National Climate Resilience and Adaptation Strategy (2015) was developed to articulate how Australia is managing the risks of a variable and changing climate.

The Australian Government has introduced other legislation that contributes to the national response to climate change. This includes legislation to establish the Clean Energy Finance Corporation, the Australian Renewable Energy Agency, and the National Greenhouse and Energy Reporting Scheme.

The Subnational Global Climate Leadership Memorandum of Understanding ("Under 2 MOU") was developed ahead of COP21 in 2015 to build momentum for greater national ambitions on reducing greenhouse gas emissions. This brings together sub-national governments who commit to reducing emissions to 80 to 95% below 1990 levels by 2050 or to achieving per capita emissions of less than two tonnes by 2050. Parties also commit to working collaboratively on a variety of issues applicable to climate change mitigation and adaptation. South Australia, Victoria, Queensland, ACT, and Northern Territory are the Australian signatories to this agreement.

3.2.3 Tasmanian Local Governments

Local government is the second domain of sub-national governance in Australia and is the level of government which is most closely connected with the community. The important opportunities local government has to influence emissions abatement and build climate resilience within local communities were emphasised in submissions by the sector to this review and the development of Tasmania's next climate change action plan. The sector also advocated for their role in climate change responses to be clarified and more explicitly supported.

The Act does not explicitly recognise local government or refer to its role in addressing the challenges Tasmania faces from climate change. However, several of the Act's objects potentially lead the State Government to engage with local government and other sectors of the community in action on emissions and climate adaptation.

Local governments in Tasmania have introduced several climate change initiatives that seek to address climate change and build their capacity to adapt to climate change. An example of efforts to address climate change by council are provided in Table 3 below

Table 3. Local government climate change initiatives in Tasmania

Southern Tasmania Council Authority	Sustainability and climate change strategies
The STCA is a group of regional local councils located in southern Tasmania. They collaborate on collective action to address issues affecting their region. The group intends to progress environmental and social outcomes while advancing their economic output. They also lobby the State and Australian government on issues that promote the collective interests of the members. The STCA have developed several climate change initiatives, including projects and strategies on climate change adaptation, coastal hazards and the collation of local government data on GHG emissions. The Regional Climate Change Initiative (RCCI) was set up by the STCA to help councils address the impacts of climate change. RCCI provides science-based climate change information to member councils. RCCI includes representatives from the Tasmanian Government and the Local Government Association of Tasmania.	Councils throughout Tasmania have developed responses to climate change for their operations and municipality through the development of sustainability and climate change strategies and action plans. Such councils have included but are not limited to; Hobart, Huon Valley, Brighton, Tasman, and Glenorchy. These strategies have featured initiatives or goals that seek to: ♦ Reduce emissions from council operations (building stock and vehicle fleets). ♦ Improve waste management practices. ♦ Mitigate flood impacts and improve stormwater management. ♦ Mitigate bushfire risk. ♦ Engage their communities on the issues of climate change, facilitate community action. ♦ Practice environmental, social, and governance (ESG) based investing.

3.3 Responses from the private sector

3.3.1 International and national developments

Developments in scientific knowledge and global advancements on climate change policy, such as the Paris Agreement, have led to increased private sector focus on climate change. Recognising this, the international body responsible for the health of the global financial system, the G20's Financial Stability Board, established the Task Force on Climate-related Financial Disclosures (TCFD) in 2015. Their role was to identify the information necessary for appropriately assessing and pricing climate-related risks and to develop voluntary climate-related disclosures that would be useful for investors and others in understanding material risks and promote more informed financial decision making.

In 2017, the TCFD released its final recommendations⁵ (refer Figure 5) which provide a framework for companies and other organisations to develop more effective climate-related financial disclosures through existing reporting processes. The TCFD recommend organisations appropriately account for climate-related risks, highlighting the potential financial implications of climate change resulting from potential physical impacts of amplified natural hazards and the widespread transition to a low carbon economy (e.g. stranded assets).

To address climate risk and reduce emissions across their business and along their supply chains, notable companies based in Australia have adopted the TCFD recommendations. These include the big four banks, Lendlease, Stockland, AGL Energy, Aurizon, BHP Billiton, and numerous superannuation funds. National governments who have also adopted the framework include New Zealand, the United Kingdom, Canada, and France.

Recommendations and Supporting Recommended Disclosures

Governance	Strategy	Risk Management	Metrics and Targets
Disclose the organization's governance around climate-related risks and opportunities.	Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.	Disclose how the organization 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 organization has identified over the short, medium, and long term.	a) Describe the organization's processes for identifying and assessing climate-related risks.	a) Disclose the metrics used by the organization 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 organization's businesses, strategy, and financial planning.	b) Describe the organization'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 organization'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 organization's overall risk management.	c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

Figure 5. Recommendations and Supporting Recommended Disclosures. (Task Force on Climate-related Financial Disclosures, 2018)

⁵ Task Force on Climate-related Financial Disclosures. (2018). Recommendations of the Task Force on Climate-related Financial Disclosures. Retrieved from fsb-tcfd.org: <https://www.fsb-tcfd.org/recommendations/>

The Australian Prudential Regulation Authority (APRA) in early 2020 released a letter to all APRA-regulated entities⁶, encouraging the adoption of the TCFD and other voluntary frameworks to better assist entities with assessing, managing and disclosing their financial risks associated with climate change.

APRA highlighted that there is a need to address the climate data deficit, to quantify the likely impact of the physical, transitional and liability risks of climate change and accurately assess and appropriately price these risks. APRA noted that business entities should be proactive in taking steps to assess and mitigate climate change financial risks now, and not delay action until further guidance from APRA is released. In 2021, APRA released a prudential practice guide: *Draft CPG 229 Climate Change Financial Risks* to outline prudent practises in relation to climate change financial risk management.

The Centre of Policy Development also discuss the necessity of response to climate change from the private sector, noting the obligations on company directors to recognise and manage impacts of physical, transition and litigation risks resulting from climate change. In its Supplementary Memorandum of Opinion (2019)⁷ it is noted that there is a profound and accelerating shift in the way that Australian regulators, firms and the public perceive climate risk and that there is acute interest in climate change issues from investor groups. As time passes, the benchmark for consideration to climate change risks by firms and their directors is rising.

This Memorandum of Opinion concludes that it is increasingly obvious that climate change will inevitably affect the economy and, as such, the exposure of individual directors to “climate change litigation” is increasing, probably exponentially, with time. Australia has had over 100 climate change cases heard, primarily focused around human rights violations and being part of strategies against fossil fuel companies and large emitters. Organisations such as larger corporate entities, utility providers, and government business enterprises can be exposed, without undertaking an appropriate level of climate action, to shareholders, individuals and regulatory bodies who view their failure to act on climate change negatively. International ratings agencies are now assessing how jurisdictions are considering climate change impacts as part of its process to determine credit ratings.

The Science Based Targets initiative (SBTi) was established in 2015 with the aim of driving climate action in the private sector through the setting of climate science-aligned emissions targets for, and in partnership with, companies. The SBTi support companies in the process of setting appropriate targets aligned to 1.5°C, well below 2°C, or 2°C warming scenarios and promote the use of best-practice low carbon technologies and practices.

⁶ Summerhayes, G. (2020, February 24). *Understanding and managing the financial risks of climate change*. Retrieved from [apra.gov.au: https://www.apra.gov.au/understanding-and-managing-financial-risks-of-climate-change](https://www.apra.gov.au/understanding-and-managing-financial-risks-of-climate-change)

⁷ The Centre for Policy Development. (2019, March 26). *Supplementary Memorandum of Opinion*. Retrieved from [cpd.org.au: https://cpd.org.au/wp-content/uploads/2019/03/Noel-Hutley-SC-and-Sebastian-Hartford-Davis-Opinion-2019-and-2016_pdf.pdf](https://cpd.org.au/wp-content/uploads/2019/03/Noel-Hutley-SC-and-Sebastian-Hartford-Davis-Opinion-2019-and-2016_pdf.pdf)

3.3.2 Tasmanian business response

Innovations are occurring in the private sector in the decarbonisation and adaptation of Tasmania's industries. Some businesses and industry organisations recognise the challenges Tasmanian industries and businesses may face in the transition to a low carbon future.

The Good Car Co is a social enterprise created to decarbonise transport through creating an affordable electric vehicle procurement service to Tasmanians. This organisation recognises that inequity within Tasmania may impact people's ability to participate in the transition of the electrification of the transport system. High upfront costs are prohibitive to some members of the community and the Good Car Co strives to actively reduce upfront costs of electric vehicles through its collective procurement method. This contributes to a just and equitable transition of the transport sector through enabling greater accessibility of private vehicle ownership.

Within the agricultural sector, there are some practices that produce unavoidable emissions such as dairy and cattle farming. However, there are other ways farmers themselves can offset a portion of their own emissions through regenerative practices as taught in the Climate-Smart Grazing Fellowship, and these work to shift existing paradigms in the agriculture sector around the financial cost and feasibility of emissions abatement.

Tasmanian Climate-Smart Grazing Fellowship

Farmers for Climate Action is a farmer-led organisation that specialises in climate action, education and advocacy. They have developed the Climate-Smart Grazing Fellowship where they are adapting their work in Queensland and Victoria to a Tasmanian context. The fellowship is in its first year and is supported by the Tasmanian Government's Pastures Pathway Small Project Fund. It is a free, year-long program that trains farmers, graziers and mixed farmers about the impacts climate change has on the agriculture industry from a local to global level.

Topics Tasmanian fellows will learn more about include:

- ♦ Future region-specific climate modelling;
- ♦ Complexities of the carbon cycle at both a farm and a global scale;
- ♦ Introducing or increasing the productivity of perennial pastures and on-farm emissions abatement; and
- ♦ The potential for participation in carbon farming (soil-focused).

3.4 Responses from the community

Global community climate change action has been growing over recent years, often utilising social media to spread awareness and information.

There are a number of community action groups in Tasmania that engage a variety of community members. Whether groups are organised based on council regions or sector interests, each group commits to sharing accessible sustainability-related information and mainstreaming sustainable practices that can help reduce community emissions. Figure 6 below displays some of these groups however there are many more active throughout the State (e.g. Climate Action North West and Climate Action Launceston). Building community awareness and knowledge on climate change mitigation is crucial to gaining public support on political and industry transitions to a low carbon future and ensuring the continuity of the clean-green Tasmanian Brand.

Clarence Climate Action advises their audience on a range of actions they can take to reduce their individual footprint while contributing to a more sustainable Tasmanian community. The actions are all locally based in Tasmania and include: regenerative agricultural practices; climate change awareness; community resilience; and climate justice for First Nations. This grassroots movement utilises an online platform which is accessible and dynamic with up to date information, events and groups that are constantly posted on the website. There are links to various external groups creating a network of organisations on one webpage.

Sustainable Living Tasmania (SLT) has been operating for over 40 years and are a non-political, not-for-profit community group committed to “helping people in our community live in a way that costs less, is healthier, more enjoyable and ensures future generations can enjoy a great quality of life too.”

Climate Action Hobart is a volunteer community group focused on climate action. They promote community involvement across a range of areas, particularly climate policy and climate action and host monthly meetings to encourage community engagement.



Figure 6. A sample of Tasmanian community-led climate action groups



Independent review

4. INDEPENDENT REVIEW

4.1 Findings of the 2016 independent review

The second independent review, conducted in 2016, was undertaken at a time when Tasmania had recently achieved net zero emissions for the first time (based on the most up to date information at that time) and had not yet made its current net zero by 2050 government commitment.

Findings from the 2016 review included:

- ♦ The legislated target of 60% below 1990 emissions levels did not provide a continuing driver for action on emissions abatement, inconsistent with 'clean and green' branding, and not aligned to leading practice by international jurisdictions.
- ♦ The objects of the Act are overlapping and individually worded such that they cover multiple themes.
- ♦ Highlighted potential conflict between State Government policies and the target and objects of the Act.
- ♦ The Act does not provide meaningful guidance for decision-makers on what to consider when making decisions allocating scarce resources.

Both the first and second independent reviews did not favour the setting of either sectoral or interim targets, but rather, favoured an adaptive management process for emissions abatement. This was considered to be appropriate within the Tasmanian context at the time, however, many changes since have led to the revaluation of such targets.

The 2016 review made five recommendations to the Tasmanian State Government as provided in Table 4.

Table 4. Recommendations from the 2016 Independent Review.

1	Set a target of net zero emissions (NZE) by 2050.
2	Consolidate the objects of the Act around four themes, namely; targets and reporting, actions to reduce greenhouse gas emissions, adaptation to projected climate change, and complementarity with national and international climate change initiatives.
3	Require State government agencies to consider the contents of the Act in relevant decision making.
4	Include a set of principles to give greater effect to intent of the Act and provide a set of expectations for government decision making.
5	Make a climate change action plan a statutory requirement.

These recommendations were accepted by the Tasmanian Government, with recommendations #3 and #5 being accepted in principle only.

This review's discussion paper also proposed to replace the Act's 10 objects with the following:

- ♦ Set a target to reduce greenhouse gas emissions;
- ♦ Monitor, evaluate and report on progress made in relation to the target;
- ♦ Respond and adapt to the impacts and projected impacts of climate change;
- ♦ Complement national and international climate change initiatives.

Recommendation #3 was proposed to be addressed by inserting a new section into the Act stating that State Government agencies should consider the target, objects and principles of the Act in relation to relevant decisions. A similar clause exists in the *Victorian Climate Change Act 2017*, however it imposes a requirement to consider climate change, but restricts this to specific aspects of a limited number of legislative instruments.

The discussion paper described a set of principles that were proposed to be included in the Act. These follow the proposed revisions to the objects of the Act and mainly related to decision-making needing to account for the target, science-based considerations of the effects of climate change and associated climate change risks.

The proposal to make a climate change actions plan a statutory requirement under the Act was not supported, however, the recommendation was given effect by the government's release of Climate Action 21, the State's climate action agenda.

In response to the second independent review Jacobs conducted in 2016, TCCO released a Discussion Paper

in October 2018 titled "*Amending the Climate Change (State Action) Act 2008*" to provide information on the Tasmanian Government's proposed amendments and to seek input from the community. The Tasmanian Government proposed four amendments to the Act in response to the five recommendations set out in the review as follows:

Table 5. The Tasmanian Government's proposed amendments to the Act in response to the independent review and the 2016 STGGI. (Discussion Paper: Amending the Climate Change (State Action) Act 2008(2018))

Independent review recommendation	Proposed amendments to the Act	Rationale
1. Set a target of net zero emissions (NZE) by 2050	Amend Section 5 – The State's 2050 target.	A new target consistent with the Paris Agreement for more ambitious emissions reductions efforts. Other State governments are also committing to more contemporary targets.
2. Consolidate the objects of the Act around four themes, namely; targets and reporting, actions to reduce greenhouse gas emissions, adaptation to projected climate change, and complementarity with national and international climate change initiatives.	Amend Section 4 – Objects of Act – by replacing the existing 10 objects with four new objects, namely: ♦ to set a target to reduce greenhouse gas emissions in the State; ♦ to monitor, evaluate and report on progress made in relation to the target; ♦ to respond and adapt to the impacts and projected impacts of climate change; and ♦ to complement national and international climate change initiatives.	To clarify the purpose and intent of the Act.
3. Require State government agencies to consider the contents of the Act in relevant decision making.	Amend the Act to insert a new section stating that State agencies should consider the target, objects and proposed principles of the Act in relation to relevant decisions.	To ensure government decision making supports the 2050 emissions reduction target and manages climate change risks.
4. Include a set of principles to give greater effect to intent of the Act and provide a set of expectations for government decision making.	Amend the Act to include a set of principles that provide a clear set of standards for decision making on climate change.	To provide guidance for decision makers and promote consistent decision making across government.
5. Make a climate change action plan a statutory requirement	No amendment to be made to the Act in response to this recommendation, recognising the Tasmanian Government's policy commitment to a climate change action plan through the release of Climate Action 21.	Maintaining a policy commitment reflects the flexible and long-term approach required to take action on climate change.



Although the Tasmanian Government proposed four amendments to the Act in response to the 2016 Independent Review, no legislative changes to the Act have been made. There has also been no new regulation made under the Act since the *Climate Change (Greenhouse Gas Emissions) Regulations 2012*, as described in section 2.2.

Tasmania's emissions are reported in accordance with the Intergovernmental Panel on Climate Change (IPCC) reporting framework for national greenhouse gas inventories. The IPCC methodology was updated in May 2019 to improve transparency of the reporting process and to develop GHG inventories based on the latest science available to each jurisdiction.

The Tasmanian Government has released a "Tasmanian Greenhouse Gas Emissions Report" annually since 2013. The *Climate Change (Greenhouse Gas Emissions) Regulations 2012* requires the Minister to publish the reduction in emissions compared with the 1990 baseline level as described in the National Inventory Report. The data used in this report is obtained from the National Inventory Report, STGGI and NGGI. These reports are in accordance with the Intergovernmental Panel on Climate Change (IPCC) reporting framework for national greenhouse gas inventories.

The Tasmanian Greenhouse Gas Emissions Reports document net emissions from the following sectors:

- ◆ Energy
 - Electricity generation
 - Transport
 - Direct combustion
- ◆ Industrial processes and product use (IPPU)
- ◆ Agriculture
- ◆ Land use, land use change and forestry (LULUCF)
- ◆ Waste

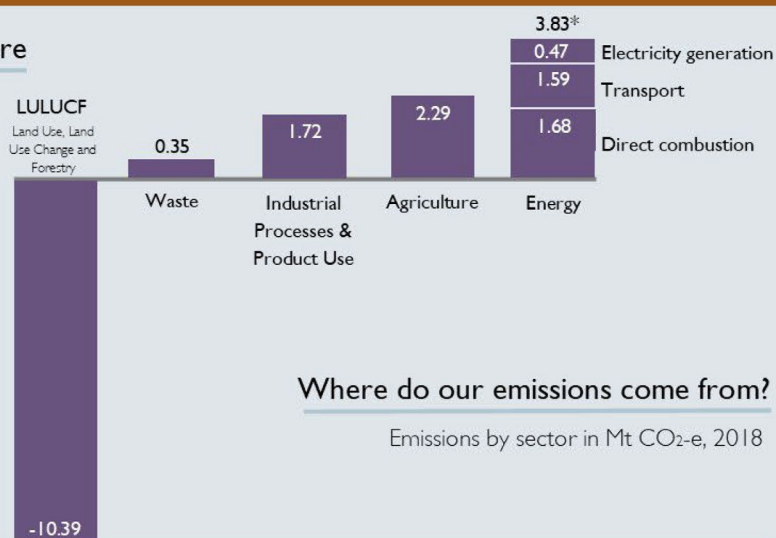
Tasmania's greenhouse gas emissions - 1990 to 2018

In 2018, Tasmania's emissions were

minus 2.19

megatonnes (Mt)
of carbon dioxide
equivalent (CO₂-e).

A **110.9%** decrease
from 1990.

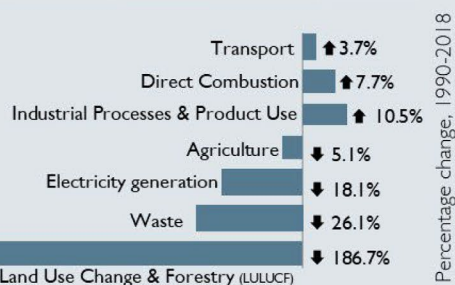


Where do our emissions come from?

Emissions by sector in Mt CO₂-e, 2018

How have our emissions changed since 1990?

Tasmania's forests
absorb carbon dioxide
from the atmosphere.
They offset all our
emissions.



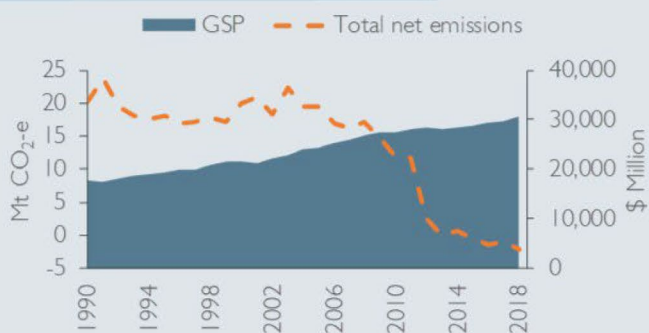
In 2018, Tasmania had
the lowest
emissions per person in
Australia, at
minus 4.15 tonnes
of CO₂-e.

The national average is
21.51 tonnes CO₂-e.

Tasmania continues to successfully transition to a lower carbon economy

Our Gross State Product (GSP)
is increasing.

Our emissions are decreasing.



* Data in this graph are sourced directly from the Australian Government. The discrepancy between the sector total and the sum of sub-sectors reflects rounding anomalies and/or the inclusion of confidential emissions data in the total figure.

Source: DoLSER 2020A.

Figure 9. Snapshot of Tasmania's emissions (Tasmanian Greenhouse Gas Emissions Report, 2020)

4.3 How has the Act driven or supported decarbonisation?

The legislated target's purpose is to drive action on emissions mitigation by placing accountability on government to pursue emissions reductions in line with a measurable commitment. The Act provides a mechanism for emissions abatement through the target and annual reporting of emissions against that target but its effectiveness has been impacted by the target being achieved for many years now.

The Act's objects provide a narrative for pursuing emissions abatement through policymaking and government action but does not explicitly state such action must occur. However, the Act has helped motivate government action to invest in and support decarbonisation. Key initiatives undertaken since 2016 (including continuing programs prior to 2016) are provided in Table 6

Table 6. Government initiatives which have supported potential emissions abatement

Whole of economy	Commissioned Tasmania's Emissions Pathway Review (TEPR) to provide projections of Tasmania's future emissions under multiple scenarios and options for Tasmania's emissions reduction target.
Renewable energy capacity	- Development of the Renewable Energy Action Plan (including the 200% Renewable Energy Target and Renewable Hydrogen Action Plan). - Funding has been committed to the activation of the renewable hydrogen industry. - Project Marinus and the Battery of the Nation Initiative.
Energy efficiency	- Power\$mart Businesses program has completed 28 energy audits. Power\$mart Homes delivered 146 low income households energy efficiency assessments and low-cost energy efficiency upgrades. - Tasmanian Energy Efficiency Loan Scheme (TEELS) provided over 3,300 homes and small businesses no-interest loans for energy efficiency upgrades. - Energy audits completed for several aged care facilities, and government owned or leased buildings. - Energy management tools developed for the agricultural sector and government operations. - Feasibility study on Environmental Upgrade Agreements (EUAs) for energy efficiency loans for building owners. - Facilitation of State-wide workshops for financial counsellors to better assist vulnerable clients manage their energy use and power bills.
Forest management	Wood Encouragement Policy, which ensures sustainably sourced wood is fully considered, where feasible, in Tasmanian Government procurement, particularly for new buildings and refurbishment projects.
Agriculture	- Fert\$mart program to reduce fertiliser-related emissions. - Climate Research Grants Program: funding provided towards research projects on 'Strategies to reduce the carbon footprint of Tasmanian dairy farms' and 'Trees on farms: a tool for decision making'. - Development of an online farm-specific energy management tool. - On-farm energy audits and capital grants program.

Transport

- ♦ ChargeSmart program providing grants to expand the State-wide rollout of electric vehicle charging infrastructure.
- ♦ Smarter Fleets which improved vehicle efficiencies and reduce emissions and costs.
- ♦ Commitment to transitioning the government fleet to 100% electric vehicles by 2030.
- ♦ Electric Vehicle Working Group to assist in the advancement of EVs in Tasmania.
- ♦ Climate Research Grants program: funding towards a research project on 'Active Travel: A climate change mitigation strategy to benefit the health of all Tasmanians'.

Tourism

- ♦ Climate Research Grants Program: funding towards a research project on 'Tasmania's future as a carbon neutral destination'.

Waste

- ♦ Business Resource Efficiency Program delivered waste audits for eleven Tasmanian businesses.
- ♦ Development of a draft Waste Action Plan for Tasmania and the Waste and Resource Recovery Bill 2021. The 2020-21 Tasmanian Budget provides approximately \$20 million to support the implementation of a range of waste and resource recovery initiatives, including:
 - a legislated State-wide waste levy;
 - establishing a statutory Waste and Resource Recovery Board; and
 - introducing a Container Refund Scheme.

For the most part, these initiatives are actions taken that precede any realised reductions in emissions at scale. For example, the rollout of electric vehicle (EV) charging infrastructure is necessary for the uptake of EVs which can then replace internal combustion engines thus reducing fossil fuel consumption and transport-related emissions. This is similar for energy audits which can enable appropriate energy efficiency upgrades that reduce energy consumption of buildings and business operations. This can potentially reduce the use of gas or wood for heating purposes. However, the penetration of some of the programs and initiatives the review considered to be low and potentially may not yield significant emissions cuts.

These actions can be attributed as a response to the Act, however, they have had negligible effect on reducing Tasmania's cumulative greenhouse gas emissions as the States emissions profile (excluding the LULUCF sector) has remained stable since the Act was introduced in 2008 (refer Figure 9). Tasmania has however, seen an increase in gross State product whilst gradually decreasing the emissions intensity of its economy (excluding LULUCF sector).

Tasmania's position as a renewable energy producer, predominately through hydropower and windfarms, means that the State is well positioned for decarbonisation in sectors other than energy generation, particularly transport and industry. The establishment of Tasmania's renewable energy capacity, however, has not been a direct result of the Act.

4.3 How has the Act driven or supported adaptation to projected climate change impacts?

The Act has prompted the Tasmanian Government to develop and implement a range of activities related to climate change adaptation since the inception of the Act in 2008. Key activities include:

- ♦ Climate Research Grants Program provided funding towards climate change-related research projects, with the majority focused on climate change adaptation covering economic sectors, natural environments and ecosystems, and community.
- ♦ Disaster Planning and Recovery for Tasmanian Businesses Project supporting businesses to undertake business continuity planning to prepare for extreme weather events.
- ♦ Enterprise Suitability Mapping, providing projected climate information for decision-making in the agriculture sector.
- ♦ Irrigation development schemes to boost water security in the agriculture sector.
- ♦ Through the Tasmanian Coastal Adaptation Pathways project the Tasmanian Government has worked with 12 different communities vulnerable to coastal hazards to identify coastal hazard risks and manage hazards through coastal adaptation planning.
- ♦ Through the delivery of the Coastal Hazards Management for Existing Settlements and Values project the Tasmanian Government worked with coastal managers to develop options to further develop a strategic State wide approach to the management of coastal hazards for existing settlements.
- ♦ Community Flood Planning Pilot Project provides locally specific information on planning for flood events to members of the community.
- ♦ RiskReady platform to provide communities and businesses with localised climate-related information and warnings.
- ♦ Funding towards improving bushfire management following the research project on the Tasmanian Wilderness World Heritage Area (TWWHA).
- ♦ Statewide Fuel Reduction Program to minimise the risk of the incidence of bushfire events.

The Act has helped drive action on climate adaptation, notably from government investment and support towards climate-related research programs and projects that have helped develop comprehensive climate data and information and a wide-ranging knowledge of the potential impacts on various aspects of the State's economy, natural environments and ecosystems. However, adaptation planning or implementation of adaptation measures have been relatively minor. More work is needed to ensure Tasmania adapts to the projected impacts of climate change. This is both in a physical sense as well as health and wellbeing.

Bushfires are one of the key adaptation challenges. Action to mitigate bushfire-related risks has started to take place, through such initiatives listed above and planned burning as illustrated in Figure 8. However, many stakeholders still hold concern over the level of bushfire risk in the State. This is reflected by climate projections for the State, indicating longer fire seasons and more frequent extreme heat events, and the susceptibility of the State's landscape to such

Common stakeholder themes regarding climate change impacts and building resilience

- ♦ Proactive planning for existing and projected climate change impacts minimises economic and community impacts caused by a changing climate.
- ♦ Communities and health and emergency services are unprepared and under resourced for the scale and immediacy of the expected consequences of climate change.
- ♦ Collaborative partnerships and alignment between various levels of government and communities helps identify and implement priorities that improve adaptive capacity and strengthen climate resilience in vulnerable communities.
- ♦ Increasing financial burdens incurred by climate change impacts. For example, strain on resources leads to supply/demand issues, increasing recognition of climate-related risks by lending institutions and ratings agencies, upgrade of assets and infrastructure to be adequately resilient, costs of damage incurred by extreme weather events and natural disasters.

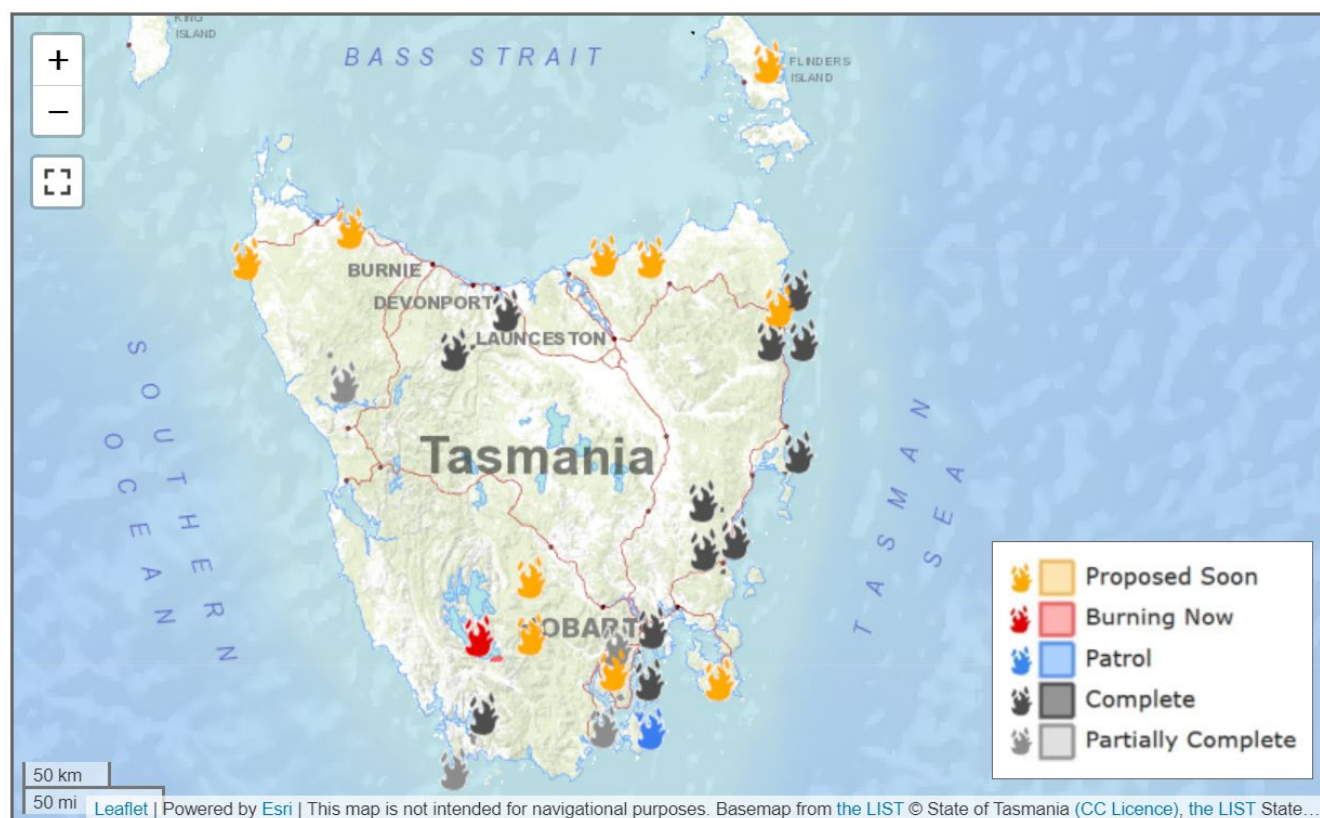


Figure 8. Proposed planned burns for the autumn season are presented on the map (Tasmania Parks and Wildlife Service, 2021).

conditions.

Changing climate conditions and the risks they pose to the agricultural sector have been responded to through the Enterprise Suitability Mapping and Irrigation Development Schemes. Given the vulnerability of the sector to the effects of a changing climate, and its significant planned growth (and subsequent increased demand for resources), building further resilience into the sector is critical.

The recent Climate Research Grants Program has provided funding towards 16 climate change mitigation and adaptation research projects. Some of these projects include:

- ♦ Understanding the economic burden of climate related extreme events in the healthcare sector.
- ♦ Assessment and communication of risks to Tasmanian aquaculture and fisheries from marine heatwaves.
- ♦ Evaluation of the susceptibility of Tasmania's agricultural sector to insect pest species under a

changing climate.

- ♦ Biosecurity preparedness in a changing climate: regional planning for the Derwent Catchment.
- ♦ lutruwita Aboriginal shell practice and ocean change.
- ♦ Radcliffe Creek – Understanding complex climate change impacts on a complex cultural heritage site.
- ♦ A fire regime model for planned burning and ecological management in a changing climate.
- ♦ Developing climate adaptation models to guide climate-resilient forest revegetation.

The Climate Research Grants Program has provided funding for research that is necessary for Tasmania to effectively adapt to the projected impacts of climate change and the review considers such a program an effective approach to reaching meaningful outcomes. Acting upon the findings of these research projects and the commencement of associated adaptation planning will help to improve resilience in the State.

4.4 Consistency with national and international action on climate change

Tasmania's 2050 net zero emissions commitment aligns with the 'new normal' of emissions targets set by national and sub-national governments, including each of the Australian States and Territories. However, given Tasmania's current emissions profile it can be argued that a net zero emissions by 2050 target is not consistent with other Australian States and Territories and comparable international jurisdictions who would require significant investment and intervention to reach net zero emissions.

Forest policy changes and the initial establishment of the State's renewable energy capacity have not been a direct result of action taken in response to the Act and so are not necessarily actions the government has taken to mitigate or adapt to climate change. Climate action pursued by neighbouring, comparable, and leading jurisdictions has featured focused decarbonisation planning and actions in sectors and communities, development of regional and sectoral climate risk assessments and adaptation strategies, promoting and practicing ecologically sustainable development, enabling access to low carbon solutions, and setting of ambitious emissions targets. Tasmania has progressed to varying extents on some of these actions but the review considers this overall progress to be not as comparable to that of a leading jurisdiction on climate change.

National and international development on climate change has included the adoption of approaches that have potential for effective climate action in Tasmania, including:

- ♦ Setting of ambitious economy-wide, interim, and sectoral emissions targets;
- ♦ Use of legislation to enact the process of climate risk assessment and adaptation planning across the whole jurisdiction (e.g. New Zealand and Ireland);
- ♦ Partnering with other tiers of government, community, and industry to plan and implement decarbonisation and climate risk and adaptation (e.g. South Australia, UK, Victoria);
- ♦ Development of economy-wide and sector-based emissions reduction plans;
- ♦ Adoption of carbon budgets and interim targets;

- ♦ Set of principles to guide development of mitigation and adaptation strategies, plans, and policy; and
- ♦ Provision of funding and incentives for projects and initiatives that have low carbon solutions or improve adaptive capacity.

For Tasmania to align with national and international jurisdictions and the momentum of climate action occurring globally, it will need to appropriately reflect approaches to climate change mitigation and adaptation such as the above in the Act or policy.

Tasmania's climate change knowledge and expertise, renewable energy capacity, and emissions profile mean that there is scope for the Act to facilitate Tasmania's low carbon transition at pace. This can ensure Tasmania remains in step with the broader transition occurring in a way that manages the impacts of the transition.

4.5 Impact of COVID-19 on climate change action in Tasmania

The COVID-19 pandemic has brought about unprecedented global change, with many jurisdictions (including Tasmania) declaring a State of emergency during 2020. Governing bodies, businesses, and communities have all needed to adapt lifestyles and ways of working to manage the risk of infection, maintain social connections and continue economic activity.

Tasmania Government measures to limit the introduction and/or spread of the virus within the State has affected the delivery of affected government programs and initiatives, including elements of the Government's climate change response. For example, the Power\$mart Homes and Power\$mart Businesses programs were suspended due to potential direct contact with people in their homes or businesses (Power\$mart Businesses has subsequently resumed). Initiation of this independent review and development of Tasmania's next climate change action plan were also delayed.

The Premier's Economic and Social Recovery Advisory Council (PESRAC) was established to advise the Government on recovery response actions from COVID-19. The Council's final report includes a series of recommendations with relevance to climate action, including:

- ♦ Recommendation 32 that the Government develop a Housing Strategy with a focus on sustainable housing.
- ♦ Recommendations 38-42 that the Government develop a Sustainability Strategy with a focus on decarbonising the economy.
- ♦ Recommendation 51 that the Government conduct a State-wide assessment of high consequence risks to which the community is exposed and develop and implement mitigating strategies for these risks.

To what extent should climate change considerations influence policies and decisions by State government agencies and government business enterprises?

Respondents to the review's Discussion Paper expressed that climate change should be a key consideration for all levels of government. Submissions suggested that all State legislation, policies, decisions and actions should be delivered with full recognition of the science and projected consequences of climate change.

4.6 Strengths and weaknesses of the Act

The Act provides a robust framework and narrative for action on climate change. It establishes a specific and measurable target for emissions reductions and, through regulation, provides a reporting mechanism on progress towards that target.

The review considers the legislated emissions reduction target to be near redundant given Tasmania's current and likely future emissions profile and its misalignment (in terms of the effort required) with net zero emissions commitments made by the State Government, its Australian counterparts and abroad.

Given the rapidly changing policy, knowledge and technological environment in which climate change risks and responses exist, the Act appropriately provides

for independent review and adaptive management. Formal legislative mechanisms for independent advice on climate change being provided to government have been removed following repeal of sections of the Act dealing with the Tasmanian Climate Action Council (and the abolition of that body). However, as amended, there is nothing to preclude the Government from seeking independent (or other) advice, should that be required.

The independent review identifies the following deficiencies with the Act:

Confidence of future planning for climate action

The Act does not contain any legislative mechanisms which require the State Government to develop plans for climate change mitigation and adaptation, nor address short-, medium-, and long-term implications for the State that climate change may present. While such plans could be (and have been) developed in the absence of such mechanisms, the lack of a formal legislative requirement suggests that planning for and action on climate change is optional and not a critical role of government.

The review considers that the Act should include a mechanism for guided and specific climate change mitigation and adaptation planning to occur on a periodic basis to deliver informed, holistic, and effective action to reduce emissions and build climate resilience.

The State Government commitment to net zero emissions is not evident in the Act

Given Tasmania's emissions profile, a distant economy-wide target in 2050 does not provide an impetus for implementation of timely and effective emissions reduction strategies. The review identifies that a distant economy wide target for net zero emissions (later than 2030) for Tasmania is inconsistent with similar commitments and targets made by comparable jurisdictions and does not reflect ambition to act in the short-term and reduce gross emissions at scale in the State. A distant target does not place sustained pressure to act and potentially introduces leniency towards incremental emissions growth. There is even the risk that it might result in further action on climate change being deferred until it's too late. The review considers that a State-wide target should drive immediate and effective action, reflect Tasmania's emissions profile, seek to reduce gross emissions and maintain the State's net zero emissions status.

Objects of the Act

Individual objects are worded such that they cover multiple themes and some themes are addressed in multiple objects. Restructuring and simplifying the objects to focus on the key themes has potential to more clearly articulate the rationale and narrative for action on climate change. Improved communication, accompanied by legislative mechanisms to initiate action, of the Act's objectives and guidance for government action on climate change should enhance its effectiveness in fulfilling the function of the Act to represent the State's overarching response to climate change. The review recommends that climate action be delivered in accordance with a complimentary set of principles to deliver appropriately and effectively the objectives of the Act.

Supportive government planning and policymaking

The review team appreciate that in setting the narrative about the State's action on and aspirations for climate change, the Act has influence over planning and policymaking by State and local governments, industry and the community. However, the review considers the level of influence could be enhanced.

One reason for the Act's limited influence is that it has no mechanism to require government to consider and address the implications of its actions on climate change. Thus, it is possible for the State to develop policy which could result in adverse outcomes with respect to the State's emissions profile and exposure to climate risk, as well as conflict with the Act's objectives.

It is not considered to be an appropriate role for legislation to specify which "balance" government strikes with competing priorities. However, it is considered that the Act should be strengthened so that there is an explicit and transparent process to consider the implications of relevant government policymaking and planning on the State's emissions and climate resilience⁸. An effective State target and sectoral decarbonisation and resilience planning in partnership with supportive government planning and policymaking would help the Act to support robust, whole-of-government climate action.

Defining a medium for positive government action

The Tasmanian government is in the process of developing the next iteration of its Climate Action Plan (CAP), following the completion of Climate Action 21 in June 2021. This plan will be the medium by which the government will articulate its position on climate change and its objectives and strategies for action. In a sense, it will be an implementation plan for the Act, although the Act does not require such a plan. The lack of a legislative requirement to develop a State CAP (or similar) is self-evidently not an impediment to its development. However, not having a legislative requirement provides greater opportunity for governments to avoid scrutiny for not taking action on climate change in a manner which is consistent with the emissions target and objects of the Act. For this reason, the review team consider that the Act should provide for a regular adaptive planning process to guide government action.

⁸ Jurisdictions including Victoria, Ireland and Wales have taken this approach. Wales' Well-being of Future Generations Act requires public bodies (ministers, local authorities, NRM bodies to name a few) and their decision-makers to consider sustainable development and places a duty on public bodies to work to improve the well-being of Wales. In Ireland's Climate Action and Low Carbon Development (Amendment) Bill 2021 public bodies are obliged to perform their functions in a manner consistent with national climate change strategies and targets.

Review recommendation #2

Consolidate the Objects of the Act

Simplifies the objectives and purpose of the Act, providing clarity and direction on climate action for the State. The proposed themes for the amended Act are:

- ♦ Targets and reporting;
- ♦ Actions to reduce GHG emissions;
- ♦ Adaptation to projected climate change;
- ♦ Complementarity with national and international climate change responses; and
- ♦ Engagement and partnership.

Review recommendation #3

A set of Principles to guide climate action

Sets expectations and guides decision making to deliver on the objects and targets of the Act appropriately and effectively.

- ♦ Sustainable development and social equity;
- ♦ Transparency and reporting;
- ♦ Science-based approach;
- ♦ Integrated decision making;
- ♦ Risk management;
- ♦ Community engagement; and
- ♦ Complementarity.

Review recommendation #4

Relevant policies and strategies informed by climate change

The formation of government and agency policies, strategies and plans that have implications on the State's emissions profile, influence exposure to climate risk, and affect its adaptive capacity to climate change should incorporate appropriate consideration of climate change.

Review recommendation #5

Make the Climate Action Plan a legislative requirement

Development of a Climate Action Plan as a statutory requirement by the Act, will set a consolidated State Government approach to climate action, providing visibility and confidence to Tasmanian communities, businesses, and industries.



Emissions targets

5. EMISSIONS TARGETS

As stated in the terms of reference, this review addressed *options to revise Tasmania's emissions reduction target* including the consideration of interim and sectoral targets. The international, national, and State climate change policy contexts have been considered in our assessment of potential emissions reduction targets for Tasmania. Emissions reduction targets were also a critical theme that emerged from stakeholder engagement for this review. This section provides: a review of emissions reduction targets and pledges of comparable and leading jurisdictions; the rationale behind legislating targets; reflections on Tasmania's emissions profile and its existing net zero commitment; and the appropriateness of interim and sectoral emissions reduction targets.

5.1 Setting the State-wide target

The IPCC Special Report *Global Warming of 1.5°C* found that to avoid the worst impacts of climate change and limit warming to 1.5°C, global emissions will need to halve by approximately 2030⁹ and reach net zero by the middle of the century. These reports and the Paris Agreement have informed and promoted emissions reduction targets across the world with the benchmark for developed economies being a net zero emissions commitment by 2050.

Governments have many factors to consider in making such commitments, including:

- ♦ *Ambition*: does the target accurately reflect the expectations of the jurisdiction's communities, business interests and other stakeholders? Does the target express the appropriate level of urgency required to address climate change impacts? Will the target help to drive action to reduce emissions?
- ♦ *Achievability*: can the target be achieved and sustained, based on (e.g.) the jurisdiction's economy, communities, infrastructure, natural environment, emissions trajectory and abatement opportunities?
- ♦ *Impact*: what are the direct and indirect upfront and long-term costs of targets at various levels of ambition? What are the social, economic and environmental impacts (opportunities and risks) that may be realised with the kinds of low carbon transition anticipated by the target?

- ♦ *Aligned with science*: does the target appropriately reflect the best available scientific data on the need to reduce emissions?
- ♦ *Alignment with national and global developments*: does the target ensure the jurisdiction's response to climate change is consistent with its counterparts?

Setting quantitative emissions reduction targets on a whole-of-economy basis helps governments and their communities define their intent and future emissions pathway. Targets facilitate monitoring and reporting and help ensure accountability for actions or initiatives that are intended to drive progress towards them.

Tasmania's legislated target, currently 60% below 1990 emissions levels by 2050, provides the central narrative for the Act and (at the time the Act was introduced) the rationale for government action on climate change. It signalled to Tasmanian communities, industries, and businesses the government's intent and the magnitude of change that was expected to occur and was a measure by which the government could be held to account for progress. The Act allows for revisiting and updating emissions reduction targets periodically, which is necessary to ensure the government's narrative on climate action reflects the latest developments on climate change and targets appropriately address the factors discussed above.

Tasmania's 'clean and green' image is an important contributor to the State's growth strategies. It is seen to boost economic and population growth through its appeal to tourists and migrants alike to experience desirable lifestyles, unpolluted natural beauty, and a leading food and beverage industry. As responses to climate change have progressed and gained momentum, 'clean and green' claims are being scrutinised more carefully. As such, robust planning and effective action must reflect these claims. With increased scrutiny and competition on 'clean and green' claims, it is important that Tasmania continues to reinforce and enhance this image through ambition and effective action on climate change mitigation.

Building on its legislated target, Tasmania renewed this target in 2017 through a policy commitment of net zero emissions by 2050. Tasmania shares this commitment with its Australian counterparts, however, unlike other Australian jurisdictions, its emissions have been negative for several years. Stakeholder feedback received during this review comprehensively favoured more ambitious emissions targets and decarbonisation across all sectors. In its response to the Review's Discussion Paper,

⁹ *Global warming of 1.5°C (2018)*, Intergovernmental Panel on Climate Change

the Launceston Chamber of Commerce stated that *"initiatives that work for climate mitigation also work to improve places"*. Scrutiny and aspirational target-setting are strong drivers of innovation and transformational change, as is necessary for jurisdictions to successfully tackle the threat of climate change whilst building resilient and prosperous societies. The University of Tasmania highlighted that ambitious climate policy promotes *"innovation, investment and employment in low-carbon technologies, industries, infrastructure and practices to ensure that Tasmania can capture economic and social dividends from the most significant structural shift in the global economy over the next generation"*.

The Australian Climate Council's 2021 report, *Aim High, Go Fast: Why Emissions Need To Plummet this Decade*¹⁰, concluded that responses to climate change must match the scale and urgency of the of the challenge and that climate action taken this decade is vital to limiting global warming to even 2°C. The urgency and action required beyond this to limit warming to 1.5°C is reflected by the IPCC reporting that widespread deep emissions cuts must occur over the next decade and beyond to avoid dangerous climate change. If Tasmania

is to maintain its current momentum on climate action and policy, it may lag (or be seen to lag) behind the low carbon transition and lose its place as a climate leader, as other jurisdictions ramp up their climate change responses over the next decade.

5.2 Tasmania's emissions and a distant net zero target

Tasmania's emissions profile (refer Figure 9) is unique in Australia, due to the extent of carbon sequestration (absorption of carbon dioxide from the atmosphere) by its native forests and forestry plantations and its almost complete reliance on renewable energy for electricity production. Changes in forest policy, demand for forest products and establishment of new plantations have led to significant increases in levels of carbon sequestration since 1990. The volume of timber harvested from Tasmania's native forests has decreased, which has paved the way for regeneration and regrowth and has increased sequestration rates. This has resulted in the LULUCF sector moving from being an emissions source to a major carbon sink, offsetting the emissions from all other sectors and resulting in net-negative emissions.

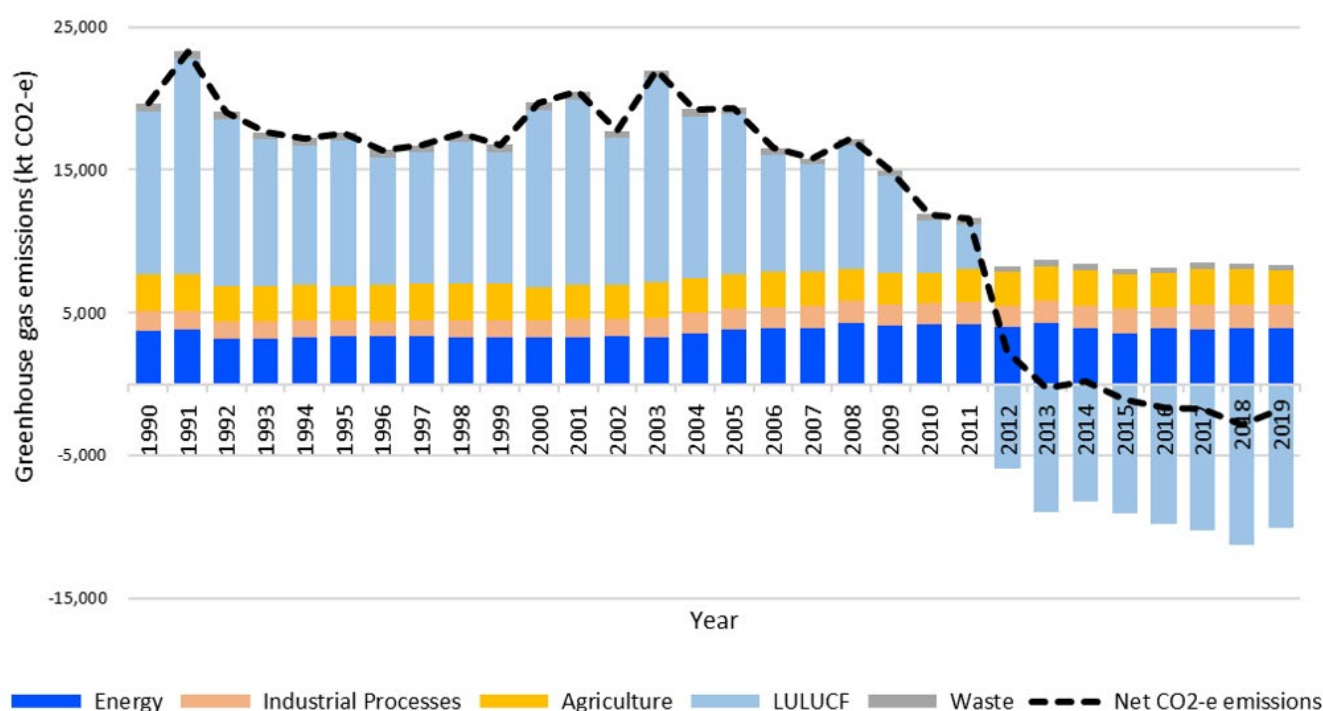


Figure 9. Tasmania's historical emissions 1990-2019 (source: Australian Government National Greenhouse Accounts 2019)

¹⁰ *Aim High, Go Fast: Why emissions need to plummet this decade* (2021), Climate Council, Australia

Reflecting its carbon sinks and generation of low emissions renewable electricity, Tasmania's emissions per capita and emissions intensity of its economy have trended downwards since 1990, particularly from the mid-2000s when large reductions in native forest harvesting started to take effect through increased levels of carbon sequestration. In reducing its emissions intensity (even when carbon sequestration from LULUCF is not included), Tasmania has been able to achieve economic growth without an associated upward trend in emissions.

State emissions profiles are influenced by a range of internal and external factors, including: consumer demand; commodity prices; disruptions to supply chains; and development and implementation of new technology. Both planned and unplanned growth to Tasmania's economic sectors and population are potential drivers of emissions growth and can put at risk the achievability of maintaining net zero emissions.

The Tasmanian Government's population growth policy could have significant influence on the State's emissions profile. The State Government's Population Growth Strategy (2015) sets a target for 650,000 people in Tasmania by 2050. Recent ABS data (June 2020) indicate Tasmania's population is approximately 540,000, suggesting population growth is in-line with this target. Without concerted efforts towards emissions abatement in population related sectors (i.e. transport, residential heating, and waste), it can be expected that the State's emissions will increase as a result of this population growth. The State's AgriVision 2050 target for agricultural production is also likely to increase emissions without focused emissions abatement occurring in the sector although it is noted the emissions per unit value of agricultural production have declined since 1990.

Accounting for key emissions drivers under plausible scenarios, the TEPR's medium-case business-as-usual (BAU) modelled pathway projects Tasmania's will remain below net zero to about 2030, after which the State's emissions settle at about net zero ($\pm <100$ kt CO₂-e). This BAU pathway models the current suite of State and National climate change policies and programs (does not assume new climate policies or programs). This is in contrast with recommendations

put forward in the recent Premier's Economic and Social Recovery Advisory Council (PESRAC) report, which recommended that a Tasmanian sustainability strategy should be developed and immediately prioritise specific frameworks for decarbonising the economy¹¹. Setting a net zero emissions target for Tasmania for some distant time in the future would not seem to convey any sense of urgency nor necessitate significant additional climate action as the Paris Agreement and stakeholder feedback have called for.

In summary, the review team have made the following reflections on a distant net zero emissions target for Tasmania (eg. 2050):

- ♦ The purpose and effectiveness of the State target diminishes and will likely be a poor driver of climate action in the non-LULUCF sectors if the timeframe is set too far into the future.
- ♦ It would do little to leverage the current net zero position to create additional low carbon economic opportunities.
- ♦ Dilution of Tasmania's clean and green brand is a significant risk when setting a distant future net zero target, with the State perceived to be "resting on its laurels".
- ♦ The level of ambition implicit in a distant target falls short of stakeholder expectations conveyed during the review.
- ♦ The TEPR suggests that a more distant target would be highly achievable and require less investment compared with more ambitious target timeframes.
- ♦ A net zero target at or before 2050 (generally) aligns to climate science and commitments made under the Paris Agreement by other jurisdictions.

Table 7 provides an options analysis of net zero targets with differing timeframes and includes the current government commitment of net zero by 2050.

¹¹ Premier's Economic and Social Recovery Advisory Council Final Report (March 2021), Department of Treasury and Finance, Tasmania

Table 7. Options analysis of net zero targets for Tasmania

	Net zero by 2050	Net zero from 2030	Net zero from 2021
Ambition	A low level of ambition is reflected as Tasmania does not need to realise deep or moderate emissions cuts to reach net zero.	A nation-leading target. Drives climate action to occur in the short-term.	A globally leading target. Likely to be seen to be too bold by stakeholders particularly impacted by the speed of such a transition. Drives immediate action.
Achievability	Net zero emissions has been achieved and can be maintained with relative ease and adjustment to policy settings but will not likely be significant in nature.	Requires effective climate action to occur. Tasmania is positioned well to pursue many diverse opportunities for emissions abatement that can ensure net zero is maintained beyond 2030. Aligns to projections and identified opportunities in the TEPR that are demonstrated, mature, or contain an acceptable level of viability.	Requires significant climate action to occur. Requires pursuit of opportunities for emissions abatement that are complex.
Impact	A low-level of intervention towards climate change mitigation is needed. This may lead to a lesser impact being felt economically and throughout Tasmanian communities in the near-term but can lead to increased costs and impacts incurred in the medium- to long-term.	Moderate investment is expected to take advantage of low carbon opportunities. Considers uncertainty of transitional impacts to businesses and communities. Aligns to the accelerating low carbon transition that can deliver medium- to long-term socio-economic benefits.	High capital investment can be expected to accelerate development and implementation of low carbon opportunities. Pursuit of complex low carbon opportunities can introduce heightened risk to transitional impacts due to level of uncertainty. More opportunities available for early adopters of emerging technologies.
Science-aligned	In-line with climate science majority of commitments made under the Paris Agreement.	Firmly aligns with climate science and limiting warming to 1.5° above pre-industrial levels.	Aligns to best available climate science which suggests rapid decarbonisation is required to maximise prospects of avoiding dangerous climate change.
Global alignment	Aligns with the benchmark commitment jurisdictions are making globally. In the global context this target is not aligned with more aspirational targets set by other jurisdictions much farther from carbon neutrality.	A nearer-term target that reflects Tasmania's emissions status and aligns more closely with climate action by comparable jurisdictions who are on much longer paths to carbon neutrality.	Displays leadership at a global level and aligns with nations at the forefront of climate action and setting emissions targets.
Stakeholder feedback	"While having a 2050 target is worthwhile, we strongly suggest the Act also includes provision for five year emissions budgets and reduction plans – this is a tangible timeframe that allows for Government and business to invest with certainty."	"It's clear Tasmania should legislate a target of NZE by 2030 and Total Zero Emissions by 2050... and that incremental goals should also be legislated. Setting these targets will raise the bar internationally and ensure Tasmania is a leader on the world stage."	"Given Tasmania is in the nationally exceptional position of already being at net zero emissions, we recommend Tasmania adopt a legislatively binding 2022 net zero target [and] coupled with appropriate emissions budgets, interim targets and reduction trajectories to ensure Tasmania's net zero status is maintained."

5.3 Resetting the State target

Article 4 of the Paris Agreement states that developed country Parties should continue to take the lead by undertaking economy-wide absolute emissions reductions.

The TEPR's best-fit emissions reduction pathway (that includes the modelled business as usual pathway and the implementation of emissions abatement opportunities across all sectors of the economy) projects that Tasmania can comfortably maintain net zero emissions from now until 2050, while continuing to grow the economy. This pathway excludes technologically uncertain opportunities, and highlights that although focused climate action is required to implement identified opportunities there would be little adverse economic impact with growth projected for the agriculture and forestry sectors.

The majority of emissions reductions options identified in the TEPR are said to be implementable in the next 5 to 10 years although they each bear upfront investment and transitional impacts to varying extents. The PESRAC report calls for immediate action on decarbonising the economy and the viable identified emissions reductions form a pathway for this action. Setting a State target which allows time to plan sectoral decarbonisation planning and action ensures greater certainty around the transitional impacts specific to Tasmania in implementing these opportunities. The target should also maintain overall downward pressure on emissions.

The Paris Agreement calls for efforts to limit atmospheric warming to 1.5°C above pre-industrial levels by reducing emissions into, and drawing down carbon from, the atmosphere. Aligning to the goal of limiting atmospheric warming and the best available climate change science, the review recommends Tasmania commit to a net zero target for 2030, with complementary decarbonisation in the non-LULUCF sectors.

The review recommends amending the legislated target to not exceed net zero emissions beyond 2030. Setting of such a target has potential to:

- ♦ Consistent to Tasmania's clean and green brand;
- ♦ Leverages net zero position for potential low-zero carbon economic opportunities and keeping up with the low carbon transition;
- ♦ Minimise risk of stranded assets associated with carbon intensive industries lagging the low carbon transition;

- ♦ Reduce reliance on the LULUCF sector to achieve the State's emissions reduction target;
- ♦ Support planning and implementation of emissions reduction opportunities such as those identified in the TEPR that are highly or moderately achievable for Tasmania in the next decade;
- ♦ Reinforce leadership on climate change and aligns with the level of (recent) climate action being pursued by comparable jurisdictions; and
- ♦ Align to the best available climate science which suggests continued emissions cuts are required to avoid dangerous climate change.

In setting an ambitious target, the Cement Industry Federation argues that "setting overly ambitious targets without a clear pathway to reaching those goals has the potential to lead to policies and measures that could distort markets and negatively impact on the competitiveness of industry and the economy. Any future emissions reduction target must be appropriately ambitious but technically achievable over the short to medium term. When determining future targets, relevant sectors should be consulted in relation to the potential emissions reduction pathways to inform the suitability of the various options being considered."

Based on the TEPR, such a target seems to be highly achievable, even allowing for increased incidence and impact of bushfires with climate change. We acknowledge that a moderate level of investment will be required by government and industry to develop and adopt low carbon technologies in some sectors and that stakeholders most responsible for or impacted by decarbonisation outside the LULUCF sector may view it as being too bold. However, the State faces increased political and reputational risk if it has insufficient ambition and commitment to action on climate change and may jeopardise economic opportunities that are open to it as an "early mover" on climate action.

The review considers that although interim targets are a useful instrument for maintaining pressure to abate emissions, they are not considered appropriate at a State-level given the current net zero status. However, we suggest that they be incorporated into the proposed sectoral decarbonisation planning.

¹² A strategic growth plan for the Tasmanian forests, fine timber and wood fibre industry (March 2017), Ministerial Advisory Council on Forestry, Tasmania

The review considers that a target that maintains net zero emissions, or a long-term target of net-negative emissions, may be achievable for Tasmania. However, uncertainty surrounding bushfire risk to carbon sequestered in native forests, future carbon accounting methodologies, emissions reduction technologies in hard to abate sectors and the effects of the low carbon transition on Tasmania's communities and economy mean that it is not appropriate to set such targets at this time.

However, the Tasmanian Government's population growth policy could have significant influence on the State's emissions profile. The State Government's Population Growth Strategy (2015) sets a target for 650,000 people in Tasmania by 2050. Recent ABS data published in June 2020 record Tasmania's population at approximately 540,000 persons, suggesting population growth is in-line with this target. Through job creation and workforce development, migration and liveability, the State's population growth policy sets out an approach for a sustainable, balanced growth which will be leveraged for economic growth in the State. Without concerted efforts towards emissions abatement in population-related sectors (i.e. transport, stationary energy, and waste), it can be expected that the State's emissions will increase as a result of this population growth.

Tasmania's commitment to net zero emissions by 2050 has been achieved but is not yet guaranteed with 2050 close to three decades away and State emissions profiles are complex in nature and continually subject to change. Both planned and unplanned growth to Tasmania's economic sectors and population are potential drivers of emissions growth and can put at risk the achievability of maintaining net zero emissions. A distant State-wide target, without sustained pressure by way of interim or sectoral targets, can introduce complacency and a lack of urgency to act in the near- and mid-term resulting in increased risk of emissions growth and lagging in the low carbon transition.

Review recommendation #1

Net zero from 2030

Review recommendation #7

Decarbonisation & Resilience Plans

The review recommends the State target set to net zero by 2030, accompanied with sectoral decarbonisation planning to commence immediately. This allows greater certainty of transitional impacts and viable decarbonisation pathways to be developed in the time leading up to 2030.

Tasmania shares the same net zero 2050 commitment as its Australian counterparts, yet it has achieved net zero for several years now while other State and Territories have significant emissions reductions to realise in order to meet their commitments. A future net zero target for Tasmania does not instil urgency nor necessitate significant climate action as the Paris Agreement and stakeholder feedback received in this review has called for. It also implies that there is an allowance for emissions to rise above their current levels.

The Paris Agreement calls for efforts to limit atmospheric warming to 1.5°C above pre-industrial levels by reducing emissions into, and drawing down carbon from, the atmosphere. Aligning to the Paris Agreement and the best available climate change science, the review recommends Tasmania commit to maintaining net zero emissions, with complementary sectoral decarbonisation planning in the non-LULUCF sectors.

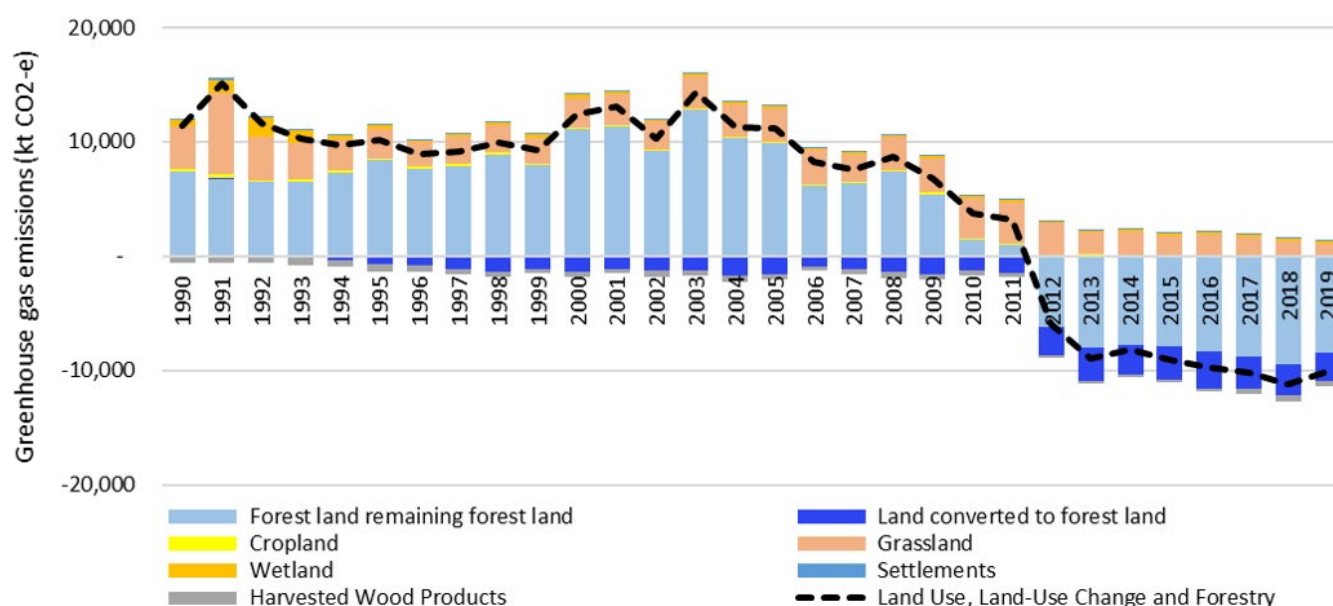


Figure 10. LULUCF sector emissions 1990-2019 (source: Australian Government National Greenhouse Accounts 2019)

5.4 Sectoral emissions

Figure 9 illustrates the influence of the LULUCF sector on the State's emissions profile and that this sector has been the main source of emissions reductions since the mid-2000s. It is also evident from Figure 9 that emissions from other sectors have changed little since 1990. Figure 10 shows the profile of the LULUCF sector emissions.

5.4.1 Land use, land-use change and forestry (LULUCF)

Tasmania's transition into State-wide net negative emissions territory is predominantly due to the changes in emissions from forest management. This was driven by a number of factors, including:

- ♦ A shift in demand for plantation wood products at the expense of products from native forests, resulting in a reduction in the area and volume harvested; and
- ♦ Plantation establishment in the decade 2000-2010 and associated sequestration in 2010-2020 as plantations matured.

This is reflected in Figure 10, where the forest land remaining forest land sub-sector went from being a source of emissions to becoming a large carbon sink (232% change) as a result of a significant increase in

carbon stocks of native forests. Expansion of forestry plantations during 2000-2010 contributed to net sequestration in the LULUCF sector. Over the past ten years harvesting levels in pre-1990 plantations have steadied, while there has been an increase in harvesting from Tasmania's post-1990 plantations, largely from the State's hardwood plantation estate. The 2017 *A Strategic Growth Plan for the Tasmanian Forests, Fine Timber and Wood Fibre Industry*¹² includes the growth objective to encourage the expansion of the plantation forest estate which has potential to deliver further net carbon sequestration for the sector.

Article 4 of the Paris Agreement refers to achieving a balance between anthropogenic emissions by sources and removals by sinks of emissions in the second half of this century. The text clearly anticipates a role for the LULUCF sector in the drawdown of carbon from the atmosphere - in conjunction with aggressive action to mitigate emissions from other sectors.

Future emissions in the LULUCF sector in Tasmania are uncertain due to the potential for changes in (for example): forest policy; forest product market conditions; and wood utilisation technology. Activity in the native forests and plantations sector could increase in response to Tasmanian Government policy to grow the industry and emerging opportunities the sector

¹² A strategic growth plan for the Tasmanian forests, fine timber and wood fibre industry (March 2017), Ministerial Advisory Council on Forestry, Tasmania

presents as reflected in the industry's strategic growth plan which includes a growth objective to double the industry value add to \$1.2 billion by 2036.

In addition to being influenced by the level of harvesting activity, LULUCF emissions are also subject to bushfire events. Bushfires are considered to be a natural process and under international carbon accounting methodology, the carbon stocks which are lost during these events are not normally directly accounted for. However, in subsequent years, sequestration from affected forest areas is adjusted to account for the fire's effects. If climate change leads to increased bushfire intensity and frequency, particularly in carbon-dense tall, wet eucalypt forests, Tasmania's carbon stocks could be eroded and emissions in the LULUCF sector could rise.

The TEPR considered these effects and accounted for increases in the average area affected by bushfire and the likely increased incidence of large-scale catastrophic bushfires. While they would lead to increased emissions, the TEPR found that under the "best fit" pathway, they would not prevent the State from continuing to record net negative emissions to at least 2050.

5.4.2 Energy and transport

The energy sector's primary sources of emissions are generated by fuel use in transport, electricity generation and direct combustion sub-sectors (Table 8). Fugitive emissions are also accounted under the energy sector, although the Australian Government treats these emissions as confidential and referred to as 'other'. As is the case with many jurisdictions, the energy sector is the leading source of emissions in Tasmania, contributing 47% of gross emissions. The State's largely renewably powered electricity grid means that per capita emissions from electricity generation are low relative to other Australian jurisdictions.

The combustion of fossil fuels for stationary energy purposes generates the emissions accounted for under the direct combustion sector, including the burning of coal, gas, agricultural waste, or forestry residue to generate heat, steam, or pressure for commercial and major industrial operations, and the burning of wood or gas for household heating and cooking. The broader transition away from fossil fuels is likely to impact supply of such fuels and costs attributed with these processes in the industrial and residential sectors.

Table 8. *Tasmania's emissions from the energy sector (source: Australian Government National Greenhouse Accounts 2019)*

Sector/ sub-sector	Share of Tasmanian emissions (excl. LULUCF)	% change since 1990
Energy	3.879 Mt CO₂-e (47%)	5%
Transport	1.797 Mt CO ₂ -e (20%)	17%
Direct Combustion & Fugitive Emissions	1.752 Mt CO ₂ -e (14%)	10%
Electricity Generation	0.330 Mt CO ₂ -e (6%)	-42%

Transport emissions have grown by 17% since 1990 and now contribute 20% of gross emissions in Tasmania. Combustion of fossil fuels by passenger and commercial motor vehicles is the main source of emissions. Electrification of the transport network through the roll out of charging infrastructure and uptake of electric vehicles is expected to reduce transport emissions in Tasmania. The Electric Vehicle Council in March 2021 released EV sales figures demonstrating that EV sales in Australia (0.7% of total sales) are falling far behind other jurisdictions such as the EU, UK, and California achieving ~8 to 10% market share for EVs. Tasmania's Climate Action 21 includes a priority area 'Reducing our transport emissions' that covers initiatives and programs designed for electrification and uptake of EVs and alternative fuels for transportation. However, the Electric Vehicle Council's 2020 State of Electric Vehicles report marked Tasmania's EV policies with a 'D' under its electric vehicle policy scorecard, scoring only in two EV policy categories (investment in public EV charging networks and public awareness initiatives) out of a possible ten¹³. In 2019, EV sales accounted for 0.32% of vehicle sales in Tasmania. It is noted that since the release of this policy scorecard the Tasmanian Government has announced a commitment to transition the government fleet to 100% EVs by 2030, in addition to recent commitments to provide duty relief on new and second hand EVs, registration exemption for hire car companies purchasing EVs and additional fast charging infrastructure. There are a number of policy levers to increase uptake of EVs, such as setting vehicle emissions standards that are outside the control of the State government.

¹³ State of Electric Vehicles, (August 2020), Electric Vehicle Council, Australia

The State Government has taken initial steps in preparing the transport network to realise emissions cuts through the rollout of charging infrastructure and community awareness of EVs. However, these will not likely occur at scale in the near- to mid-term based on current policy and EV sales market share and without significant intervention or investment.

5.4.3 Agriculture

Table 9. Tasmania's emissions from the agriculture sector (source: Australian Government National Greenhouse Accounts 2019)

Sector/sub-sector	Share of Tasmanian emissions (excl. LULUCF)	% change since 1990
Energy	2.396 Mt CO₂-e (29%)	-8%
Enteric fermentation	1.775 Mt CO ₂ -e (22%)	-16%
Manure management	0.137 Mt CO ₂ -e (2%)	0%
Agricultural soils	0.392 Mt CO ₂ -e (5%)	15%

Tasmania's agricultural sector accounts for 29% of gross emissions generated in the State, predominantly via enteric fermentation which contributes to 22% of the State's emissions (Table 9). Enteric fermentation releases methane and is a result of digestive processes in livestock. Dairy and beef cattle release the majority of these emissions in Tasmania.

During the review's stakeholder engagement process, representatives from the Tasmanian agricultural sector expressed their support for emissions cuts in the sector. However, common themes included the need for further research and investment towards developing viable emissions reduction strategies and that pursuit of emission reductions must consider farm productivity and profitability.

The Tasmanian Government aims to increase the annual value of its agricultural sector to \$10 billion by 2050. Growth in agricultural production, particularly dairy and beef industries, could lead to increased emissions. However, economic growth between 2004/05 and 2018/19 in the sector saw a ~14.3% increase in gross agri-food production value although emissions over that period reduced by 1.4%.

It is recognised that agriculture is a complex sector in which to achieve emissions reductions. Tasmania's scientific community has and is continuing research on low emissions technologies and solutions for the agriculture sector, particularly emissions reduction surrounding enteric fermentation and carbon sequestration occurring on-farm.

The National Farmers Federation (NFF) issued its own climate change policy in 2020, declaring support for a national economy-wide net zero emissions target. The NFF acknowledges that the agriculture sector must play its part in reducing emissions, provided that viable decarbonisation pathways are identified, and legislation is equitable and advantageous and does not provide unnecessary regulatory impediments. Some other agricultural organisations have set ambitious emissions reduction targets for their sector such as the Meat & Livestock Australia (carbon neutral by 2030). Promising research findings from CSIRO have identified a seaweed feed additive that could lead to reductions of methane emissions from ruminant animals, potentially providing the agricultural sector a significant low emissions pathway for livestock.

5.4.4 Industrial

Emissions from Tasmania's industrial sector primarily occur within the metal and mineral industries (refer Table 10). Emissions from individual participants in the metal industry are treated as confidential. Emissions abatement in these industries are difficult and complex, with chemical reactions occurring in the production processes of smelting and cement manufacture result in the release of carbon dioxide. Low carbon technologies and practices that deliver emissions abatement at scale are not yet mainstream nor considered to be viable or implementable at scale, this is reflected by the growth of emissions from these industries over time. Emissions cuts in this sector will require further research and development and partnering with industry.

Despite this, the global cement and metals industries are making commitments to reducing emissions. The world's largest cement manufacturer, LafargeHolcim,

has committed to science-based targets and net zero emissions by 2050. The global industry body, International Aluminium Institute, has laid out pathways for the industry to reduce emissions by 80% by 2050.

Table 10. Tasmania's emissions from the industrial sector (source: Australian Government National Greenhouse Accounts 2019)

Sector/ sub-sector	Share of Tasmanian emissions (excl. LULUCF)	% change since 1990
Energy	1.693 Mt CO₂-e (20%)	19%
Metal, chemical, food & Beverage, and electronic industry	0.769 Mt CO ₂ -e (10%)	-9%
Mineral industry	0.716 Mt CO ₂ -e (8%)	24%
Substitutes for ozone depleting substances	0.209 Mt CO ₂ -e (2%)	-

5.5 Decarbonising Tasmania's sectors

Decarbonising the energy, agriculture, waste, and industrial sectors is critical to maintaining net zero emissions in Tasmania. Reducing gross emissions will lessen the reliance on the LULUCF sector. The World Resources Institute's working paper, *Designing and communicating net zero targets*, finds that major emitters should adopt a time frame that is at least as early as the global time frame to achieve Paris Agreement goals, and that separate and distinct targets for decarbonisation and carbon removals provide clear pathways to achieving emissions reductions¹⁴.

During the consultation phase, stakeholders indicated broad overall support for the introduction of sectoral emissions targets. However, the response from sector representatives varied. Within the agricultural sector, Wine Tasmania proposed "targets – high level and interim – should be set in partnership with key sectors". The Tasmanian Farmers and Graziers Association stated that if mandated (sectoral) targets are set and they are beyond reasonable means of attainment, that this would be counterproductive to efficiency, productivity and sustainability, however they also express their support

for practical and pragmatic efforts to better deal with a changing climate and believes that setting emission targets is an appropriate mechanism for measuring action. Cement, Concrete & Aggregates Australia stated sector-based targets can lead to market distortion but also supported the notion of partnership as an approach to sectoral decarbonisation; "sector based strategies developed in partnership with government, industry and the community are more likely to deliver tangible climate benefits".

Approaching decarbonisation collaboratively utilises the benefits of involving stakeholders in the planning phase, where valuable insight and the knowledge and identification of risks can shape an effective, appropriate and achievable course of action. Robust, sectoral planning and actions, in partnership with local government, business, industry and the community should help the State achieve meaningful emissions reductions in non-LULUCF sectors that minimise transitional risks to businesses, their employees and dependent communities.

Partnering government with key sectors has particular benefit where there is significant emissions reduction potential or emissions abatement is complex and difficult. Sector and industry representatives can assist government in identifying where support or funding can have the greatest effect and make the most of public investment. An informed and collaborative approach recognises the availability of low emissions solutions and technologies and the capacity for transition on a sector basis, allowing for timely, focused, and considered decarbonisation planning and implementation. This approach allows the setting of achievable and realistic long-term and rolling interim targets to facilitate monitoring and reporting of progress and incorporate accountability to act in pursuit of meeting them.

Review recommendation #7

Decarbonisation & Resilience Plans

Drives informed action on emissions abatement that is consistent with a sector's capacity to transition. Builds resilience into economic sectors and communities to develop a climate and carbon conscious economy and society.



Transitioning to a low carbon future

6. TRANSITIONING TO A LOW CARBON FUTURE

The review's terms of reference include consideration of climate-related risks and opportunities for Tasmania and taking into account the global transition to a low carbon economy. Low carbon opportunities and transitional considerations formed part of the review's stakeholder engagement process. This section provides a high-level overview of the global transition and its relevance to Tasmania, potential low emissions opportunities and their transitional considerations as well as potential ways in which the Tasmanian Government can support the transition amongst businesses and communities.

6.1 The effect of the low carbon transition

Since the Paris Agreement, a global transition to a low-emissions future has been building momentum, and with the recent surge in commitments to act on climate change and implement post-pandemic 'green' recoveries in major world economies, it can be expected that this transition will continue to accelerate.

As national and international climate action progresses towards lower carbon economies and communities, Australian States and Territories will need to ensure that their communities, businesses and industries are on a path to decarbonisation in order to benefit from this transition. Tasmania is well-placed to do so, with its carbon sinks and renewable powered electricity grid laying the foundation for a low carbon economy.

The world's largest asset managers have updated their investment stewardship global strategies to emphasise stronger consideration and action on environment and social issues by the companies they invest in¹⁵. Companies are now expected to disclose how they are considering the use of current and future low-carbon transition technologies and addressing their emissions within their business strategies. An increasing number of asset managers are adopting these approaches through the UN Principles for Responsible Investment, with the number of signatories rising from 63 in 2006 to over 3,000 in 2020, now representing over US\$100 trillion in assets under management.

As demand for low carbon and climate-friendly products and services grow, the associated changes in investor and consumer sentiments will place pressure on businesses and industry sectors. This highlights the importance for businesses and industry to transition at a pace consistent to national and international climate action, to avoid loss of investment, reduced demand for carbon-intensive products or services, and the potential of stranded assets. Infrastructure assets that are built today will still be operating in 2050 and if they are unprepared for a net zero future, they face risks of becoming stranded due to significant and unanticipated loss of value and they face restricted pools of financing¹⁶. Infrastructure that is designed and built with sustainable use of resources and which considers environmental, social, and economic factors minimises emissions and improves resilience, thus mitigating infrastructure associated climate-related risks.

The Australian Government's Climate Change Authority noted in its 2020 Climate Policy Toolkit for 'Prospering in a low-emissions world' that Australia will need to respond to changing global circumstances, or risk getting left behind, identifying that the upcoming national long-term national emissions reduction strategy should:

- ♦ Consider trade and investment strategies that utilise Australia's competitive advantages in a low-emissions world.
- ♦ Support a global response to climate change through growing international demand for emerging Australian low-emissions export industries.
- ♦ Ensure Australian low-carbon industries, products and services benefit from increased international green investment flows.
- ♦ Support regions and communities to position for new low emissions technologies and economic opportunities.

ClimateWorks' submission to this review highlights that "a rapid transition to low/zero emissions in each sector of the economy will have a host of co-benefits. For example, improving energy efficiency and electrifying buildings will save households and businesses on their energy bills and improve health outcomes. Decarbonising transport by switching to electric vehicles will improve air quality and reduce noise"

¹⁵ See, for example, *BlackRock Investment Stewardship: Global Principles (2020)*, BlackRock, Inc.

¹⁶ *Reshaping infrastructure for a net zero emissions future (March 2020)*, Infrastructure Sustainability Council of Australia, ClimateWorks Australia, ASBEC, Australia

A low carbon transition will need to be carefully executed, considering the impact on communities and businesses that are dependent on carbon-intensive resources and operations. Careful consideration and appropriate planning and policy will facilitate a just transition for impacted industries and dependent communities. Communication around the benefit of safeguarding communities and livelihoods from the shocks and stresses of climate change is critical.

The low carbon transition presents risk to lagging economies and their communities, but it also provides significant opportunity for businesses and communities to innovate, improve resilience and realise social, economic, and environmental benefits. Beyond Zero Emissions' *Million Jobs Plan* illustrates the growth and employment potential of investing in clean, low carbon technologies in Australia¹⁷. Economic analysis of the plan identifies that implementation of the plan can result in higher employment, raised living standards and economic growth, and boost private investment for the nation.

6.2 Low carbon opportunities in Tasmania

An economy-wide transition to a lower carbon Tasmania can have many co-benefits, including:

- ♦ Less polluted air which decreases rates of illness and death through reducing fossil fuel consumption, and cleaner waterways through more efficient rates of fertiliser application and precision agriculture. This is reflective of, and enhances, Tasmania's "clean and green" brand.
- ♦ New research and learning, and the adoption of low emissions technologies can result in innovation and the emergence of alternative technologies that can open up new markets and access previously untouched markets for Tasmanian businesses and industries.
- ♦ Paving the way for realisation of new and additional investment opportunities in Tasmania. For example, the production of bioenergy and renewable hydrogen for use in the manufacturing and transportation sectors, or the development of zero carbon products that can be exported.
- ♦ Recognition as a world leader on climate change, positively contributing to and influencing national and international responses to climate change.

"The competitive advantages of Tasmania will be enhanced from a status as a global leader in transitioning to a carbon negative economy. Aspirational targets will drive innovation and job creation. They will lead to businesses moving here or starting here. A vibrant low carbon business ecosystem will develop which will attract talent and investment to our State. The emerging hydrogen industry at Bell Bay is an example of what may come our way, but it really just the tip of the iceberg. Opportunities to develop circular markets and the circular economy more broadly would benefit from stronger carbon reduction targets..."

We note that often, initiatives that work for climate mitigation also work to improve places. The EV transition, active transport, city greening and electrification reduce air and noise pollution and have benefits for city liveability and experience, as well as long term health benefits...

Finally, we note that a carbon negative economy will provide impetus to develop skills and skills provision for these new industries."

Launceston Chamber of Commerce submission to the independent review

Tasmania holds advantages as an island State with recognised expertise, natural resources and beauty, and its status as a low emissions jurisdiction. These sought-after attributes are advantageous in the transition to a low carbon future, priming Tasmania with the capacity to be innovative and 'ahead of the curve'.

Utilising Tasmania's scientific expertise and research, and the diverse array of industries present on a relatively small island, innovation and the research and development of low carbon technologies and practices can be piloted with relative ease and implemented at scale. This could open up new export markets to jurisdictions seeking to reduce emissions and adopt such technologies and markets. Tasmania's net zero emissions status leads to opportunity for a 'surplus' of carbon credits, or offsets, for jurisdictions and entities abroad that can return economic value into the State. Moving further ahead of the curve and leveraging its emissions profile and clean and green brand, Tasmania's reputation as a low carbon eco-tourist destination can grow and attract new investment.

¹⁷ *The Million Jobs Plan (June 2020), Beyond Zero Emissions, Australia*

The opportunities listed in Table 11 were all identified in the TEPR as moderately or highly achievable and/or implementable within the next 5 to 10 years, with some readily available to realise emissions reductions

in the next 2 to 3 years (e.g. accelerate uptake of EVs). Further government investment, policy, and support is required in the short-term to progress these initiatives for widespread adoption throughout the State.

Table 11. Low carbon opportunities for Tasmania

Opportunity	Considerations	Potential co-benefits
Low methane livestock	◆ Inhibits enteric methane fermentation of ruminant animals using a seaweed feed additive. ◆ Further research and development underway to activate industry. ◆ Yet to be implemented at-scale through real-world applications.	◆ Development of a low carbon product and industry.
Renewable hydrogen industry	◆ Alternative zero emissions fuel. ◆ Tasmanian Hydrogen Action Plan and government funding provided to kick start industry. ◆ Hydrogen market globally gaining momentum. ◆ Production cost and cost competitiveness are some of the barriers to uptake.	◆ Opens up new export markets. ◆ Enables emissions reductions to occur in other sectors, particularly transport and industrial.
Electrification of transport network	◆ Reduces/eliminates fossil fuel consumption in vehicles. ◆ Barriers to adoption include expense and limited supply of EVs, community awareness, charging infrastructure and tax and regulatory impediments. ◆ Increases electrical demand from the grid.	◆ Reduces pollution and improves air quality. ◆ Leverages availability of a renewably powered grid.
Sustainable and regenerative agricultural practices	◆ Increases carbon sequestration and/or efficiency of farm operations. ◆ Farmer awareness and training required to increase adoption. ◆ Initial time and capital investment required to transition farm operations inhibits uptake.	◆ Income diversification and resilience. ◆ Improved farm productivity and profitability. ◆ Landscape restoration.
Efficient/sustainable manufacturing processes	◆ Achieved through demand reduction and energy efficiency measures and fuel switching. ◆ Capital cost of retrofits and equipment upgrades.	◆ Reduced operating expenses for manufacturing and industrial businesses.

"Having achieved net zero-emissions in 2015, Tasmania is uniquely positioned to be a global leader in climate change mitigation and abatement technologies and supply chains. With a largely renewable energy source, competitive energy prices can be used to attract investment into new products and technologies for export.

Tasmania offers the unique opportunity to trial new technologies at a small scale in a well understood and contained marketplace. With the right government incentives, Tasmania could be a trial site to prove up innovation and technologies at an affordable scale before risking full scale implementation nationally or globally"

Cement, Concrete & Aggregates Australia (CCAA) submission the independent review

Tasmanian renewable hydrogen production and potential end uses

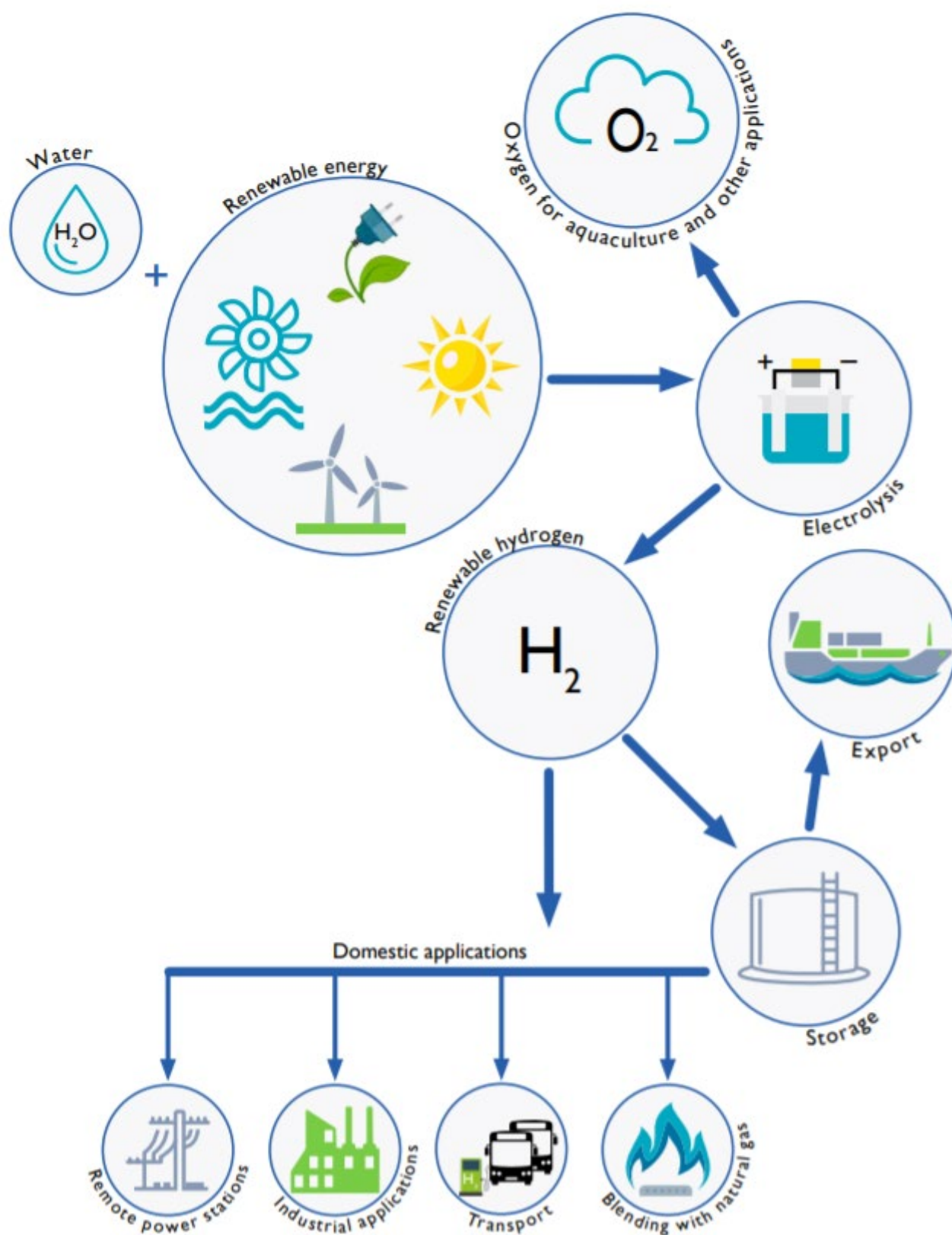


Figure 11. Tasmanian renewable hydrogen production and potential end uses (Tasmanian Renewable Hydrogen Action Plan, 2020)

6.3 Transitional considerations for Tasmania

The transition to a low carbon future is accelerating in many major and emerging economies and the scale of change is expected to be transformative to their sectors and communities. Each sector will need to overcome unique challenges to maintain continuity and performance and communities will need to adapt lifestyles, both at work and at home, to societal shifts that will occur as a result of widespread adoption of low carbon technologies and practices.

Communities and individuals hold less control over the transition. Industries which undergo transformational change may see significant restructuring, or closure which has the potential for job redundancies, a changing workplace, and/or stranded assets, thus reducing or changing the employment landscape. Common feedback received from stakeholders during this review was that a just and equitable transition must take place, to prosper as a society and to also protect vulnerable communities who are disproportionately disadvantaged in societal shifts and to the challenges climate change presents. This could include addressing many issues such as employment skills and training and the health and wellbeing of such communities.

Appropriate education and training will be required to prepare individuals for a low carbon transition, reflecting skills and roles that industries require to decarbonise their operations, products, and services. Electrification of the transport sector for example will see a whole new industry created where many new jobs, skills and training will be required. Changing farming practices will also see a need for wide-ranging and comprehensive training to take place.

What do you consider to be the main risks and opportunities for Tasmania as it continues to transition towards a low/zero carbon economy and society? What risks and opportunities may arise if Tasmania transitions more slowly/more rapidly?

"A transition to a low carbon economy will need to be carefully executed to minimise transition risks and impacts on communities and businesses. It is important to consider people's work, stranded assets and operations, regulatory and technological changes, and stakeholder expectations"

– Local Government Association Tasmania submission to the independent review

"The largest transition risks are likely to be related to the petroleum supply industry. Tasmania's fuel supply will increasingly come from places like Singapore and Japan. The oil majors are already suffering some financial difficulties, and to expect this large international industry to perfectly maintain a consistent, but dwindling supply of quality fuels to all parts of the world over a 10 to 20 year time horizon marked by steadily reducing sales of most (but not all) products, is crazily optimistic. Tasmania is a very small fuel market a long way away from major fuel refineries. Fuel supply disruptions are a definite transition risk"

Climate Tasmania submission to the independent review

6.4 Transitioning Tasmania into the low carbon future

Effective climate action is a shared responsibility between the community and the public and private sector, with public policy and investment being vital instruments for facilitating effective action.

Decarbonisation technologies are already close to technological readiness. However, their deployment is often hampered by the fact that they are presently higher cost than the high-carbon alternative. Although the cost differential between high-carbon and low carbon solutions might eventually be reduced through economies of scale and learning effects, policy mechanisms need to be put in place to drive deployment. Appropriate policies will differ from one sector to the other, depending on sectoral abatement costs and on whether there is a single foreseeable pathway to decarbonisation or a multiplicity of decarbonisation options. They will also differ by region, as they will need to be adapted to local specificities in economic structures, resource endowments, appropriate technology pathways, as well as pre-existing policy frameworks¹⁸.

Stakeholder views on the State Government's role in supporting the low carbon transition included:

- ♦ Leading by example.
- ♦ Providing funding and incentives for low carbon solutions and practices.
- ♦ Policymaking and decision-making to consider any associated emissions.
- ♦ Promote and leverage domestic low carbon solutions.
- ♦ Timely, transparent, and evidence-based reporting of progress.
- ♦ Partnering with industry and councils on decarbonisation pursuits.
- ♦ Engage with the community in planning for the transition, particularly young people and First Nations people.\

The Tasmanian Government has a role to play in setting the overarching agenda and ambition for Tasmania's low carbon transition. It also has a responsibility in facilitating and enabling the State to maximise on the opportunities that come with a net zero global economy, as well as in accelerating the implementation of emissions reduction solutions for the State's domestic emissions. The government can accelerate the implementation of emissions reduction solutions directly, through government procurement and operations, and indirectly by incentivising low emissions activities (and disincentivising high emissions activities) for business and households¹⁹. Demonstrated and mature low and zero carbon technologies are readily available for deployment. Government plays a critical role in accelerating uptake in such technologies as well as the development of emerging solutions in economic sectors and communities. Stakeholder feedback echoes many of the government actions listed in Figure 12 in addition to partnering with government in planning for the implementation of such actions.

The review recommends sectors including agriculture, transport, energy, and industrial are engaged in partnership to develop decarbonisation planning. Collaborative planning for these key economic sectors ensures that not only emissions cuts can occur at-scale but also an equitable transition takes place that can deliver prosperous businesses and communities throughout Tasmania. This planning is likely to be useful for informing government policy and investment that drives emissions reductions without adverse impacts to economic profitability and growth.

Review recommendation #7

Decarbonisation & Resilience Plans

Drives informed action on emissions abatement that is consistent with a sector's capacity to transition. Builds resilience into economic sectors and communities to develop a climate and carbon conscious economy and society.

¹⁸ *Making Mission Possible: Delivering a net zero economy* (September 2020), Energy Transitions Commission

¹⁹ *ClimateWorks input to the review of Tasmania's Climate Change (State Action) Act 2008* (April 2021), ClimateWorks Australia

Summary of key zero-emissions solutions and supporting actions, by sector and maturity

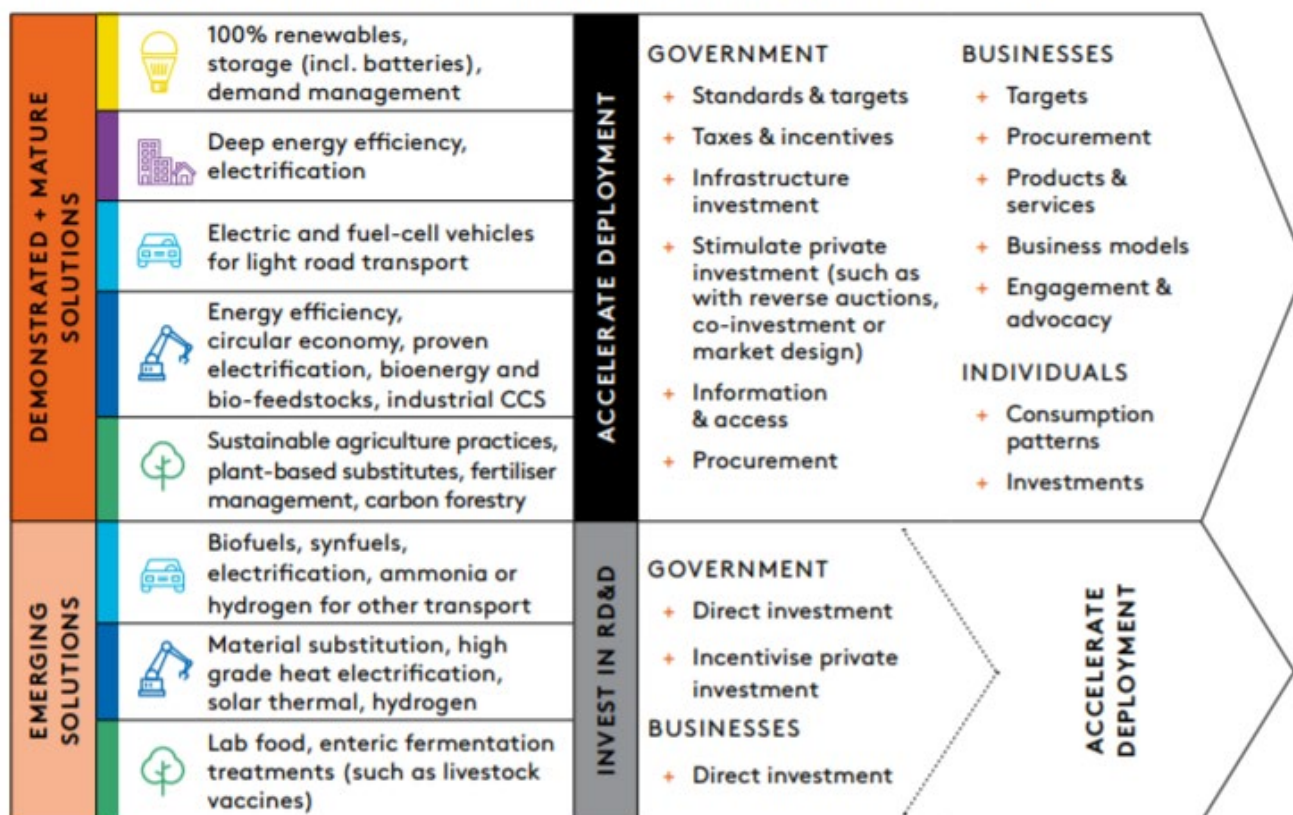


Figure 12. Key zero-emissions solutions and supporting actions (Decarbonisation Futures 2020, ClimateWorks²⁰)

²⁰ Decarbonisation Futures (2020), ClimateWorks, Australia



Climate change impacts and resilience

7. CLIMATE CHANGE IMPACTS AND RESILIENCE

The objects of the Act call for the promotion of research and development, and support for measures, *that help Tasmania deal with and adapt to the expected consequences of climate change*. The review's stakeholder engagement process and research and analysis has led to a broad view of Tasmania's understanding of its future climate and associated risks and expected impacts. This section describes such risks and impacts, and discusses Tasmania's responses, and other potential adaptation measures, which seek to build resilience into the economy, environment, and communities of Tasmania.

7.1 Projected climate impacts and risks

With climate change, Tasmania is likely to experience increased temperatures, changes to annual rainfall patterns and an increase in the frequency of extreme weather events. Increasing temperatures (and decreased humidity inland) are likely to lead to increases in evaporation and, with reduced rainfall in north-west and central Tasmania, may lead to changes in water resource availability.

Tasmania's average temperature rise is slightly moderated relative to many other areas of Australia due to the influence of surrounding oceans. However, the surrounding oceans will continue to warm and acidify, and sea levels are projected to continue to rise. IPCC upper range sea level rise projections for 2100 now exceed 1 metre and some peer-reviewed science suggests that sea levels will rise much faster than this. Erodeable coasts are expected to retreat in response to changing sea levels.

Projected climate change to 2030 is effectively locked in by greenhouse gases already in the atmosphere and the carbon intensity of existing industrial and transportation systems. The opportunity exists to contain the change in global mean temperature to less than 2°C, but only through aggressive global reductions in greenhouse gas emissions, in line with the Paris Agreement. However, even if the drive to abate the growth in greenhouse gas emissions is successful, significant action will still be required to adapt to the direct and indirect impacts of a 2°C increase in temperature.

Natural hazards and climatic events

Tasmania's ability to anticipate and adapt to climate extremes and future climate change is underpinned by the level of climate resilience in the community. Climate resilience is a journey involving analysis of climate change projections and impacts and the prioritisation and implementation of measures to better cope with climate risks.

Tasmania has experienced significant bushfire events in 2016 and 2018-19 and was indirectly impacted by the Black Summer event (summer 2019-2020) from bushfire smoke and emergency services being sent to support the national effort on the mainland. Tasmania also experienced the worst State-wide flooding in 40 years in 2016.

Climate Futures for Tasmania projects that in addition to changes in average rainfall and temperature, there will be changes in the frequency and intensity of extreme climate events such as bushfires, heatwaves and flooding, and these events have already begun manifesting.



Figure 13. Tasmanian bushfire event.

Community impacts

Projected climate change may also affect the physical and mental health of Tasmanians. Such impacts are likely to result from the direct impacts of extreme climate events such as drought, bushfires, heatwaves and flooding and, for some affected people and communities, the on-going trauma associated with those events.

Climate conditions associated with bushfire or other events can cause or contribute to a variety of acute and chronic health issues. Acute conditions range from irritated eyes to severe heat or respiratory distress. These are linked to increased deaths in the elderly population. Vulnerable population groups (e.g. children, elderly, socially disadvantaged) may also have a higher risk of negative physical and mental health outcomes during and following natural disasters according to the Royal Commission into National Natural Disaster Arrangements Report²¹.

7.2 Climate risk and adaptation for Tasmanian sectors and communities

Although there are efforts to be made in mitigating further climate change from future emissions, the Tasmanian community must prepare for environmental change caused by unavoidable climate change that is already locked in. The capacity of the Tasmanian community, business and sectors to adapt to these changes is underpinned by their level of resilience, which is achieved through awareness, planning and preparation for climate hazards and events, informed by accurate and localised climate science.

While actions are being undertaken to improve preparedness and resilience, risk assessment and identification and subsequent adaptation planning is necessary to secure prosperity in the State.

The climate change research and modelling, and data/information gathering conducted to date for Tasmania is comprehensive and up to date with globally recognised climate change science. It has not been demonstrated that such information has been utilised to conduct risk and vulnerability assessments across the State, which would enable adaptation planning to take place to develop an appropriate level of resilience in response to the expected consequences of climate change.

Infrastructure and the built environment

Tasmania's cities, towns, communities, and infrastructure are likely to be confronted with challenges due to a changing climate. Exposure will be high in ageing built assets and infrastructure that have not been designed, built, or operated to a degree that is adequately resilient to sea level rise, increased storm activity, and more intense rainfall events. This can result in significant cultural and economic costs through the damage of assets and disruption to economic activity. Tasmanian cultural and heritage sites for example could be at risk of damage if they have not been managed to withstand any relevant impacts that may be caused by climate change. Tasmania's growing population and associated growth in infrastructure, commercial, and residential development is likely to increase the State's exposure without climate change adaptation being appropriately addressed in the planning, design, construction, and operation of such development. Tasmania's existing population is primarily found in coastal regions and face the potential hazard of coastal inundation and erosion.

Elevated consideration of climate change impacts and sustainable development in urban and land-use planning will need to occur to ensure Tasmanian communities, businesses and infrastructure are not overly exposed to the current and projected impacts of climate change. This will help minimise risks to community health and safety, built assets, infrastructure, transport networks, and business continuity.

TasNetwork's submission to this review highlighted that "Action plans that include tangible, measurable, objectives with feedback loops and review periods will ensure the Tasmania's Government maintains vigilance and awareness of Tasmania's emissions and climate resilience."

²¹ Royal Commission into National Natural Disaster Arrangements Report. (2020, October 28). Commonwealth of Australia.

Community health and safety

There is an increased frequency and magnitude of climate events that impact on the environment, infrastructure and communities. This needs to be met with long-term planning from the Government to enhance community capacity to respond and survive these events. This long-term emergency planning can be informed through scenario planning to link risk quantification and management leading to tangible actions.

Emergency management and warnings have seen positive progress such as the Tasmanian Disaster Resilience Strategy 2020-2025, the 2016 Tasmanian

State Natural Disaster Risk Assessment (TSNDRA), the Tasmanian Flood Map Project and the development of the RiskReady platform. However, stakeholders believe communities, health and emergency services are unprepared and under-resourced to deal with the scale and immediacy of the expected consequences of climate change.

In its submission to this review, the Australian Medical Association (AMA) Tasmania identifies a number of areas of concern caused by climate change and its potential impacts to communities and individuals (Table 12).

"Break O'Day is subject to significant flood, bushfire and drought risks that climate change projections indicate will increase over time. Public infrastructure, homes and businesses face future shoreline erosion/inundation risks, for example to main roads and access to St Helens Point and airport. We also face health and welfare risks as climate changes and natural disasters increase - housing, heat stress, disease and mental health for example. Our community and economy depend on the State's climate change frameworks, actions and agencies to support planning for avoidance, emergency management, recovery programs and adaptation pathways anticipating changes and impacts. State-local government collaboration on delivery of these should continue to grow and be supported. However, to manage rising natural hazards risks local governments will need more regulatory, policy, technical and financial backing to play their part in this partnership. The State's climate change frameworks and actions need to do more to enable local government's role, but also take responsibility for State issues and benchmarks."

**Break O'Day Council submission
to the independent review**

UTAS's submission to the independent review suggests a number of actions the Tasmanian Government can do to enhance community safety such as:

1. "Mainstream climate change in all aspects of Tasmania's emergency management plans and actions.
2. Develop a specific climate change emergency management program.
3. Enhance and coordinate community-based climate risk and emergency management and planning.
4. Include climate change projections into government budgeting at the State and local level. This will help prevent financial shocks and manage the immediate and long-term financial costs of a major environmental emergency.
5. Investigate enhanced delivery of vital information to the Tasmanian community. For example, delivery of the Tasmanian Bushfire App (similar to the effective NSW Fires Near Me app) to the community will save lives."

Table 12. Australian Medical Association Tasmania views on climate change impacts in Tasmania

Public Health	♦ Safety of shelter; homes are at risk from fire and from inundation and storms. ♦ Housing supply, homelessness and arrival of unconnected immigrants. ♦ Air quality; pollution from the burning of fossil fuels and domestic wood burning and exposure to bushfire smoke all have adverse effects human health. ♦ Quality, safety and supply of drinking water. ♦ Food availability and affordability.
Mental Health	♦ Response to the loss, grief and trauma associated with extreme weather events - Drought - Floods - Storms - Fires - Heat waves ♦ Eco-anxiety - this is an increasingly prevalent condition, particularly in young people. ♦ Inadequate current services. There needs to be an increase in provision of inpatient beds and psychiatric support at every level, from primary to tertiary expertise. The Reform process promises to provide better community early intervention as compared to the current system but does not take into account the need for more services in the future because of the impact of climate change.
Heat and weather-related conditions	♦ Heatstroke; ♦ 5% increase in Emergency Department presentations on heat wave days (recent PhD conclusion); ♦ Increase in domestic violence; ♦ Worsening of existing conditions such as respiratory and cardiovascular conditions; ♦ Smoke exposure; ♦ Displacement and homelessness; ♦ Thunderstorm asthma; and ♦ Infectious diseases via spread of insect vectors and food-borne diseases and toxins.
Allergens	More allergens related to higher levels of carbon dioxide, warmer temperatures and more rainfall.
Those most at risk	Those already disadvantaged are likely to bear the brunt of climate related difficulties: ♦ People with pre-existing health conditions ♦ Older adults ♦ People who are economically disadvantaged ♦ People who are socially isolated ♦ Children ♦ First Nation people With more people likely to be suffering from health and mental health conditions associated with climate change, there will be more people relying on insurance and disability schemes, that are already on the edge of unproductivity and affordability.

Agriculture and aquaculture

The farming and agriculture sector is particularly vulnerable to the physical impacts as there is a strong dependence on the physical conditions of the environment. Most stakeholders that participated during the review reflected this, emphasising that the agriculture sector as particularly exposed to the projected impacts of climate change. The Tasmanian Farmers and Graziers Association (TFGA) describes farmers as being on the 'front-line of dealing with the impact of climate change on a daily basis' as agricultural productivity relies heavily on climatic conditions²².

Climate Futures' Impacts on agriculture report states that projected changes to the climate will have significant impacts on agricultural enterprises at farm, industry and regional scales, seeing potentially significant changes to farm management, choice of crops and land use as a result of such impacts²³. Changing climate conditions causing such changes, present a difficult challenge to preserving and sustaining the natural resources that are necessary for the planned growth of the sector. In the context of a changing climate, the State Government needs to focus on supporting the development of long-term resilience and preparedness initiatives in rural communities, rather than reactively providing recovery assistance during or following extreme events such as drought²⁴.

Localised climate data and information is critical for farmers to inform decision-making on farm management practices, crop selection and management, exercise risk management, manage climate variability, and planning for the future. Adopting methods such as regenerative farming practices and crop diversification can help mitigate climate related risks and improve climate and economic resilience of farming businesses.

Common stakeholder feedback theme: the agriculture sector is particularly exposed to the expected consequences of climate change. Decreasing productivity and crop yields, increased presence of invasive species, crop losses due to disease, extreme weather events, changing climate conditions, and increased strain on resources as a result of a changing climate can jeopardise food and water security, increase costs for businesses and consumers, and increase competition for resources.

While the effects of the changing climate will vary across sectors, regions and production systems, the continued variability and shifting patterns of rainfall are likely to pose significant challenges, particularly to agriculture²⁵. The University of Tasmania has established the Tasmania Drought Resilience Adoption and Innovation Hub to build the capabilities of farmers and rural communities to better prepare for drought by way of bringing together researchers, farmers, industry, natural resource managers and traditional owners to co-design relevant and innovative solutions²⁶.

There has been an overarching response from the agriculture sector highlighting the importance of climate action carried out through collaboration and partnerships, and driving awareness and education is critical for the sector to make progress against climate change.

Coastal zones and aquaculture

Tasmania's coastal zone is particularly important to the Tasmanian community and the economy. No place in Tasmania is more than 115 kilometres from the sea, with most of Tasmania's population centres and major industries located on or near the coast. Coastal hazards, including inundation and erosion, are the result of natural processes that have the potential to cause considerable damage to communities, industries and infrastructure. These hazards are expected to be magnified by climate change and sea level rise, presenting significant risk to Tasmanian communities and the economy if they are not appropriately managed.

Tasmania's projected climate includes warming and acidification of the surrounding ocean, changing currents, sea level rise and coastal erosion due to increased storm activity which will introduce challenges to Tasmania's aquaculture industry. The introduction of invasive species and a changing marine environment are likely to have adverse effects to fish populations and marine ecosystems. The aquaculture industry will require detailed climate and marine data to inform appropriate measures for adaptation to ensure the longevity of marine ecosystems and fish populations.

²² *Tasmanian Farmers and Graziers Association submission to the independent review (May 2021)*

²³ *Impacts on agriculture (2010), Climate Futures, Tasmania*

²⁴ *Competitiveness of Tasmanian Agriculture White Paper (2020), Tasmanian Government*

²⁵ *National Climate and Resilience Strategy (2015), Australian Government*

²⁶ *Future Drought Fund: Tasmanian Drought Resilience Adoption and Innovation Hub (April 2021), Australian Government*

Bushfire

The projected increased incidence of severe fire weather conditions may lead to greater risk to communities and environments from bushfires and increased expenditure on hazard management and fire responses. Increased fire incidence in some ecosystems and fire ingress into those which rely on the absence of fire may lead to irreversible loss of heritage values and diminish ecotourism opportunities.

Participating stakeholders in this review expressed concern over the level of bushfire risk, existing and future, in the State and raised the need for more proactive planning for mitigating bushfire impacts and the development of effective bushfire response methods. Integrated approaches to land and bushfire management can help to mitigate bushfire impacts and deliver more effective emergency responses. Indigenous Land Management practices, such as cultural burning, can improve landscape and community resilience by helping to reduce fuel whilst also providing biodiversity benefits in a controlled and culturally sensitive manner. Cultural burning is also eligible under the carbon farming initiative as emissions released from early burns ultimately result in lesser emissions being released in bushfire events for the same area.

Review recommendation #6

State-wide climate change risk assessment

Assess and identify significant and critical risks to Tasmanian communities, economy, natural environment and ecosystems as a result of the projected impacts of climate change

Natural environment and ecosystems

Biodiversity and natural ecosystems are under significant pressure from a changing climate, compounded by human activity and development. Projected climate change will place significantly more pressure on natural ecosystems with some likely to exceed their capacity to adapt to climate change. Ecosystem services are likely to be impacted. They include provisioning, regulating, and cultural services that directly affect people, and supporting services needed to maintain the other services²⁷.

Approaches to build resilience into biodiversity and ecosystems that incorporate broad thinking about environmental change appear most likely to ensure effective outcomes. At the landscape level, land managers and policymakers are engaged in a suite of actions to build and support resilient ecosystems. These include increasing the conservation estate, reducing the impact of pressures, identifying and protecting refugia, and restoring connectivity in degraded landscapes²⁸. Private land conservation in altered landscapes, if adopted widely, can significantly improve overall biodiversity resilience. Harvesting activity in the private forests of Tasmania, and the significant planned growth in the agriculture sector has potential to be counterproductive to this method of improving biodiversity resilience.

²⁷ *Climate change and human health: Ecosystems goods and services for health*, World Health Organization (retrieved 15 May 2021; <https://www.who.int/globalchange/ecosystems/en/>)

²⁸ Cresswell ID, Murphy H (2016). *Biodiversity: Resilience*. In: *Australia State of the environment 2016*, Australian Government

7.3 Building Tasmania's resilience

Each year, the Australian and Tasmanian governments invest \$2.6m in resilience measures for Tasmania under the Natural Disaster Resilience Program²⁹. This funding goes towards various risk management and awareness programs implemented by the Tasmanian Government to build the State's resilience. Some key activities resulting from this funding include:

Table 13. Tasmanian climate resilience initiatives funded by the national Natural Disaster Resilience Program

2016 Tasmanian State Natural Disaster Risk Assessment (TSNDRA)	This assessment reviewed a range of hazards including coastal inundations and heatwaves on Tasmania's regions. This assessment has already resulted in amendments to various planning codes to ensure sea level rise is accounted for in planning provisions.
Community Protection Planning Unit	Run by the Tasmanian Fire Service this group builds upon bushfire safety within the community by utilising a community-centred approach for safety rather than based on properties or assets.
Join, Learn, Be Ready	This campaign and volunteer recruitment program aims to increase public awareness on the importance of preparedness and prevention of emergency events as opposed to the reaction and response to emergencies. It utilised six Tasmanian emergency response agencies that respond to a range of environmental issues to help build holistic community resilience.

The Tasmanian Government spent \$746,958 across 16 research programs which focused on key climate change issues³⁰. The Tasmanian Government developed the Climate Research Grants Program which offered grants towards research aligning with any of the following priority research areas

1. Compound extreme events
2. Agriculture sector
3. Biosecurity and invasive pests
4. Tourism sector
5. Health and wellbeing
6. Aquaculture and wild fisheries
7. Tools for decision making

Research, risk assessments and community building ventures are ongoing activities that continually improve the resilience and adaptive capacity of Tasmania. However, stakeholder views, climate science and the expected consequences of climate change suggest that Tasmania has much to do in building resilience throughout its economy, communities and environment.

The comprehensive climate-related research undertaken by Tasmania's scientific community of the State's current and future climate, and their associated risks and impacts, provides the State with a solid base to improve resilience. Utilising such climate research and knowledge, a State-wide climate change risk assessment can identify the most significant risks based on their nature and severity and provide a starting point for appropriate planning. Informed and robust adaptation planning will enable the implementation of effective adaptation measures. Focused sectoral adaptation planning, in conjunction with decarbonisation planning, can provide an integrated and holistic approach towards building resilience into sectors and communities.

²⁹ *Building resilience to natural disasters in our states and territories (November 2017), Australian Business Roundtable for Disaster Resilience & Safer Communities, Australia*

³⁰ *Climate Research Grants Program (2020) Department of Premier and Cabinet, Tasmania*

Review recommendation #7

Decarbonisation & Resilience Plans

Ensure climate change mitigation and adaptation is addressed and acted upon in a manner that is consistent with the opportunities and challenges climate change presents to any specific system, sector, or community in Tasmania. Drive emissions reduction efforts across each sector at a pace consistent with that sector's capacity to transition. Build resilience into economic sectors and communities to develop a climate and carbon conscious economy and society.

What do you consider to be the main roles for State Government in supporting Tasmanian communities, infrastructure, economic activities and environments in becoming more resilient to projected climate change?

Significant work is occurring in building community/infrastructure resilience to natural hazards, however there is still much work to do. More funding needs to be invested in hazard mitigation. Investment in mitigation makes financial sense as it saves significant funding in recovery. We note that the Tasmanian Government has relied heavily on Australian Government funding for mitigation activity to date.

The Tasmanian Government has developed a disaster resilience strategy, so work in the climate change should complement and add to this work.

Programs have been established in the bushfire and flood areas to build community resilience to these hazards. These programs have received national recognition and should be linked to and reviewed in the context of community climate resilience activity. There is also an opportunity to draw on the bushfire governance models used for planning and hazard mitigation for other climate hazards, such as coastal erosion and inundation.

Of particular interest to councils, were the following:

- ♦ Coastal hazards response and planning, including a review of Tasmania's State Coastal Policy and development of coastal risk and hazard policies and procedures.
- ♦ Development controls available to local government in high-risk climate impact areas such as coastal, bushfire and flood.
- ♦ Greater resourcing and facilitation for community-based adaptation planning, particularly for vulnerable coastal communities.
- ♦ Facilitation of programs to develop best practice asset management and infrastructure methodologies.
- ♦ Support to extend municipal climate profiles to all Tasmanian councils, including infographics for communicating with non-technical audiences and harmonisation of responses.
- ♦ Technical and community-based reference and working groups for collaborating and sharing information at a Ministerial and Agency level.

Local Government Association Tasmania (LGAT) submission to the independent review



Conclusion and recommendations

8. CONCLUSIONS AND RECOMMENDATIONS

The review team are of the view that Tasmania and the State Government have utilised industry and research expertise to provide a comprehensive understanding of the extent of impacts climate change will have on the State's communities, economy, and natural environments. Similarly, the review team consider that preparation towards decarbonising non-LULUCF sectors has commenced. However, action, planning, and leveraging knowledge to realise improved resilience and emissions cuts are yet to occur at scale.

Actions taken by the State Government such as the statewide rollout of electric vehicle charging infrastructure, energy efficiency audits, a renewably powered grid, planned renewable energy growth, research and development for emissions cuts in the agricultural industry, and the development of a local renewable hydrogen industry have placed Tasmania in a strong position, from which it can accelerate a transition to a low carbon economy.

To drive such a transition, ambitious emissions targets, focused decarbonisation planning, and climate change informed policies and strategies will need to be adopted. This will display leadership consistent to that of climate change leaders globally and in the context of Tasmania's achievement of reaching net zero emissions and pushing forward with further emissions cuts.

Regional and localised climate data and information can be consolidated to develop a high-level, spatially explicit assessment of climate-related risks Tasmania is facing, considering assets, sectors and communities with contrasting exposure and sensitivity profiles. High priority risks can be appropriately targeted and mitigated. Sectoral climate risk assessments and adaptation planning can commence throughout the State to begin the process of building resilience sufficient to withstand a changing climate.

In undertaking the independent review, the review team have consolidated findings from stakeholder and subject matter research and analysis below:

Review findings

The comprehensive climate-related research undertaken by Tasmania's scientific community of the State's current and future climate, and their associated risks and impacts, provides the State with a solid base to improve resilience. Utilising such climate research and knowledge, a State-wide climate change risk assessment can identify the most significant risks based on their nature and severity and provide a starting point for appropriate planning. Informed and robust adaptation planning will enable the implementation of effective adaptation measures. Focused sectoral adaptation planning, in conjunction with decarbonisation planning, can provide an integrated and holistic approach towards building resilience into sectors and communities.

1. The Act does not contain mechanisms that drive action on climate change mitigation and adaptation specifically, rather it provides a narrative and is set out as a framework to promote and support endeavours without any timeline, benchmark or specificity.
2. Commendable progress has been made to determine Tasmania's future climate and the expected consequences of climate change, developing models and knowledge of this across various areas. A moderate degree of adaptation planning and measures being implemented has occurred.
3. Tasmania is a leader when it comes to renewable energy generation and storage. However, there has been little progress in leveraging the State's renewable energy capacity and developing low emissions products and services at this time. The Tasmanian Renewable Energy Target of 200% renewable energy generation by 2040 and the planned activation of Tasmania's renewable hydrogen industry can catalyse this and lay the foundation for a successful low emissions economy but must be utilised to capitalise on ecologically friendly and sustainable opportunities.

4. All emissions sectors since 1990, excluding LULUCF, have made minor progress towards reducing total cumulative emissions although a gradual decrease in emissions intensity has been achieved.
 - This reflects a lack of emissions reduction initiatives at scale being pursued and implemented across the State.
5. Tasmania's emissions profile and renewable energy generation capacity places the State in an enviable position to become a leader on climate action, both nationally and internationally.
6. Most of Tasmania's climate change responses have been directed towards climate change science and its projected impacts which is commendable and potentially a reflection of Tasmania's current and historical emissions status. Although this has positioned Tasmania well to implement adaptation measures and build climate resilience, this may also have been to the detriment of progress on emissions abatement in some sectors and preparing for and accelerating Tasmania's transition to a low carbon economy.
7. Initial steps towards making progress on climate change mitigation and adaptation have occurred in: electrifying transport (e.g. ChargeSmart, Electric Vehicle Working Group, Smarter Fleets), improving energy efficiency (a diverse number of energy audits and management measures conducted), implementation of adaptation measures (development of climate knowledge and models), building resilience into the agricultural sector (e.g. Enterprise Suitability mapping, irrigation schemes, Skills Tasmania training).
8. In the Tasmanian community and economic sectors, there is a perceived lack of ambition and intention on climate action and a reliance on carbon sequestration in the landscape and forestry stocks. Strong leadership on climate change issues and responses is evident from these groups.
9. Collaboration and partnership by the State Government with all levels of Tasmanian government and economic sectors is critical to ensure effective, appropriate, and just action is taken on climate change mitigation and adaptation.
10. There is appetite in Tasmanian Government agencies and key economic sectors for more ambitious emissions reduction targets to be pursued that reflect the best available science (i.e. more ambitious than net zero emissions by 2050 and limiting global warming to 1.5°C above pre-industrial levels).
11. The agriculture sector is complex with regard to emissions abatement. Significant planned growth in the agriculture industry will likely lead to associated emissions growth without intervention or alternative methods being adopted. Further research and development, awareness, and training on low emissions solutions in this sector are required.
12. The Tasmanian Government's current policy commitment of net zero emissions by 2050 aligns with many commitments abroad and with similar jurisdictions. Contextually speaking however, considering Tasmania's existing emissions profile, a 2050 commitment can be seen as not bearing the same level of ambition by other jurisdictions who will require significant investment and intervention to achieve net zero emissions in that same period.
13. Particularly in the last two years, there has been a clear surge of increased ambition towards climate action and emissions reduction pledges in both the public and private sectors, but most notably by the world's leading economies.
14. Climate-related risk management frameworks and consideration of climate change mitigation and adaptation has gained momentum in both the public and private sectors for decision-making, planning, and strategy.

Based on the findings of the independent review, the review team consider that the following legislative measures should be implemented into the Act:

Review recommendation #1

Net zero emissions from 2030

Amend the Act to legislate net emissions (gross emissions less any carbon removals) are not to exceed net zero beyond 31 December 2030.

Rationale

Tasmania has achieved net zero emissions for several years and is projected to maintain this status until 2030 (based on the TEPR business as usual medium emissions reference case pathway). As such the setting of a distant target beyond this time is not likely to drive emissions abatement at-scale and keep up with the global low carbon transition. Legislating this target signals the intent and scale to which the Government will act and more closely aligns to climate action taking place, or signalled, by comparable and leading jurisdictions on emissions abatement. Such a target displays leadership nationally, and internationally, reflecting leading action on climate change that will reinforce the State's clean and green branding. This target aligns with climate science and limiting global warming to 1.5°C above pre industrial levels through continued emissions cuts to avoid dangerous climate change.

This target considers the TEPR's medium emissions reference case emissions pathway (business as usual – current policy settings only); and the 'best-fit' emissions reduction pathway, which includes the implementation of emissions reduction opportunities across all sectors of the economy. It also acknowledges uncertainty and transitional impacts of solutions and technologies not yet mature or demonstrated at scale. Sectoral decarbonisation planning through the Decarbonisation & Resilience Plans are expected to develop greater certainty and understanding of transitional impacts from which viable pathways can be developed to implement further emissions reductions.

Key stakeholder feedback

Stakeholders engaged in the review supported setting ambitious and realistic emission reduction targets and viewed the net zero emissions by 2050 commitment as conservative. Some stakeholders engaged during the community-based workshops suggested Tasmania should pursue a zero-emissions target (refer to section 5.3 for the review's rationale against setting net-negative targets at this time).

Review recommendation #2

Consolidate the Objects of the Act

Amend the Act to consolidate the existing objects of the Act around five themes:

- ♦ Targets and reporting;
- ♦ Actions to reduce Green House Gas emissions;
- ♦ Adaptation to projected climate change;
- ♦ Complementarity with national and international climate change responses; and
- ♦ Engagement and partnership.

Rationale

The objects of the Act are currently set out in a manner that is not explicit and distinct enough to effectively guide appropriate climate action. The objects overlap and are worded such that they cover multiple themes, with certain themes addressed in multiple objects.

Restructuring and simplifying the objects of the Act around key themes, provides clarity on its purpose, a clear direction and narrative for climate action in the State, and a robust framework for evaluating such climate action and the effectiveness of the Act.

Key stakeholder feedback

Stakeholders commonly supported an Act that provides clear direction, supports a coordinated approach, and ensures accountability.

Review recommendation #3

A set of principles to guide climate action

Amend the Act to include a set of principles, such as the following:

Table 14. Recommended set of principles

Sustainable development and social equity	Climate action, and any government action that has a direct impact on climate change mitigation or adaptation efforts, should provide benefit to both current and future generations of Tasmanians. In particular, consideration of vulnerable communities and First Nations practices should occur.
Transparency and reporting	Reporting on climate action should be timely, transparent and accurate and made available to the public.
Science-based approach	Climate action taken should be scientifically substantiated and align with limiting global warming to no more than 1.5°C above pre-industrial levels.
Integrated decision-making	Decision-making on climate action is integrated, addressing environmental, social and economic considerations over short-, medium-, and long-term timeframes.
Risk management	Climate action adequately reflects assessed risks, and risks of action and inaction are addressed.
Community Engagement	Proposed climate action takes into account the views of interested and relevant members of the community through appropriate engagement.
Complementarity	Climate action should reflect an appropriate level of cohesion with relevant State, national, and international climate change developments.

Rationale

The objects do not inform decision-makers in considering climate change in a meaningful way. The principles further guide climate action to the themes of the Act (recommendation #2), to deliver appropriately and effectively against the target and objectives of the Act. The principles establish a set of expectations for relevant Government action on climate change, including the development of mitigation and adaptation strategies and relevant policies.

Key stakeholder feedback

Respondents to the review's Discussion Paper listed many themes and principles that should guide government action on climate change. These included; honesty, transparency, accountability, selflessness, integrated and informed approaches, community engagement, long-term perspectives, shared responsibilities, sustainable development, equity, and approaches that are science- and risk-based.

Review recommendation #4

Relevant policies and strategies informed by climate change

Amend the Act to include the consideration of climate change in the development of relevant government policies, planning, and strategies.

Rationale

The formation of Government and agency policies, strategies and plans that have implications on the State's emissions profile, influence exposure to climate risk, and affect its adaptive capacity to climate change should incorporate appropriate consideration of climate change. This should be through consideration of the proposed principles of the Act and the objectives and targets of relevant Decarbonisation & Resilience Plans (recommendation #7). Government policymaking and planning should seek to support the achievement of such objectives and targets. This ensures broader government action does not inhibit progress on the target and objectives of the Act.

Key stakeholder feedback:

Stakeholders comprehensively expressed the need for government to consider climate change in all government decision-making. The review team consider that it is not feasible, or conducive to effective climate action, to consider climate change in all government decision-making but rather in the development of policies, strategies, or planning that hold relevance, or may give effect, to climate change mitigation and adaptation.

Review recommendation #5

Make the Climate Action Plan a legislative requirement

Amend the Act to make the development of a Climate Action Plan (CAP) a statutory requirement. The CAP should be developed on a 5-yearly basis and take into account:

- ♦ The legislated emissions target (recommendation #1).
- ♦ Key objectives and targets of the latest available sectoral Decarbonisation & Resilience Plans (recommendation #7).
- ♦ The revised objects, and principles proposed for the Act (recommendations #2 and #3).
- ♦ Latest available State-wide climate change risk assessment (recommendation #6) and appropriate responses to significant risks identified.

Rationale

Provides a consolidated State Government approach to climate action, providing visibility and confidence to Tasmanian communities, businesses, and industries. Legislating the CAP provides assurance to Tasmanian businesses, local government, and the community that the government is acting in earnest on climate change.

The review team consider that development of the CAP may follow a similar process as to Climate Action 21 and the next climate change action plan currently being developed by the Government; namely adopting an adaptive management framework and engagement with stakeholders. However, this process should incorporate the considerations listed above.

Key stakeholder feedback

A common theme heard during stakeholder engagement included the need for continuity and transparency of the government's approach to responding to climate change, one stakeholder stating that climate change risks and mitigation and adaption strategies are dynamic and require consistent policy responses from government over extended time frames.

Review recommendation #6

State-wide climate change risk assessment

Amend the Act to require a 5-yearly State-wide climate change risk assessment to be completed. The risk assessment process should incorporate the following:

- ♦ The first risk assessment to be completed prior to July 2022 and completed every five years following that date.
- ♦ The latest and best available science.
- ♦ Consideration of economic, social, and environmental implications of climate change and assess the associated risks to Tasmanian communities, natural environments and ecosystems, and economic activity.

Rationale

Consolidate climate research and knowledge to identify exposures significant to Tasmania because of climate change. Such a risk assessment provides the State with a clear direction it must take to ensure it is resilient and can thrive. Significant risks can be responded to through the Government's Climate Action Plan (recommendation #5). The assessment can also inform focused adaptation planning such as proposed in recommendation #7. The review considers the approach set out in New Zealand's Climate Change Response (Zero Carbon) Amendment Act 2019 to be appropriate to adopt for conducting a State-wide risk assessment in Tasmania.

Particularly aligned to conducting a State-wide risk assessment is recommendation 51 provided in the recent PESRAC report; 'The State Government should develop a structured process for identifying high-consequence risks to which the community is exposed and develop and implement mitigating strategies for these risks'.

Key stakeholder feedback

"Meaningful, tangible information about the main risks associated with projected climate change is critical to preparing government, communities, businesses and industries for the future".

Review recommendation #7

Decarbonisation & Resilience Plans

Amend the Act to include the completion of sector-based Decarbonisation & Resilience Plans (Plans). In preparing these Plans, we recommend that the following are considered:

- ♦ Relevant ministers are responsible for the development of the Plans for the following key sectors: State Government operations, energy, transport, agriculture, and industrial. Plans may be developed for sectors or systems beyond these on a voluntary basis.
- ♦ Plans should be developed in partnership with representatives from each sector, with representation from interested and relevant members of the community, business/industry organisations and State and/or local government.
- ♦ Plans should be developed in accordance with the proposed principles of the Act.
- ♦ Plans for key sectors are to be completed before the year 2026 and updated on a five-yearly basis following the release of the first Plans³¹.
- ♦ The Plans are to include rolling five- and 10-year emissions targets and a 2050 emissions target for the sector.
- ♦ Plans should include implementation planning and/or identifying research and development projects for emissions reduction opportunities (and their expected reduction potential).
- ♦ A climate change risk assessment and adaptation plan is included in each Plan that demonstrates the planning of, or outcomes for, improved resilience for each sector.
- ♦ The Plans are presented to Parliament and made public.
- ♦ Annual reporting on policies, initiatives, and programs that are developed to meet the objectives and targets of the Plans is carried out. Five-yearly review and reporting of the outcomes of each Plan should be completed.

Rationale

The Plans set out a clear pathway and adaptive planning approach for decarbonising Tasmania's key emission sources, whilst considering climate-related risks and improving resilience through partnering with key stakeholders and engaging impacted members of the community.

This ensures climate change mitigation and adaptation is addressed and acted upon in a manner that is consistent with the opportunities and challenges climate change presents to any specific system, sector, or region in Tasmania. This approach drives emissions reduction efforts at a pace consistent with a sector's capacity to transition and builds resilience into economic sectors and communities to develop a climate and carbon conscious economy and society.

Key stakeholder feedback

Climate change responses are most effective when they are developed in partnership with the affected parties.

³¹ The review suggests sectors with readily available and demonstrated low emissions technologies and solutions should be completed as a priority and well before 2026.



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APPENDIX A. OBJECTS OF THE ACT

The objects of Climate Change (State Action) Act 2008 are –

- (a) to help Tasmania respond to the challenges of climate change by addressing issues associated with that phenomenon and, in particular, by providing for the setting of a target for the reduction of greenhouse gas emissions in the State as part of the national and international response to climate change; and
- (b) to promote a commitment to action on climate change issues in Tasmania by providing for the development of:
 - a. interim State targets for the reduction of greenhouse gas emissions in the State; and
 - b. suitable targets and interim targets, having the same aim, for specific sectors of the State's economy; and
- (c) to help Tasmania take advantage of the new social, economic and environmental opportunities that climate change will present; and
- (d) to provide for reporting and Parliamentary oversight of progress being made towards achieving the State's 2050 target and other targets; and
- (e) to promote energy efficiency and conservation; and
- (f) to promote research and development in the development and use of technology for reducing or limiting greenhouse gas emissions or for dealing with and adapting to the expected consequences of climate change, including technology for removing greenhouse gases from the atmosphere; and
- (g) to promote and facilitate business and community consultation and early action on climate change issues; and
- (h) to identify, promote and support measures to help Tasmania deal with and adapt to the expected consequences of climate change; and
- (i) to promote a Tasmanian response to climate change issues that is as far as practicable consistent with national and international schemes addressing those issues, including any schemes for emissions trading and emissions reporting; and
- (j) to enhance Tasmania's willingness and capacity to contribute and respond, constructively and expeditiously, to national and international developments in climate change issues

APPENDIX B. TERMS OF REFERENCE FOR THE INDEPENDENT REVIEW

Pursuant to subsection 18(2) of the Act, the review will address:

1. the extent to which the objects of the Act are being achieved;
2. the extent to which additional legislative measures, if any, are considered necessary to achieve the targets set by the Act within the periods contemplated by the Act, including the introduction of performance standards or other mandatory requirements; and
3. such other matters as the Minister may consider relevant to the review of the Act.

Pursuant to subsection 18(2)(c) of the Act, other relevant matters to be addressed by the review include to:

4. examine whether the Act provides a sound foundation for action (by the Tasmanian Government, business and community) on both climate change mitigation and adaptation;
5. examine whether the Act provides a sound framework for consideration of climate-related risks and opportunities relevant to the Tasmanian Government, businesses and community;
6. consult on the options to revise Tasmania's emissions reduction target based on the outcomes of Tasmania's Emissions Pathway Review. As outlined in the Objects of the Act (section 4 of the Act) this is to include consideration of interim targets and sectoral targets;
7. take into account the international, national and State climate change policy context (as outlined in the Context) including:

- ♦ recent climate change developments:
 - climate-related financial and liability risks to government;
 - Tasmania's latest greenhouse gas figures (the 2018 Australian Government's STGGI);
 - the global transition to a low carbon economy; and
 - the impact of COVID-19 on climate change action in Tasmania.

- ♦ key Australian Government strategies including:

- Australian Government National Strategy for Electric Vehicles;
- Australia's Australian Government's National Strategy for Electric Vehicles; and
- National Hydrogen Strategy;

- ♦ key Tasmanian Government strategies including:

- Tasmanian Renewable Energy Action Plan and Tasmanian Renewable Energy Target;
- Tasmania's Population Growth Strategy;
- Tasmanian Infrastructure Project Pipeline; and
- Agrivision 2050 and White Paper: Growing Tasmanian Agriculture Research, Development and Extension for 2050.

- ♦ the 2016 review of the Act; and
- ♦ the Tasmanian Government's Climate Action 21 and development of the next action plan post-2021.

Subsection 18(3) of the Act stipulates that reasonable steps should be taken to carry out the review of the Act in consultation with relevant business, scientific, environment and community bodies. It is expected that, as part of the review of the Act, reasonable time and processes are built in to ensure broad input.

APPENDIX C. QUESTIONS FOR PUBLIC CONSULTATION – DISCUSSION PAPER

1. To what extent should climate change considerations (e.g. greenhouse gas emissions, climate change impacts, climate resilience) influence policies and decisions by State government agencies and government business enterprises?
2. How important is it to you that the Tasmanian government systematically assess and disclose the main risks associated with projected climate change?
3. How might the Act provide you with confidence that successive State governments will continue to act to contain/reduce Tasmania's emissions and build climate resilience?
4. How might the Act drive further decarbonisation of the Tasmanian economy (e.g. via setting/legislating targets for sectors of the economy, potentially including interim targets)?
5. If the Act were to espouse principles that would guide consideration of climate change by government, its agencies and business enterprises, what might they be?
6. Within the context of global agreements to action to reduce greenhouse gas emissions, what do you consider to be the main roles of the Tasmanian government and how effective do you believe the government has been?
7. What would Tasmania be like in 10 years' time if it was a national or international leader in climate change responses?
8. What would you consider to be an appropriate long-term greenhouse gas emissions or emissions reduction target for Tasmania (in terms of date and level of emissions or emissions reduction)?
9. What (if any) value do you think targets for specific sectors of the economy would offer, including for the sector itself? If you agree with the concept of sectoral emissions targets, which sectors should have emissions targets? Why?
10. What key factors should influence Government decisions to set State, sectoral and/or interim targets?
11. What do you consider to be the main risks and opportunities for Tasmania as it continues to transition towards a low/zero carbon economy and society? What risks and opportunities may arise if Tasmania transitions more slowly/more rapidly?
12. What do you consider to be the main roles for State government in supporting Tasmania's low/zero carbon transition?
13. What do you consider to be the main roles for State government in supporting Tasmanian communities, infrastructure, economic activities and environments in becoming more resilient to projected climate change?

APPENDIX D. SUBMISSIONS TO THE DISCUSSION PAPER

A total of 54 (including 3 anonymous) submissions were received on the Discussion Paper, which have been considered in preparing this report. Submissions made in response to this review's Discussion Paper were received from:

- ♦ Wine Tasmania
- ♦ Independent Member for Clark, Andrew Wilkie MP
- ♦ Veterinarians for Climate Action
- ♦ Environmental Defenders Office
- ♦ Tasmanian Minerals, Manufacturing and Energy Council
- ♦ Launceston Chamber of Commerce
- ♦ Cement, Concrete & Aggregates Australia
- ♦ Clean Energy Council
- ♦ Cement Industry Federation
- ♦ Local Government Association Tasmania
- ♦ Hydro Tasmania
- ♦ Private Forests Tasmania
- ♦ The Good Car Co
- ♦ TasNetworks
- ♦ Natural Impact Group
- ♦ Australian Energy Council
- ♦ Commissioner for Children and Young People
- ♦ Margaret Taylor, Alan Taylor, Gil Pixley, Peter Jones
- ♦ Vanessa Ward
- ♦ Dr Meghan Bond
- ♦ Michelle Foale and Jonah Gouldthorpe
- ♦ Helen Peters
- ♦ Dr Helen Hutchinson
- ♦ Doctors for the Environment
- ♦ UTAS Student Environment and Animal Law Society
- ♦ University of Tasmania
- ♦ Tasmanian Way
- ♦ ClimateWorks
- ♦ Australia Institute Tasmania
- ♦ Australian Medical Association Tasmania
- ♦ Tasmanian Farmers and Graziers Association
- ♦ Tasmanian Council of Social Service
- ♦ Southern Tasmanian Councils Authority
- ♦ City of Hobart
- ♦ Climate Action North West Tasmania
- ♦ Break O'Day Council
- ♦ Australian Red Cross
- ♦ Regenerative Agriculture Network Tasmania
- ♦ Brighton Council
- ♦ Roy Ramage
- ♦ Catherine Nicholson
- ♦ Robert Cassidy
- ♦ Ann Hamilton
- ♦ Estelle Ross
- ♦ Rosemary Farrell
- ♦ Pen and Ben Clark
- ♦ Duncan Mills
- ♦ WWF
- ♦ Wilderness Society
- ♦ Farmers for Climate Action



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