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To whom it may concern

RE: Response to Jacob's Discussion Paper on Tasmania's Climate Change Act

Thank you for the opportunity to respond to this Discussion Paper.

WWF-Australia is part of the WWF International Network, one of the world's largest conservation organisations. WWF's global mission is to 'stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature'. WWF-Australia as an organisation has a 40-year history of working on wildlife conservation in Australia with scientists, communities, farmers, business and government. WWF-Australia has approximately one million financial and non-financial supporters.

WWF-Australia is pleased to offer its expertise in clean energy solutions and biodiversity conservation to help the Tasmanian Government position the state on a global scale, particularly in relation to climate change. Specifically, this submission builds on WWF-Australia's submission to the Tasmanian Government on its Renewable Energy Action Plan, WWF-Australia's 'Renewable Energy Powerhouse' policy paper, and 'Energising Australia with Hydrogen' policy paper.

This submission reflects WWF-Australia's views that:

1. There is an urgent and essential need to adapt to the impacts of climate change that are being felt across many ecosystems and throughout society.
2. It is in the best interest of state and national governments to unlock Australia's economic opportunities associated with our world-leading renewable resources, mitigating the worst impacts of climate change and to ensure a foundation on which to grow greater action and to decarbonise other sectors – specifically transport and industry.
3. Net Zero Emissions targets by 2040 (for Tasmania), and five-year climate budgets are critical to driving changes.
4. Governments need to undertake climate risk and opportunity assessments and plan accordingly for each sector of the economy.
5. Legislation, such as the Tasmanian Climate Change Act, are critical in setting the framework for action and establishing a guide to ensure accountability.

Overview

We believe Tasmania has the opportunity through this review to position itself as a climate change leader, by setting a target to achieve and maintain net zero emissions well before 2050.

WWF-Australia commends the Tasmanian Government for significant achievements – getting to 100% renewable self-sufficiency, and legislating a world-leading 200% renewables target.

The opportunities presented by Tasmania's abundant and high-quality renewable resources can be transformed into jobs, new industries, new export opportunities, and economic growth, ensuring that people and communities across the state benefit from decisions taken now.

Taking the opportunity to update and refine the Climate Change Act, set an ambitious long-term target and interim targets, supported by sectoral plans, can further drive outcomes for Tasmania's long term social, environmental and economic benefit.

Our response recommends:

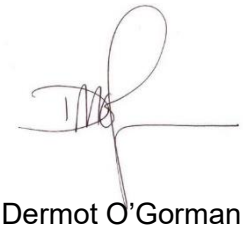
- Bringing forward the timeframe for Tasmania to achieve net-zero by 2040.
- Implement five-yearly interim targets and develop sector plans to underpin the interim targets.
- Driving new or expanded actions and programs in key sectors, particularly manufacturing and transport, to mitigate climate change, reduce emissions, build resilience and/or leverage from a renewable-powered economy.

Our submission responds to the key stakeholder questions regarding:

- The Climate Change Act & State Government response to climate change and long-term targets
- Global Climate Action & Tasmania
- Low Carbon Economy & Society
- Climate Resilience & Adaptation

WWF-Australia would be happy to provide further detail or discuss any of the matters raised. To do so please contact WWF-Australia's Energy Transition Manager Nicky Ison.

Yours sincerely,



Dermot O'Gorman
Chief Executive Officer
WWF-Australia

1. Climate Change Act, State Government response to climate change and long-term targets

Discussion Paper Question: 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?

Tasmania is highly exposed to potential climate impacts in terms of extreme weather, especially more intense bushfires and droughts.

Ensuring the natural environment is spared the worst impacts of climate change is important to the key economic sectors and for social and environmental benefit. In a state like Tasmania, nature-based tourism, agriculture, and energy are key areas of economic activity and employment. As such the influence of climate change on decision-making is critical to drive towards opportunities that deliver on mitigation and/or resilience outcomes.

Analysis by the Investor Group on Climate Change found that an orderly transition to a net zero emissions economy– at the national level – would unlock an investment boom of $63 Billion over the next five years.[1] Tasmania could leverage from this boom to its great advantage.

Addressing climate change through legislated targets and supporting actions play a key role in creating stimulus for greater investment in clean energy solutions, and in domestic markets for products and services that are powered by clean energy. Ensuring that the legislation is also underpinned by complementary targets and initiatives that have an appropriate and proportionate influence on decision-making is vital to ensuring the objectives of the Act are maximized.

Practically, addressing climate change should be a key influence on policies and decisions by State Government agencies and government business enterprises in terms of emissions reduction, climate change impacts, and climate resilience.

We note, also, that there are risks to the State from not acting on climate change. Recent analysis – at a national level – estimated that not acting could cost Australia $2.7 Trillion by 2030.[2] This includes lost property values, labour and agricultural productivity losses, losses in biodiversity and human health and of course the impacts of increasingly frequent extreme weather events. We also note that, the catastrophic bushfires over the summer of 2019-20 were "unequivocally…made worse by climate change."[3] Unfortunately, what we are already experiencing is not the new normal, but rather an escalating series of changes. To limit global heating to no more than 2°C of warming and as close to 1.5°C as possible requires urgent and comprehensive action across all aspects of government, the community and private sector. Indeed, climate action requires a whole of government approach.

Discussion Paper Questions:

- **How important is it to you that the Tasmanian government systematically assess and disclose the main risks associated with projected climate change?**
- **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?**
- **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)?**

It is vital that the Government periodically assess and disclose the key risks associated with climate change. While this five-yearly review of the Act provides a periodic opportunity to

[1] https://igcc.org.au/wp-content/uploads/2020/10/121020_IGCC-Report_Net-Zero-Investment-Opportunity.pdf
[2] https://sustainable.unimelb.edu.au/news/what-are-the-full-economic-costs-to-australia-from-climate-change
[3] https://naturaldisaster.royalcommission.gov.au/

undertake such an assessment, it is not – by itself – sufficient to inform ongoing and regular policy and regulatory decisions and directions.

Discussion Paper Questions: 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?

According to the latest science globally we are tracking to the worst case scenarios that models have set out, as such there is a need to reach net-zero emissions as quickly as possible.[4] The scientific community has consistently warned that the accumulation of greenhouse gases in the atmosphere is the main cause of observed and projected increases in global mean surface temperature. In response to the science, many nations have committed to net-zero by 2050, or earlier. Indeed, many countries enshrined net-zero commitments into law.[5]

In Australia, all states and territories have committed to achieving net zero by 2050 or earlier. Victoria has a legislated target to achieve net zero emissions by 2050 and has 5-yearly interim targets. South Australia has a 50% of net zero by 2030 and 100% net zero by 2050 target. The ACT has a net zero target by 2045 and has set interim targets for 2025, 2030 and 2040.

Along with South Australia, **Tasmania has a legislated target of 60% below 1990 emissions levels**. Tasmania has also committed to **net zero by 2050**, but we consider **this is not ambitious enough.**

Alongside the Review of the Act, the State Government commissioned an analysis to assess and inform the approach to achieve and the target of maintain net zero by 2050. This assessment, in combination with the present Review, will help the Tasmanian Government to set a more ambitious emissions reduction target for Tasmania aligned with the goals of the Paris Agreement. The assessment set out key benefits and risks from moving to a net zero emissions target for 2035, 2040, 2045 or retaining the current 2050 timeframe. [6]

Setting such a target requires sound assessment of the capacity and capability in the State, support and buy-in of the community and businesses.

WWF-Australia considers that Tasmania is in a strong position and should strive to decrease its domestic emissions and **achieve close to zero status as soon as possible**. Globally, we are seeing leading jurisdictions such as Germany bring forward their net zero by 2050 commitments to 2045. In the global context, as well as nationally, Tasmania has several natural advantages that would enable it to achieve net zero and even close to zero emissions status well before 2050 and likely by 2040 or before. We support Tasmania setting a 2040 target for net zero as it can move quickly and the analysis has demonstrated significant opportunities to do so.

Interim targets

WWF-Australia considers that – in addition to an earlier net-zero target – interim targets can amplify and strengthen the impact of the Act. Interim targets with five-year carbon budgets can be used highly effectively to drive required and progressive changes to transition that net-zero target and ensure economic, environmental, and social benefits are most effectively captured and embedded. Interim targets also ensure that ambition and innovation can be (more regularly) guided by the best available and current science. Indeed, the science clearly states what we do in the next decade will be 'critical' to whether we can keep the worse effects of climate change averted.[7] Setting regular 5 yearly budgets will help to keep Tasmania on track, to ensure we are being ambitious enough given the urgency of the climate emergency we are facing. Having a

[4] https://wwf.panda.org/discover/our_focus/climate_and_energy_practice/ipcc152/
[5] http://www.dpac.tas.gov.au/__data/assets/pdf_file/0011/573095/net_zero_emissions_background_Paper_-_Final.pdf
6 Point Advisory – Net Zero emissions pathway options for Tasmania (2021).
http://www.dpac.tas.gov.au/__data/assets/pdf_file/0011/573095/net_zero_emissions_background_Paper_-_Final.pdf
[7] https://www.ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments/

regular report card and setting short term future targets will help to keep current and future governments accountable to all stakeholders.

Discussion Paper Question: 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?

To strengthen the track towards net zero, there is demonstrable value in setting targets and ambition for specific sectors. Sectoral targets can drive policies and programs that both accelerate the adoption of sector relevant zero-emission technologies, reduce emissions and deliver co-benefits relevant to that sector. Such sectoral targets can be (regularly) assessed against progress on mitigating climate change, building resilience to manage remaining risks and on economic indicators.

Continue Tasmania's Renewable Energy Focus

As Tasmania is already pursuing targets in (renewable) energy, there is clearly value in clear ambition and well-directed policies. Indeed, Tasmania is already powered by close to 100% renewable energy from its existing hydro and newer wind energy resources. The state gained global attention for legislating a target of 200% renewable energy by 2040[8].

The implementation of the Tasmania Renewable Energy Action Plan is a critical complement to achieving the objectives of the Climate Change Act.

Recent analysis from The Grattan Institute further reinforces WWF's view that Tasmania is perfectly placed to capitalise on its clean energy advantages. Grattan noted that "Australia can achieve a net-zero carbon emissions electricity system without threatening affordability or reliability of supply." However, they also noted that getting from 90% to 100% zero carbon nationally will involve challenges "especially in the depths of winter in the southern states when electricity demand is high, solar supply is low, and persistent wind droughts are possible."[9]

We recognise the above concerns, but believe that Tasmania has a key advantage in ensuring the last 10% of demand needs can be supported in winter through energy storage and dispatchable hydro. Tasmania is well placed to provide this energy storage and dispatchable capacity to support winter demand, replacing reliance on gas and coal. Increasing the capacity of Tasmania's pumped hydro storage is a key pathway to decarbonising the national energy system and getting to net zero. However, we also note new or expanded hydro solutions need to address and mitigate associated or likely environmental impacts from the plant and any associated transmission infrastructure. In addition, it is vital to ensure clear (and ongoing) social license is given by the community.

By extending the state's focus on emissions reduction targets in transport and low-emissions manufacturing, (see below) Tasmania can further complement its renewable energy powerhouse ambitions. Given the state's economic reliance and reputation for a clean natural environment that supports agriculture and tourism activities, WWF-Australia is also supportive of sectoral targets for these industries.

[8] Draft Tasmanian Renewable Energy Action Plan 2020
[9] Go for net zero: A practical plan for reliable, affordable, low-emissions electricity (grattan.edu.au)

Why sectoral targets for manufacturing and transport?

While significant focus has been placed to date on Tasmania's electricity sector – and we welcome the 200% renewables target for the state in the near-term[10] – we consider that now is the time to extend the sector focus to manufacturing and transport.

Manufacturing and industrial trends

Internationally, energy systems are undergoing a transformation at the scale not seen since the 1800s. Global megatrends towards electrification, decarbonisation and digitisation are combining across the transport, heating and industrial sectors to provide smarter, cleaner, and more efficient and reliable approaches to energy production and use, which will have hugely disruptive impacts on traditional energy systems. Importantly, some of Australia's biggest trading partners, such as Japan and South Korea, Singapore and even Europe, face significant challenges decarbonising their energy sectors, largely because of geography - they have less sunshine or wind (in the cases of Japan, South Korea, parts of Northern Europe), or too little space (as is the case in Singapore). Meanwhile, major global industries such as shipping, steel and chemical production have been forced to rethink their operational models in the face of carbon constraints. These trends combine to present a huge opportunity for Tasmania.

Transport fleet and industrial electrification

Fifty four per cent of Tasmania's 2017-18 energy consumption was from fossil fuels, specifically natural gas and refined products such as petrol, diesel, LNG etc. Today, electrical alternatives such as electric vehicles and industrial heat pumps are much more efficient than petrol vehicles and gas boilers. With most major vehicle manufacturers moving away from producing fossil-fuel powered cars[11], increasing moves towards electric trucks in industry[12], adoption of electric buses[13] and accelerating active transport initiatives[14], there is an opportunity to enable faster adoption of EVs – across all vehicle types – in Tasmania. Electrification helps reduce costs for consumers and industry and will grow markets for Tasmania's renewable energy generators. Complementing EV adoption for transport, there are many opportunities to also improve active transport (walking, cycling) through improved infrastructure and initiatives such as public bike/e-bike/foot-scooter share schemes.

Supporting and encouraging these trends towards electrification and active transport presents strong complementary opportunities for Tasmania in terms of reductions in fuel importation and fuel security risks, increased use of home-grown renewable energy and a more active population.

What could sector targets do?

New sector targets for manufacturing and transport would benefit Tasmania and leverage the significant overlap and mutual interaction with energy and emissions reduction potential. For example, Tasmania could:

- **Reduce demand for energy and lower emissions by** incentives for more efficient processes or alternatives
- **Accelerate the electrification of transport and industry** through (i) increasing support for EV adoption and use that could include further expansion of charging infrastructure, sales targets for EVs, vehicle emissions standards, or other vehicle or road-user incentives and (ii) establishing Australia's first Renewable Energy Industrial Precinct in Bell Bay.

[10] WWF-Australia's submission to draft Tas Renewable Energy Action Plan 2020, https://www.wwf.org.au/ArticleDocuments/843/WWF%20Submission%20-%20draft%20Tasmanian%20Renewable%20Energy%20Action%20Plan_17Sept2020.pdf.aspx?OverrideExpiry=Y

[11] See for example: https://www.racv.com.au/royalauto/moving/news-information/car-brands-going-electric.html

12 https://thedriven.io/2020/09/04/transition-to-electric-trucks-gathers-pace-in-mining-energy-and-logistics/

[13] https://www.sustainable-bus.com/electric-bus/electric-bus-public-transport-main-fleets-projects-around-world/

[14] For example, accelerating: https://www.transport.tas.gov.au/archive/active_transport/walking_and_cycling

- **Growing and supporting the renewable hydrogen industry** through pursuing hydrogen end-uses that cannot easily or affordably be electrified such as zero emissions fuel for shipping (bunker fuels).

Given the above, we consider it is appropriate to:

- update targets for Tasmania with an earlier timeframe set to achieve net-zero.
- implement five-yearly interim targets and develop sector plans to underpin the interim targets
- drive new or expanded actions and programs in key sectors, particularly manufacturing and transport, to mitigate climate change, reduce emissions, build resilience and leverage from a renewable-powered economy.

2. Global Climate Action & Tasmania

Discussion Paper Question: What would Tasmania be like in 10 years' time if it was a national or international leader in climate change responses?

As the world moves to act on climate change and fulfil the promise of the Paris Climate Agreement, those places that have the best renewable resources in the world have a significant opportunity. Tasmania is just one of those places.

If Tasmania adopts ambitious targets to reduce emissions and grows climate-safe products, activities and businesses, it will be a global leader and a powerhouse of our economy and natural capital.

WWF-Australia believes Tasmania is perfectly placed to nurture and embed a culture where all businesses, households, communities see themselves as playing a role in decarbonising their state. By positioning themselves as leaders now, the State government's activities and ambition in decarbonising will put the state in the best position to ensure support by people, businesses and ongoing benefits flow.

Over the next decade, Tasmania has a key role to play in policies, practices, technologies, and models. There are clear opportunities that can become showcases for the state and adapted nationally, and that will resonate globally, including:

- Best practice renewables development in harmony with nature
- The Bell Bay Renewable Energy Industrial Precinct (see #3, below).

Tasmania will also be actively participating in impactful global forums like the Race to Zero, below 2 Degrees and others, spotlighting its climate leadership and inspiring others to follow in its footsteps. As an ww leader, Tasmania is also well-positioned to profile its expertise alongside other island jurisdictions.

Unlocking economic opportunities to become a clean energy powerhouse

Tasmania is well endowed with the resources needed to prosper in a low-carbon world over the next decade. The state has expertise, trust, stable government, and strong existing trade relationships. Importantly, Tasmania has a significant comparative advantage already and is well positioned to meet its own domestic energy needs, establish a renewable energy export industry and leverage the growing opportunities in renewable hydrogen through:

- **Renewable hydrogen.** Renewable electricity used to electrolyse water to create renewable hydrogen can then be converted into a range of derivative commodities such as ammonia and synthetic fuels. Renewable hydrogen has a huge role to play in decarbonising hard-to-decarbonise places and sectors such as shipping and steel. (See below)

- **Direct electricity transfer** via undersea cables. Exporting renewable energy through high-voltage direct current cables supports Tasmania to be a net-energy exporter to the rest of Australia, delivering benefits to other states in terms of reliability and emissions reduction and helping to accelerate the closure of coal power stations.
- **Renewable power products and commodities**. Manufacturing energy-intensive commodities such as green steel, advanced manufacturing, aluminium and more using renewable electricity and then exporting embodied renewable energy in the form of these high-value products.
- **Expertise.** Expertise, legal, financial, business and engineering, particularly in deploying & managing renewable energy systems, including education and training are contributing significantly to local and global activities.

Tasmania can also support activities in other parts of Australia that help to reinforce these opportunities:

- **Components and recycling of components for clean energy technologies.** Australia still produces the minerals essential to clean energy technologies such as lithium, copper and nickel, as well as manufacturing wind turbine towers, blades, inverters and batteries.
- **Software and services.** Our software expertise is helping to support the operation of clean energy systems, enabling demand management, microgrids, and grid integration of renewables. We are exporting such software and services to the world.

3. Low-carbon Economy & Society

Discussion Paper Question: 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?

WWF-Australia believes the biggest risk for Tasmania is missing out on the opportunities that are within their grasp. If Tasmania doesn't move to accelerate its ambition and capture potential opportunities, it risks losing the 'first mover to 100% renewables' status as other jurisdictions move rapidly to catch up.

In the future carbon-constrained world economy, places like Tasmania - which has a high renewable electricity system – has a significant comparative advantage that the state can leverage by encouraging on-shore development and export capacity for renewable-powered hydrogen. In pursuing this direction, renewables will even further underpin the economic competitiveness of Tasmania's manufacturing, resources and agricultural sectors, attracting new businesses and industries to the state economy. This provides opportunities for existing industrial centres such as Bell Bay to become a Renewable Energy Industrial Precinct, shipping renewable hydrogen and zero-carbon commodities such aluminium and alloys to the world.

Zero emissions fuel for the shipping industry

The shipping industry accounts for 2-3% of global carbon emissions. Historically, shipping has been thought of as one of the hardest sectors to decarbonise as it has difficult to identify potential bunkering fuel[15] replacements to crude oil. However, with the International Maritime Organisation setting a 50% carbon reduction target by 2050 and the establishment of the Getting to Zero coalition by the Global Maritime Forum, momentum is growing to find viable zero emissions fuel alternatives.

One of the most promising alternatives identified is renewable hydrogen, most likely in the form of renewable ammonia. Indeed, in 2020 four renewable ammonia deep water shipping

[15] Bunkering fuel is used to power ships.

demonstration projects were announced. Globally the supply of bunkering fuel is a $90billion industry.[16]

Currently, Tasmania and Australia more broadly is a net importer of bunkering fuel. With a targeted approach, Australia could become a net-exporter of zero-emissions bunkering fuel in the next 20 years, creating jobs, new revenue and new demand for renewable energy. Tasmania could lead the way.

As an island state, in an island nation, Tasmania is reliant on shipping for both domestic and international trade. As such, Tasmania has extensive shipping infrastructure and shipping expertise, exemplified by the Global Maritime College. Tasmania should build on this industry advantage and prioritise shipping as a top end-use for a Tasmanian renewable hydrogen industry through the Bell Bay Renewable Energy Industrial Precinct (see below)

Bell Bay Renewable Energy Industrial Precinct

A Renewable Energy Industrial Precinct is a cluster of manufacturers powered by 100% renewable energy. These precincts are either located within Renewable Energy Zones or connected to renewable energy generation through high voltage transmission lines. They also have access to clean heat and renewable hydrogen production and infrastructure such as port, rail and road logistics, water and recycling. A renewable energy industrial precinct can be thought of as an expanded Hydrogen Hub as proposed in the National Hydrogen Strategy.

Already acknowledged as an Industry Precinct, Bell Bay is arguably already Australia's first Renewable Energy Industrial Precinct (REIP), with heavy industry (including aluminium smelting and alloy production) powered by near 100% renewable electricity. Building on existing infrastructure and the Tasmanian Renewable Hydrogen Acton Plan, the next steps to establish Bell Bay as a globally attractive REIP are the development of renewable hydrogen production and associated pipeline, and associated renewable heating and cooling infrastructure.

WWF-Australia believes that the opportunities presented by Tasmania's abundant and high-quality renewable resources can be transformed into jobs, new industries, new export opportunities, and economic growth. Complementing the Climate Change Act, the Tasmanian Renewable Energy Action Plan, the Tasmanian Renewable Hydrogen Action Plan, the Government should develop new sector plans for manufacturing and transport decarabonisation with goals to:

- Providing zero emissions fuel to the Tasmanian and global shipping industry.
- Establishing a Renewable Energy Industrial Precinct in Bell Bay.

Discussion Paper Question: What do you consider to be the main roles for State government in supporting Tasmania's low/zero carbon transition?

There are four key roles for the State Government:

1. To set the right long-term policies and targets that will provide a clear signal for commercial businesses, industries and investors.
2. To support Tasmanian communities and businesses to play a role in the decarbonisation of Tasmania in ways that integrate into the Tasmanian culture and unique natural environment.
3. To support state-owned energy entities (Hydro Tasmania, TasNetworks) to leverage and expand opportunities for renewable energy growth.

[16] The global market value of marine fuel has been estimated at US$90.4B based on the consumption of 3.38 mb/d of un-scrubbed high Sulphur fuel oil and 0.87 mb/d of marine gas oil in 2018 at prices of US$421 and US$458/t respectively

4. To use public sectors levers such as government procurement, planning and regulation, communications and marketing, to implement the vision and supportive targets.

4. Climate Resilience & Adaptation

Discussion Paper Question: 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?

WWF-Australia believes it is imperative that governments respond to the urgent and essential need to adapt to the impacts of climate change that is already locked into the system. The 2019-20 bushfires revealed Australia's true vulnerability to the looming climate crisis. The existing network for emergency wildlife response was insufficient to respond to the scale of the 2019-20 crisis. The devastating loss of life, disruption across communities and property destruction as well as the displacement or death of nearly 3 billion mammals, reptiles, birds and frogs during the fires, has scarred our country. Remaining refuge habitat is also under continuing pressure from clearing and degradation.[17] Environmental scientists harbor deep concerns that these fires may have triggered extinction events for a range of nationally threatened flora and fauna. Scientists warn that fires will continue to increase in frequency and intensity as our planet warms.[18] This knowledge, along with the recognition that Australia is already facing a species extinction crisis and millions of hectares of habitat have been destroyed, combined with other impacts such as droughts, floods, sea-level rise, and erosion, makes interventions that protect what remains more critical than ever before.

Given how serious the situation is, WWF-Australia strongly supports state government action to protect habitats – on land and sea. Actions that can be implemented include

- strengthening recovery capabilities and building resilience into disaster and emergency response approaches.
- providing robust data and reducing the risk of natural disaster risk, and increasing natural disaster resilience.
- guiding the process of managed adaptation in partnership with local government, businesses and communities.

[17] The University of Sydney. *A statement about the 480 million animals killed in NSW bushfires since September*. Published 3 January 2020. Available for viewing at https://www.sydney.edu.au/news-opinion/news/2020/01/03/a-statement-about-the-480-million-animals-killed-in-nsw-bushfire.html
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[18] Jolly, W., Cochrane, M., Freeborn, P. *et al*. Climate-induced variations in global wildfire danger from 1979 to 2013. *Nat Commun,* 6, 7537 (2015). https://doi.org/10.1038/ncomms8537