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I am making this submission as
Other

Submission type
I am submitting on behalf of my organisation

Organisation making the submission (if applicable)
Veterinarians for Climate Action

Your position in the organisation (if applicable)
Founding Board Member and Public Officer

Consent to make submission public
I give my consent for this submission to be made public

Share your experience or tell your story

Your story
We write as Veterinarians for Climate Action (vfca.org.au). VfCA is a national not-for-profit organisation of veterinary professionals working toward a future in which the welfare of all animals, and the people who rely on them, is not threatened by anthropogenic climate change. Veterinarians have a duty to use their scientific knowledge and skills for the protection of animal health and welfare, the prevention of animal suffering, and the promotion of public (human) health. In this context, we are duty-bound to work toward mitigation of anthropogenic climate change, if for no other reason than that it impacts directly on our animal patients.

As we will discuss below, climate change is an enormous threat to animal health and welfare, as well as human health (even now), and a massive cause of animal suffering; and in the instance of the 2019-2020 summer, this threat was realised in the form of extreme bush fires.

In this Submission, we write in response to the Terms of Reference for the NSW Independent Bushfire Inquiry, specifically in response to:
(1) The causes of, and factors contributing to, the frequency, intensity, timing and location of, bushfires in NSW in the 2019-20 bushfire season, including consideration of any role of weather, drought, climate change, fuel loads and human activity.
(4) Any other matters that the inquiry deems appropriate in relation to bushfires.
(6) Land use planning and management and building standards, including appropriate clearing and other hazard reduction, zoning, and any appropriate use of indigenous practices.
(7) Appropriate action to adapt to future bushfire risks to communities and ecosystems.

Australia has always experienced bushfires; and indeed cyclic, seasonal fires can be considered part of the natural process of renewal in the Australian bush. However it is well understood that the extreme severity of the 2019-2020 bushfire season in Australia was genuinely unprecedented and represents a phenomenon separate to the cyclic seasonal bushfires of Australia's natural history. This follows a pattern of increasingly severe bushfire activity of recent years and decades, compared to the more distant past.

The Commission is well aware that the impacts on people, communities and infrastructure were far more severe than that of the typical historical Australian bushfires. There are several reasons for this, including the fact that residential communities are more widely and deeply distributed into bushfire-prone areas, and the fact that fires occurred at peak holiday time and affected some communities that rely economically on the holiday season. However the greatest reason for the exceptionally severe impact was simply the size and severity of the fires themselves, and we will discuss anthropogenic climate change as a primary driver, below.

As veterinarians, we are naturally concerned about our fellow humans, communities, and our own families; but we have a special duty of care for animals, both domestic and wild. The 2019-2020 Australian bushfire season is probably unapparelled in human history in terms of the scale of animal deaths caused by a single event or cluster of events; and this impact is certainly relevant to this Commission.

In the Black Saturday bushfires of 2009, more than 1,000,000 animals were killed, including nearly 12,000 helpless livestock. Terrible as these numbers are, they have been dwarfed by the sheer scale of the 2019-2020 Australian bushfire event, in which more than 1,000,000,000 domestic and wild animals (not including invertebrate animals) were killed. This number is almost incomprehensible; however it has been carefully fact-checked and found to be valid. As well as livestock such as sheep and cattle, it includes huge numbers of "iconic" wild animals such as koalas, as well as smaller or less well-known animals such as echidnas, wombats, platypus, antechinus, and many reptiles and birds.

As an example, the fire in the area around Lake Innes in northern NSW destroyed more than 3500 hectares including a significant habitat for breeding koalas. The Port Macquarie Koala hospital president, Sue Ashton, described it as a "tragedy" and told the Guardian that "the beauty of this particular population is that it's so genetically diverse that it's of national significance." At a national level, the Shadow Minister for the Environment and Water Terri Butler reported that a growing number of badly injured or displaced animals, like koalas and sugar-gliders were being tended in local wildlife hospitals, putting them under strain as they struggled to cope.

We submit moreover, that it is important to consider not only the numeric magnitude of these losses, but the animal welfare aspects of these deaths. We ask the Commission to take a moment to contemplate the fear and pain in which these animals died. It is also important to remember the many animals that did not die and are not included in this massive death toll; but were injured by smoke inhalation, burns, and physical factors such as unstable footing or falling tree limbs, and the pain and distress they experienced as well. No animal in the (massive) area of the fires could have been unaffected - even those animals that escaped without injury certainly experienced fear and stress. In addition, many more animals that did not die in the immediate event suffered later as a result of habitat loss and resultant stress, exposure, predation, and / or starvation.

In addition to the impact on countless individual animals, the massive geographic area involved in these bushfires has resulted in pressure on entire species, such as the Kangaroo Island dunnart and glossy black cockatoo, and local populations of already-stressed species such as koalas.

It seems obvious but is worth stating explicitly that, just as for the impact on people, the greatest reason for the exceptionally severe impact of this event on animals was the extreme size and severity of the fires. Below, we will discuss how anthropogenic climate change was a primary driver for this.

Terms of Reference (optional)

The Inquiry welcomes submissions that address the particular matters identified in its Terms of Reference.

1.1 Causes and contributing factors
It is well documented that climate change is occurring now and has already led to an increased average global temperature of more than 1oC. However, this warming is not evenly distributed, either geographically or over time, and Australia is already experiencing more frequent heatwaves, droughts, and disruption of traditional annual cycles of weather patterns. Global and Australian heat records have been set year after year in the last few decades, including Australia's hottest year ever recorded in 2019.

This heating does not, in itself, cause bushfires (although it can be argued that hotter weather and increased energy in the troposphere increase storm activity and lightning strikes). However, it does clearly sets the stage for fires to be more severe and more difficult to control when they occur. This occurs because spring and summer – periods of plant growth and warm weather - are beginning earlier and lasting longer, and peak temperatures are higher. This translates to increased plant growth during longer growing seasons causing increased fuel loads, drought leading to drying of this plant material, and hotter than usual weather conditions. Moreover, the change in weather patterns resulting from climate change is making it more difficult for fire authorities to conduct hazard reduction activity because the "bushfire season" is longer and conditions are more difficult to predict.

This effect is caused by the accumulation of "greenhouse gasses" in the earth's atmosphere; and while carbon dioxide, or CO2, is certainly not the only culprit, it is a major player. CO2 is now commonly referred to as just "carbon" although chemically what is being discussed is not the element carbon but rather the compound carbon dioxide.

Many people find it difficult to conceptualise how human activity can significantly influence the composition of our planet's atmosphere. When viewed from the surface, the "sky" looks vast and limitless. However, this is an optical illusion; in reality the atmosphere is a very thin shell around the globe and its volume is actually much smaller than it appears from the earth's surface. Considered in this way, most people find it easier to understand that the composition of the atmosphere can be significantly altered by human activity.

The lowest layer of the atmosphere where our weather occurs is the troposphere. Much of the heat energy in the troposphere comes from solar radiation, warming the planet, which is favourable. Some of the energy reflects off the surface of the earth back into space, and the earth itself produces infrared heat energy; and some of that reflected and produced heat energy is trapped by gasses in the atmosphere which are partially "opaque" to infrared radiation. Again, this is favourable, and is the reason that the earth is warmer than the moon, even though both are about the same distance from the sun. However, if we increase the amount of these infrared-blocking components – or greenhouse gasses - in the atmosphere, by for example emitting CO2 faster than it is absorbed by natural processes like plant growth, then we will have more trapping of heat energy within the atmosphere (like a blanket), causing a net increase of energy in the system. This is unfavourable and is the root cause of climate change or global warming.

The model of the water cycle conceptualises that the overall amount of water in the earth's system is fairly stable, a proportion of it is locked away as ice, and the rest moves around by evaporation, precipitation and flowing back to

sea. However, a net increase of energy in the atmosphere increases the overall magnitude of the cycle, as well as adding more liquid water to the system by unlocking previously frozen water that wasn't cycling. Thus, increased evaporation leads to increased water vapor in the atmosphere, increasing the risk and severity of extreme precipitation events and flooding, another type of natural disaster from the one primarily being considered here.

Drought is a natural disaster in itself and also a driver of extreme bushfire risk. Sometimes it is difficult to understand how global warming can be blamed for causing more precipitation and flooding, and at the same time, more drought. As the climate changes, precipitation patterns also change, leaving some areas with less rainfall than before; and long established, relatively predictable annual patterns starting to deteriorate and becoming less predictable. In addition, the increased heat causes greater evaporation from the soil in areas where precipitation does not occur.

Finally, it is well understood that when fires occur, their severity depends on the preceding weather conditions, so with hotter, drier conditions, fires that occur will be more severe and harder to control – exactly what has been seen in the 2019-2020 summer.

Thus, with continued climate change such extreme bushfire events will inevitably occur with greater frequency.

1.4 Any other matters

In this section we will include comments on solutions to climate change, which as discussed above is a primary driver of extreme bushfires; and also:
(6) Land use planning and management and building standards, including appropriate clearing and other hazard reduction, zoning, and any appropriate use of indigenous practices.
(7) Appropriate action to adapt to future bushfire risks to communities and ecosystems.

There are two main categories of response to climate change – adaptation and mitigation.

Adaptation means accepting some change and learning how to manage with it and includes steps as building seawalls and switching agricultural production to more heat-resistant strains as well as items (6) and (7) in this Commission's Terms of Reference, mentioned above.

Adaptation recommendations will undoubtedly constitute much of the submissions that this Commission will receive, and this is critically important since the quantity of greenhouse gasses already emitted means that some degree of change is now unavoidable and current efforts centre around attempting to limit heating to 1.5oC.

With respect to items (6) and (7), we implore the NSW government to take stronger consideration of wildlife and ecosystems habitat in land clearing legislation (of course, this has implications for climate change, which is the primary threat, as well). Moreover, strong protection for ecosystems should not only be legislated but the legislation should be effectively enforced.

So much wildlife habitat has been cleared in recent years in NSW that the result is ever-increasing reliance by species on the ever-shrinking remaining areas of habitat. It may (or may not) be that the area allocated is just adequate for species survival. But if these tightly budgeted remaining areas of habitat are then destroyed by bushfire, the species have nowhere to go. Therefore it is extremely important that when balancing land clearing against remaining habitat, authorities must take into consideration a buffer area for species, in case remaining habitat is destroyed by fires - which are indeed to be expected.

It is important to ensure that there is sufficient area of adequately complex ecosystems for enough individuals to feed, shelter, and breed to maintain the viability of the various species. We specifically emphasise complex ecosystems to support various species, to remind the Commission that (a) while we love koalas, the full tapestry of our wildlife encompasses many more species, and (b) a forest is much more than a collection of tall trees in one area, and that monoculture plantations – while helpful to reduce pressures on natural forest for wood resources – do not amount to a functional replacement for natural forest from a wildlife and ecosystems perspective. Thus, adequate area needs to be allocated for natural forest apart from plantations for wood resources and the preservation of mature forest must be prioritised.

In addition, it is also vital that the area of habitat is contiguous and not fragmented such that individuals cannot move through safely to find new feeding grounds and shelter when needed, to breed – and to escape fires.

However, mitigation is the other critically important arm of response to climate change, and is increasingly overlooked by government. Mitigation means taking steps to minimize the amount of change that will occur. This focusses around reducing the causes of the problem – primarily greenhouse gas emissions, especially CO2 (more below). Although adaptation is absolutely vital; from a veterinary perspective, mitigation is much more important because adaptation mainly centers around the needs of humans and to a certain extent domestic animals, but does little to reduce risks for wildlife.

Moreover, mitigation is much less costly than adaptation.

CO2 is a major greenhouse gas but it is not the only one; others include methane and water vapor, so the primary emphasis on CO2 emissions can be confusing. The reasons for the emphasis are that CO2 contributes a major proportion to warming, it is the main greenhouse gas produced by human activity, and the greenhouse gas most likely to be controllable with reasonable regulations. And while there are other sources of CO2 emissions, the biggest by far is the production and burning of fossil fuels. Fossil fuels still provide more than 80% of the world's energy. Their use (and emissions) has increased dramatically since World War II and has contributed greatly to the social and technical progress and standard of living that characterized the second half of the 20th century. However, this benefit was associated with side effects – unknown initially but now understood for several decades. We propose that now is the time to build on that progress of the 20th century, and use this as a platform to take the step to new sources of energy.

Considering Australia's fossil fuel emissions by source, electricity is the largest; the second largest is mining, industry, and heating; then transportation. Fortunately there are good alternatives now available, especially for the largest sources.

Mitigation efforts in the past have emphasized individuals and businesses minimizing their personal "carbon footprint" – switching off lights, cycling instead of driving, recycling and choosing recycled products, etc. This is important and should continue, but it is not adequate in the face of industrial scale extraction and emissions. Moreover, it shifts responsibility on consumers to make choices, when the necessity for these changes is so pressing that individuals should not be saddled with the heavy lifting. An effort of the magnitude needed must come from government, industry and finance.

This is a global problem and so the United Nations process – the UNFCCC - is key and Australia should participate enthusiastically, not reluctantly.

The finance sector is quickly recognizing the economic risks of climate change and old technologies. Many financial experts now agree that doing nothing about climate change is already becoming more costly than taking action; and that moreover, a change will be a win-win. The equation is no longer the environment versus the economy … it's now the economy and the environment both on the same side, versus old thinking. At the time of writing, the RE100 initiative has partnered with 230 major global corporations committed to source 100% of their global electricity from renewable sources as soon as possible (by 2050 at the latest) (there100.org). The Powering Past Coal Alliance is an alliance of national and sub-national governments, businesses and organizations committed to accelerating the transition from coal to clean energy, whose 97 members currently include 33 countries and 27 sub-national governments (including Sydney, Melbourne and the ACT). Australia's states and territories have made strong commitments.

Both solar and wind energy have dramatically surpassed predicted potential, with installations and the energy produced from them increasing while costs drop rapidly; and Australia has the best solar resource of any nation in the world. In addition, NSW is home to one of the world's foremost leaders in solar technology and other renewable energy technologies at the University of New South Wales. This should be celebrated!

As well as being necessary from an environmental point of view, a prompt switch to renewably-sourced electricity would also be economically effective. Firstly, electricity from wind and solar is now simply less costly than electricity from new coal plants or new natural gas plants. In terms of jobs, the Australian Bureau of Statistics reports a 27%

growth in renewable energy jobs in Australia in the 218-2019 year, to 26,850 full-time equivalent workers. In comparison, Energy New Bulletin stated that "According to the ABS, average employment across mining and extraction industries combined grew by an average of 11%, equivalent to nearly 24,000 full time jobs in 2018-2019." A recent analysis by the International Monetary Fund found that Australian government effective subsidies to the fossil industries amount to $47 Billion per year (employing 24,000 full-time equivalent workers), compared to just under $3 billion per year for the renewable energy industry (employing 26,850 full-time equivalent workers). The IMF further found that removing these fossil fuel subsidies would have significant benefits to the overall economy, including for governments, amounting to an increase of 1.7 per cent of global GDP.

Reliability is a frequently cited concern with renewables; but while sun and wind are variable, they are predictable, and coupled with batteries, hydroelectric dams and smarter grids, the "intermittency problem" is surmountable. The Hornsdale Power Reserve, South Australia's "big battery" which was grid-connected on December 1 2017, helped to stabilise the power grid when a unit at the Loy Yang coal-fired power station tripped on December 14 2017, before the Gladstone Power Station was able to respond; and by the end of 2018 is estimated to have saved $40million in costs.

Thus, a transition to a low-carbon economy is not only necessary, not only possible, but has the potential to be associated with a better economic outcome for Australia than not transitioning. Certainly, this transition will require resolution, care, and attention to justice; but the technical resources are ready, and "responsible" transition should not be allowed to become a euphemism. Rather, considering the scale and the urgency of the problem, the responsible approach is to make the strongest possible effort at emission reduction, at the fastest possible pace.

In summary, in this submission,
• We have confirmed that the impact of natural disasters in general and the 2019-2020 bushfire season in particular, on the health and welfare of all animals and especially wildlife and threatened species, is extreme.
• We have established the causal link between the increasing frequency and severity of such natural disasters and anthropogenic climate change.
• We have discussed the causes of climate change, and the potential responses, including adaptation and mitigation.
• We discussed the importance of allocating adequate, unfragmented area of complex ecosystems, especially mature forest, to sustain species even in the face of natural disasters.
• We highlighted the largest sources of the major greenhouse gas emissions, being primarily CO2 as a by-product of fossil fuel extraction and combustion; and the availability of low-carbon alternatives.
• We argued that, contrary to a commonly-held view that transitioning to a low-carbon economy would economically unfavourable; in fact transitioning as quickly and strongly as possible with careful attention to justice is not only technically feasible but would be economically favourable for Australia.

Therefore to recap, our recommendations to this Commission are that:
1. NSW should take the strongest possible action to mitigate climate change as a primary driver of extreme bushfires by taking steps to reduce greenhouse gas emissions on a state level; as well as by pressing the Federal government for stronger national action and to assume leadership role in global efforts to reduce greenhouse gas emissions (notably the UNFCC process). This should all be done in the shortest possible timeframe.
2. NSW should strengthen and enforce protections for mature forests as ecosystems and wildlife habitat, reduce land-clearing and take greater consideration of allocating areas of complex ecosystems that are adequate to support species not only in a best-case scenario but also in the scenario of the repeated severe bushfires that are now to be expected.

REFERENCES are available on request

Supporting documents or images