

REFLECTIONS ON THE 2019-2020 BUSHFIRES – SUBMISSION TO THE NSW BUSHFIRE INQUIRY

Elizabeth Greef

There are both macro and micro aspects to investigate and resolve within the many-layered circumstances, which led to our devastating and distressing bushfires over the summer of 2019 to 2020. I'll mention some micro issues first and the macro issues towards the end.

THE COST

19.4 million hectares burned and 35 lives lost....

Inspector Ben Shepherd from the NSW Rural Fire Service: "An average fire season here in New South Wales is typically at around 300,000 hectares." Between Sept 2019 and 23 February 2020 434 million tonnes of carbon dioxide has been released into the atmosphere.

INVESTIGATE APPROACHES HELPFUL IN MINIMISING FIRE DEVASTATION – FIRE PLANS, BUILDING AND PLANTING

- Preparedness and fire plan at Willinga Park helping to save Bawley Point; strategies such as prior planning, debris removal, water trucks and sources of emergency power

<https://www.smh.com.au/national/nsw/the-billionaire-whose-plan-helped-save-a-town-from-bushfire-20200108-p53pvo.html>

- *Building within a forest by Paul Whittington*

<https://southernforestlife.net/happenings/2020/1/26/building-within-a-forest>

Great house design pointers for fire-proofing, built using guidance from: *Reardon, C., Milne, G., McGee, G. & Downton, P. (2004) Your Home Technical Manual 2nd ed.* This manual is now available on-line as an Australian Government publication: <https://www.yourhome.gov.au>

- Consider if grazing animals in national parks may be of use in keeping fuel load down; need to balance possible damage against benefit. Consult with local rangers.
- Consider location of trails to provide access for fire fighters into national parks.

- *The exotic weeds that saved a Braidwood truffle forest from destruction*

<https://the-riotact.com/the-exotic-weeds-that-saved-a-braidwood-truffle-forest-from-destruction/360629>

A designed fire retardant landscape comprised of a mosaic of trees

HAZARD REDUCTION

- *Sunspots herald change in the weather with bulk of drought behind us - Jamie Brown*

<https://www.theland.com.au/story/6575133/change-in-the-weather-just-around-the-corner/>

"Another fact not well discussed is that six of the 15 wettest years according to written records occurred after the start of this millennium. Those wet periods peaking in 2011, the wettest year on record, contributed immensely to increased fuel loads in bush that is now burning. There was very little hazard reduction opportunity during those wet times, which ended abruptly in 2017."

- Look at **indigenous fire management strategies** to improve hazard reduction - lots of articles and interviews available online. This would be a good means for encouraging indigenous input, jobs and raising respect levels for indigenous knowledge of country. See Firesticks Alliance Indigenous Corporation and "cultural burning"

Indigenous leaders say Australia's bushfire crisis shows approach to land management failing

<https://www.abc.net.au/news/2019-11-14/traditional-owners-predicted-bushfire-disaster/11700320>

<https://www.abc.net.au/news/2020-01-09/indigenous-cultural-fire-burning-method-has-benefits-experts-say/11853096>

<https://theconversation.com/the-worlds-best-fire-management-system-is-in-northern-australia-and-its-led-by-indigenous-land-managers-133071>

Traditional Aboriginal land burning in modern day land management

<https://landcareaustralia.org.au/project/traditional-aboriginal-burning-modern-day-land-management/>

LOCALISED EMERGENCY POWER SOURCES

- Consider smaller and independent power grids.
- Have local emergency generators/Tesla batteries in vulnerable areas, e.g. in some areas people could not get out because they were unable to get petrol as the pumps had failed due to power loss.

COMMUNICATION

Plans for communicating with areas where internet and power have been lost.

CARE FOR WILDLIFE

- Study how animals have survived fires. Consider strategies to provide safe zones e.g. underground bunkers here and there; food and water stations.

David Andrew Hubbard on Facebook:

"The big, furry guardian angels of the Australian bush. They've been finding wombat burrows after the fire containing snakes, pademelons, quolls and of course, Wombats. It's now been seen that wombat's are actively herding the other creatures into their burrows ahead of the fires. The menagerie gets in the burrow, & they live in peace for the duration!" Jackie French also mentions this.

Echidnas burrow into ground prior to a fire and emerge afterwards. They can cope with quills being burnt off.

'Solitary' lyrebirds band together to save themselves in 'incredible' show of unity under bushfire threat

<https://www.abc.net.au/news/2020-01-30/lyrebirds-band-together-to-avoid-approaching-bushfire/11910666>

- Destroy feral cats and dogs.
- After fires liaise with local wildlife organisations to ensure food and water stations are set up quickly.

REFOREST/ STOP MOST LOGGING

What I learnt about the Australian bushfires living on the edge of the Sahara desert by Tony Rinaudo

<https://www.abc.net.au/news/2020-01-23/what-i-learnt-about-australian-bushfires-living-on-edge-sahara/11885000>

Fungi fights forest fire and builds the Global Carbon Soil Sponge

<https://www.3cr.org.au/earthmatters/episode-201912081100/fungi-fights-forest-fire-and-builds-global-carbon-soil-sponge> i.e. **plant trees**

PROVIDE SUFFICIENT FUNDING

- Funds for bushfire research and for preventative measures. The Bushfire and Natural Hazards Cooperative Research Centre is slated to close on June 31, 2021 (sic.) Keep it open and continue to fund this.

Bushfire research centre on the brink of closure despite deadly summer fires

<https://thenewdaily.com.au/news/politics/australian-politics/2020/03/04/bushfire-research-centre-funding/>

- Funds for the RFS

- Funds for a dedicated mobile force. When there are no fires perhaps they can maintain fire trails, create bunkers for animals.

COMMUNICATE OPPORTUNITIES FOR VOLUNTEERING AND POSITIVE ACTION

- BlazeAid
- Wildlife organisations, etc.
- Better means for providing financial assistance to avoid scams and also charities taking ages to pass on funds and not passing on funds in their entirety

JACKIE FRENCH'S ARTICLE - EXTRACT

<https://www.smh.com.au/culture/books/from-fire-evacuation-rooms-diary-of-a-wombat-author-pens-her-message-to-australia-20200107-p53piv.html>

“What do we need?”

1. “National disaster management, with mobile teams that can be sent into disaster regions with portable hospitals, medics, evacuation centres, rescue gear. The expertise exists. But I bet you that non-experts will look at the reports, then shove them in a bottom drawer.
2. A bushfire and emergency response system that does not depend on volunteers. Yes, there will always be magnificent volunteers, but the job of fighting for our nation’s fires, floods and cyclones should not be on their shoulders. Volunteers must be supported, not just financially, but physically and emotionally, and their families too. The Rural Fire Services should not have to ask for donations. They are a government body and should be funded by government.
3. We need more independence for local fire brigades. That old farmer or the wrinkled woman with her walking stick are the ones who know that the wind will change at 4.50pm exactly and the fire will leap across the ridges.
4. We need containment lines across the country from which fire can be safely fought. We once built a rabbit-proof fence across Australia. We need nationwide fire-resistant planted landscapes, a mosaic of thousands of kilometres of fireproof walls, and burning regimes suited to each ecosystem, not one size fits all.
5. We need building codes that dictate that all houses, roads, rail, bridges, power supplies, communications and essential services must be flood and fireproof, in cities as well as rural areas.
6. We need redundancy. If one phone, water, bridge, road or energy system goes down, there must be others to rely on. As I write my computer is powered by our solar system. Our local grid is down, our phone is out, but because of our solar system I can connect to the world and know where the fires are. We have our own water storage and sewerage too. There must be nowhere in Australia that does not have back-ups like these.
7. Most importantly?

DO NOT FORGET. This is most Australians’ first taste of climate change. But we are the descendants of those who have faced Ice Ages, plagues, wars, famine. Most humans died. Our ancestors did not. When times are hardest, humans are capable of the greatest kindness and innovation. The best way to survive the decades to come is by forging strong community links, because when disaster strikes, those links will stand strong.

DO NOT FORGET. Because those who make vast sums of money from businesses that, as a side effect, destroy our planet, put vast sums into PR or political campaigns so that laws are never made to hinder their actions. The politicians who denied climate change, the need for disaster planning and firefighting equipment, and who cut fire budgets by 30-40 per cent this year alone – despite warnings from their own

experts that we faced catastrophes this year – will use political spin ... let's just call it lying ... to try to make you forget before the next election.

DO NOT FORGET. Because the federal fire aid has only been offered now because of the rage of "quiet Australians". You and I and every Australian who expressed contempt has achieved this. We must keep demanding what is needed. Unless we keep up the rage, the passion and compassion, our children and our children's children will die in more climatic disasters, from winds to cyclones, floods, tornadoes, bushfires and storm surges: the "new normal" of the Anthropocene.

DO NOT FORGET. Because long after these flames are doused, there will be traumatised kids, fireys who collapse when the adrenalin seeps away, businesses destroyed, half a billion wildlife killed, with just as many injured, starving, needing food and water stations if their species is to survive.

DO NOT FORGET. How we have worked together, fighting disaster without political leadership, leaders emerging in their own communities, from those who fought the flames to those who offered rooms, diverted traffic amidst red smoke, raised funds or simply offered all the smiles they could find. Do not forget that when we acted together we achieved miracles.

This is the comfort we must give our children: in the past weeks, Australia has been a truly great nation. We must remain one.
We must not forget."

RESILIENCE AND RECOVERY

- Teach resilience strategies and good communication skills in schools
- Have an action plan for disaster recovery
- Provide varied means of bolstering mental health – counselling, cafes and meeting centres for sharing and debriefing (as happened in Ulladulla next to the library)

GOVERNMENT NEEDS TO LISTEN AND PROVIDE WISE LEADERSHIP

- **Listen to the fire chiefs and the retired experts!! Forewarned is forearmed.**

"I tried to warn the government about the bushfire disaster. Adapting to climate change isn't enough" by Greg Mullins

<https://www.theguardian.com/commentisfree/2020/jan/20/i-tried-to-warn-scott-morrison-about-the-bushfire-disaster-adapting-to-climate-change-isnt-enough?CMP=soc> 567

Rediscover contrition? *Contrition and environmental catastrophe: Rediscovering a lost political emotion.* Michael Thompson <https://www.abc.net.au/religion/australian-fires-and-the-absence-of-contrition/11874704>

My response to this article: "I would love to see genuine contrition for how our land has been taken for granted, used and abused, and a science-based approach employed to heal it. I would love to see this contrition result in seeking the wisdom of our land's original custodians and offer respect, support and partnership in a deeper healing journey. "

THE MACRO ISSUES OF CLIMATE CHANGE, DROUGHT & WATER MANAGEMENT

TACKLING CLIMATE CHANGE – not a popular topic for our government but needs to be addressed because down the track the consequences (of which we have had a glimpse this past summer) are untenable and will cost the economy profoundly.

BOM temperature and rain maps 1910-2019

<https://www.abc.net.au/news/2020-01-14/bureau-of-meteorology-chart-shows-how-temperatures-soared/11857404>

Temperature gif

http://blogs.reading.ac.uk/climate-lab-book/files/2016/06/spiral_2019_large.gif

Sunspots herald change in the weather with bulk of the drought behind us

<https://www.theland.com.au/story/6575133/change-in-the-weather-just-around-the-corner/>

“Compared to the patterns of the last once in a hundred year drought, which ended in 1902, this one has shown features remarkably familiar, with the exception of record heat and resulting evaporation. That factor could be a sign of human induced climate change, said Dr Baker.

Another fact not well discussed is that six of the 15 wettest years according to written records occurred after the start of this millennium. Those wet periods peaking in 2011, the wettest year on record, contributed immensely to increased fuel loads in bush that is now burning. There was very little hazard reduction opportunity during those wet times, which ended abruptly in 2017.”

Include regional Australians in this discussion:

Regional Australians will need to be the ground troops in the climate war - so stop neglecting us

<https://www.abc.net.au/news/2020-01-21/regional-australians-need-to-be-ground-troops-climate-war/11874930?sf228526042=1>

Fire weather worsening; more heat, less rainfall

<https://www.theaustralian.com.au/inquirer/fire-weather-worsening-more-heat-less-rainfall/news-story/d24476d26c8ac788c8e485434cc4fa6d>

“The fact only a small fraction of the southeast forests remain unburnt also makes this season unique.

These fires are taking place after 200 years of land clearing, when the extent of temperate forests is the smallest in history. This means that as the remaining forests burn, critical habitat for many species is further reduced. At present, 49 species have had more than 80 per cent of their habitat burned, raising the question of whether some species have shifted from being threatened to endangered.

Preliminary analyses from the Global Fire Emissions Database, run by a consortium of research institutions including NASA, suggests that last year fire emissions in Australia were higher than in any previous year since records began in the late 1990s. Work we are doing in conjunction with the fire emissions group for Australia’s carbon budget (calculating the net balance of all emissions and removals of greenhouse gases in Australia, which the CSIRO has been calculating since 2013) shows that fire emissions from the southeast last year were at least as high as the entire annual Australian CO2 emissions inventory from the combustion of fossil fuels, so effectively doubling the nation’s carbon footprint. The large carbon emissions this year are the result of burning some of the most carbon dense forests in the world, many accumulating hundreds of tonnes of carbon per hectare.

The CO2 emitted from forest fires can be taken up again by later regrowth over years, decades or centuries. However, the higher frequency of fires as seen in the south and southeast, and the burning of fire-sensitive ecosystems such as alpine and rain forests, leads to increasing levels of permanent degradation and permanent transfers of carbon to the atmosphere.

How did we get to this catastrophic fire season? Research done by CSIRO and the Australian Bureau of Meteorology has shown a pervasive increase in past decades of the type of weather that is highly conducive to bushfires in many parts of Australia, particularly in the south and southeast. Three components of that worsening fire weather are the observed increase in average air temperatures, the increase in frequency of extreme heat events, and the reduction of winter rainfall, which primes the forest to be drier by the time the fire season starts. With more than 30 years of national and international research, those climate trends are now unequivocally linked to the increase of greenhouse gases in the atmosphere due to the combustion of fossil fuels and multiple uses of the land here in Australia and around the world.

Those trends alone were unlikely to have led to the current catastrophic fire season, which has been spurred by a combination of factors including the current drought lasting over three years in some parts of the southeast and the culmination of 2019 being the hottest and driest year recorded in the history of this country; importantly, all these factors are driven or influenced by climate change.

Under these conditions, the magnitude and intensity of bushfires this season were no surprise. Many of the underlying trends associated with climate change that have taken us to this point will continue to

increase into the future. Climate modelling done by CSIRO and the BOM shows a consistent increase in high fire danger days and worsening fire behaviour in a warmer world. For instance, CSIRO research published in 2005 showed that Canberra would have up to 24 per cent more very high or extreme fire danger days by 2020 (the catastrophic rating did not exist back then), a figure that could reach up to 66 per cent by mid-century. Our research also confirms the increased plant growth under a CO₂-richer world as plants used CO₂ as a building block of new growth, thus increasing the fuel loads.

It is important to highlight the role of climate extremes, which led to the extraordinary outcome last year of having the lowest rainfall since records started more than 100 years ago. Climate extremes have been part of the Australian climate for millennia, but for some of them, human-induced climate change is increasing how extreme they are becoming.

Nationally, there is an opportunity for government, disaster and resilience management agencies, research institutions and land communities to develop a resilience and adaptation plan. This will need to recognise the strong climate change link in order to understand the nature of what we want to adapt to. There is no longer a normal or even a new normal to adapt to, but rapidly changing conditions that require a longer-term adaptive management strategy.

Preliminary efforts to understand the relevance, impact and historical context of this fire season have stumbled with the fact there is no national archive of fire occurrence and associated data but many repositories in state-level agencies that hold responsibilities in fire management. There is now a great opportunity to co-ordinate an effort to bring this rich source of data into a national database to support research and the planning of resilience and adaptation strategies.

A detailed review and assessment of the current understanding of climatic, ecological and management drivers that have led to this year's devastating fire season is also needed. This needs to include an update of research into the likely future fire activity in light of new advances in the knowledge of drivers of fire weather and the sensitivity of the climate to greenhouse gases.

There are decades of research into three main impacts of fires — the safety of people living in or near bushfire-prone areas; the impact on people of smoke inhalation; and the impacts on ecosystems. The question is how to apply and refine this knowledge in the face of a continuing trend for worsening of fire weather. Importantly, we will need mature evidence-based dialogue on a range of matters many feel strongly about.

We also need urgent efforts to protect threatened species and ecosystems, and to support the regrowth of forests. For instance, we know that salvage logging is highly detrimental to the recovery of many species, and that prescribed burning programs need to be highly tailored to the specific ecosystems and habitats intended to be protected.

Finally, we need to recognise we can never fully proof our managed landscapes and ecosystems from the likely increase in fire activity. An evidence-based approach will help us to build the resilience of local communities and make the right adaptation choices now and into the future. But only addressing the causes of human-induced climate change will stabilise the climate and prevent further impacts on our economy and natural endowment."

Pep Canadell is a chief research scientist of CSIRO Oceans and Atmosphere (and of the Earth Systems and Climate Change Hub of the National Environmental Science Program) and the executive director of the Global Carbon Project.

Australian Academy of Science. Statement regarding Australian bushfires

<https://www.science.org.au/news-and-events/news-and-media-releases/statement-regarding-australian-bushfires>

"Australia must take stronger action as its part of the worldwide commitment to limit global warming to 1.5° C above the long-term average to reduce the worst impacts of climate change.

To have the best chance of succeeding, we must draw on all the available evidence and knowledge, including working with Aboriginal and Torres Strait Islander peoples and undertaking further research where it will have the most benefit.

Who to blame for Australia's bullshit approach to climate change

https://www.vice.com/en_au/article/dygvjy/who-to-blame-for-australia-coal-mining-lobbyists-fires-bushfires-bullshit-approach-to-climate-change

The attitude of “money, mates and mines” HAS to change.

Government buried climate risk action plan

<https://www.afr.com/politics/federal/government-buried-climate-risk-action-plan-20200110-p53qeg>

The government cannot afford to do this any longer.

Why was Australia's government so ill-prepared for the bushfires?

<https://www.economist.com/asia/2020/01/11/why-was-australias-government-so-ill-prepared-for-the-bushfires?fsrc=scn/fb/te/bl/ed/aburningquestionwhywasaustaliasgovernmentsoillpreparedforthebushfiresasia>

The lessons from Australia's fires

<https://www.economist.com/leaders/2020/01/11/the-lessons-from-australias-fires>

Worldwide, fire seasons are getting longer and more damaging. The areas at risk include America's west coast, the Mediterranean, southern Africa and swathes of Central Asia. If that sounds alarmist, remember that in 2018 California had the deadliest forest fires in its history, killing over 80 people and causing parts of Los Angeles to be evacuated, while over 100 people died in wildfires in Greece.

In 2019 Australia's mean temperature was the highest since records began in 1910, 1.5°C above the long-run average. The amount of rainfall, meanwhile, was 40% below the long-term average and at the lowest level since 1900. For at least a decade climate models, sometimes derided by sceptics, have accurately predicted worsening droughts and infernos in Australia.

Another lesson is that as fires get worse the old ways of assessing and containing them have become obsolete. Unlikely as it may seem, Australia's fire-planning is ahead of most of the world's—it carries out preventive burns, for example, and its planning codes seek to limit fire risks. Nonetheless this system, and a heroic voluntary firefighting force, has been overwhelmed. Attention must now turn to how to live with fires. In some places, that will mean building structures that can resist the flames. Other regions may no longer be suitable for human habitation. If governments and residents do not act, financial markets will. In California insurance firms have lost \$24bn from recent fires, and the cost of bundling and reinsuring these risks is soaring as investors become unwilling to underwrite homes in dangerous places.

The last lesson is that, as the costs of climate change stop being just about abstract temperature forecasts and start being something you can smell in your nostrils, the politics surrounding it will change, too. Australia's conservative politicians have long downplayed climate risks, in part because some 70% of the country's exports come from natural-resource extraction, most notably coal and iron ore shipped to China. Scott Morrison, the prime minister, won an election in 2019 in stunning fashion, partly on a climate-sceptical platform that appealed in Queensland, a swing state with a big coal industry. He is now being pilloried for his government's laggardly climate policies and stuttering response to the fires. His position may be secure for now, but 61% of Australians think climate change is a pressing problem. Sooner or later, in hot, dry places all over the world, politicians who fail to deal with climate disasters may find their credibility going up in smoke.

Thomas Keneally: "Those fires have changed us".

https://www.theguardian.com/australia-news/2020/feb/01/thomas-keneally-these-fires-have-changed-us?CMP=soc_567

Bushfire mitigation : "Tackling climate change is number one", says engineer

https://www.createdigital.org.au/bushfire-mitigation-tackling-climate-change-must-be-number-one-says-engineer/?utm_source=facebook.com&utm_medium=sponsored-social

If defending life on earth is extremist, we must own that label - George Monbiot

https://www.theguardian.com/commentisfree/2020/jan/22/defending-life-earth-extremist-police-extinction-rebellion?CMP=share_btn_fb

“Our government is helping propel us towards a catastrophe on a scale humankind has never encountered before: the collapse of our life-support systems. It does so in support of certain ideologies – consumerism, neoliberalism, capitalism – and on behalf of powerful industries. This, apparently, meets the definition of moderation. Seeking to prevent this catastrophe is extremism. If you care about other people, you go on the list. If you couldn’t give a damn about humankind and the rest of life on Earth, the police and the government will leave you alone. You might even be appointed to high office.”

Extracts from Sarah Wilson’s post on 6 January 2020:

<https://www.sarahwilson.com/2020/01/australians-raging-prime-minister-scom-us-confused-allowed/>

A major report by Professor Ross Garnaut commissioned by the government at the time in 2007 and delivered in 2008 clearly predicted catastrophic fire “in 2020” if nothing is done.

15 minute documentary by investigative journalist Michael West.

A major UN report forecast Australia to be the sixth-largest producer of fossil fuels by 2030, contributing to a carbon emission prediction four times what’s required to keep global heating below the 1.5C we know to be the dangerous tipping point for our survival.

“Meanwhile, the Government tried to wriggle out of our existing and thin climate commitments.

During all this, at the Madrid conference, Australia was accused of “cheating” and named as one of a handful of nations that thwarted the Paris climate agreement. Embarrassing.

And just as Australia got ranked 57th out of 57 countries on climate change policy.

Australia scored the lowest possible rating of 0.0, compared with the highest-scoring country, Portugal, which was ranked best for its climate policy at 97.8 per cent. The 2020 Climate Change Performance Index, prepared by a group of thinktanks comprising the NewClimate Institute, the Climate Action Network and Germanwatch, looks at national climate action across the categories of emissions, renewable energy, energy use and policy.

On the assessment of national and international climate policy, Australia was singled out as the worst-performing, with the report saying the re-elected Morrison government “has continued to worsen performance at both national and international levels”.

“Experts observe a lack of progress to reduce the country’s very high level of emissions,” Greenwatch policy adviser Ursula Hagen said. “With greenhouse gas per capita emissions of 21.1 tonnes, Australia ranks last for the indicator on current levels in the greenhouse gas emissions category. Further, experts observe that the government is playing an increasingly regressive force in international negotiations.” Again, embarrassing.”

DROUGHT AND WATER MANAGEMENT – In a country like Australia as the driest continent on earth, we should not be selling water to overseas interests, e.g. water in Queensland to Chinese interests while a nearby town has to have water trucked in; selling water to almond plantations run by overseas interests while our food bowl is unable to access the water. Priorities need to be clear, fair and transparent. We cannot afford water-hungry cotton plantations. We need sustainable fair approaches to water use. We need to look at better means of retaining water in our soil – native grasses, more trees, less logging.

Plant more trees.

“Australians have been lied to”: Murray Darling Royal Commission

<https://australiascience.tv/australians-have-been-lied-to-murray-darling-royal-commission/>

Transparency, fairness, environmental health must be priorities not greed and political gain.

Government must LISTEN TO THE SCIENCE, in relation to the MDBA and climate change.