Climate Change Policy for Western Australia: Local Solutions to a Global Challenge

Dr Carmen Lawrence

In late November the World Meteorological Organization informed us that the atmospheric concentration of key greenhouse gases was continuing to grow and was reaching levels not seen in at least 3 million years; global average concentrations of carbon dioxide (CO2) reached 407.8 parts per million (ppm) in 2018, up from 405.5 in 2017.[1] Scientific research and analysis points to the risks posed by this collective failure to rein in growth in greenhouse gas emissions: the destructive effects of climate change are already evident; the threat is accelerating and worse than earlier IPCC predictions; and the systems on which our economies and societies rely are at risk of major instability, posing grave and imminent danger to human health, water and food security. A recent joint report by the MJA and Lancet[2] underlined the elevated risk of illness among Australians due to climate change induced heat, fire and extreme weather events.

This demands rapid economic and social change on an unprecedented scale.[3] Significant new investment in low-emission technologies and infrastructure is needed[4], along with the maintenance and restoration of ecosystems to draw down and sequester atmospheric CO_2. The OECD, UN Environment and World Bank Group in their report, *Financing Climate Futures: Rethinking Infrastructure*, have anticipated the major transformations in government policies which will need to follow: in planning, innovation, public budgeting, private finance, development finance and cities.[5]

As the OECD has advised[6], placing people's wellbeing at the centre of decision-making and recognising the benefits which flow from effective mitigation policies is probably the most effective way to increase political and social support for such ambitious actions and to overcome the resistance to change. For example, people are more likely to accept reducing transport CO2 emissions because air pollution is also lowered and to embrace increasing urban tree cover to reduce CO2 because it simultaneously lowers urban temperatures and cuts air pollution while improving children's health and cognitive function.[7]

Although the Government's issues paper focuses on the impacts of climate change on Western Australia and the actions we, as one Australian State, might consider, it is important to recognise the global significance of any actions we take or fail to take. Like

---

[1] https://ane4bf-datap1.s3-eu-west-1.amazonaws.com/wmocms/s3fs-public/ckeditor/files/GHG-Bulletin-15_en.pdf?mQP5SDxBr_pHsQNJsAPrF8E5XnqkfHo2

[2] https://onlinelibrary.wiley.com/doi/abs/10.5694/mja2.50405

[3] IPCC (2018), *Global Warming of 1.5 C*, https://ipcc.ch/report/sr15/

[4] OECD (2017), *Investing in Climate, Investing in Growth*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264273528-en.

[5] OECD/The World Bank/UN Environment (2018), *Financing Climate Futures: Rethinking Infrastructure*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264308114-en.

[6] https://www.oecd-ilibrary.org/sites/1d38aac9-en/index.html?itemId=/content/component/1d38aac9-en&mimeType=text/html

[7] https://www.ccyp.wa.gov.au/media/3913/report-the-effects-of-physical-and-social-environments-on-the-health-and-wellbeing-of-children-and-young-people.pdf

every other country, we have a responsibility to account for the effects of our actions on others, particularly the most vulnerable to (and typically least culpable in generating) climate change. More self-interestedly, we should note that of all the developed (OECD) countries, Australia is one of the most vulnerable to damage from climate change.[8]

1. Producing and burning fossil fuels

Especially relevant to WA are the findings of the most recent UN Environment Program report[9] headlining the fact that governments, including our own, are "planning to produce about 50% more fossil fuels by 2030 than would be consistent with limiting warming to 2° and 120% more than would be consistent with limiting warming to 1.5°." The report notes that oil and gas are on track to exceed global and local carbon budgets as countries continue to invest in fossil fuel infrastructure that "lock in" oil and gas use; while governments, including Western Australia's, are signalling their intentions to decrease emissions, they are doing the opposite in planning and subsidising the further expansion of fossil fuel production. In this context, the recent announcement[10] of WA government support and funding for industry sponsored research into technologies which enable the further expansion of the industry into fields previously considered unviable is astounding. How can this possibly be compatible with reaching net zero emissions by 2050?

As the government of a State which a major and growing producer of LNG, it is not possible to develop a credible climate change policy while avoiding the inevitable questions about the climate change impacts of producing and exporting a fossil fuel which contributes significantly to climate change globally and locally is now responsible for 36% of WA's total annual emissions. This is especially problematic since there are almost no requirements on the industry to sequester or offset these emissions.

The argument that gas is a transition fuel and can replace more carbon-intensive coal and oil while alternative technologies develop is also challenged, including by the UNEP. They outline recent research which shows that increasing natural gas production and the subsequent drop in prices may actually lead to a net increase in global emissions (partly due to methane leakage), while delaying the introduction of low or no emission energy systems. Despite claims to the contrary, neither is there evidence that gas is replacing coal in power generation in China or developing economies in our region. Indeed, the most recent surveys show that construction of coal fired plants continues apace in China.

No one underestimates the economic and social challenges posed by moving away from fossil fuel production, but there are also enormous economic and employment opportunities for WA in developing renewable energy for export and using offsets policies to develop programs such as tree planting and revegetation to sequester carbon and improve degraded environments. In his recent book, "Superpower", Ross Garnaut explains in detail Australia's potential to lead – and prosper - in the move to zero net emissions by grasping such opportunities. Rather than restricting our focus to reducing demand for fossil fuels, supply side policies are also needed: such instruments as ending fossil fuel subsidies;

[8] https://www.sustainablefinance.hsbc.com/reports/fragile-planet
[9] https://productiongap.org/2019report/
[10] https://www.mediastatements.wa.gov.au/Pages/McGowan/2019/11/New-research-lab-positions-WA-as-global-energy-hub-leader-and-creates-jobs.aspx

using regulations and international agreements to limit extraction while ensuring support for workers and communities during the transition away from fossil fuel production.

Recommendations

Effective climate policy in WA aimed at net zero greenhouse gas emissions by 2050 should:

- Take strong action to play our part and to reduce State-based greenhouse gas emissions across all industry sectors;
- Introduce a Zero Carbon Act to establish a binding target of net zero emissions by 2050 and to implement shorter-term 'carbon budgets' for the State;
- Redirect subsidies provided to the fossil fuel industry to stimulate renewable energy, including green hydrogen, projects;
- Regulate the LNG industry to require all emissions sourced within WA to be captured or offset, with the resulting funds to be invested in employment generating activities in agriculture, renewable energy, carbon farming and vegetation management;
- Develop policies to prevent any new or expanded coal, oil or gas developments in WA including LNG and fracking, while ensuring that workers are retrained to participate in emerging replacement industries.

While there are many other areas which require attention, and no doubt will be covered by other submissions, I have chosen to focus further on two important areas of climate change policy especially significant to Western Australian's future wellbeing: policies to reduce fire risk and policies to harness forests' capacity to reduce CO2 emissions.

2. Policies to reduce fire risk

Bushfires are a constant threat in Australia and have resulted in devastating loss of life and property. As well as widespread displacement and relocation of populations, they also cause: long-lasting psychological problems in affected communities and amongst firefighters; loss of stock, forests and agricultural equipment; changes in the demographic structure of communities and ecosystems; damage to and loss of income from businesses; and destruction of individual and community assets, including prized heritage.

Of all the natural disasters in Australia, bushfires have resulted in the greatest loss of life - 552 recorded civilian deaths between 1900 and 2008. In the Victorian bushfires in 2009, Australia's worst natural disaster since Federation, 173 lives were lost, over 2000 homes were destroyed, about 6000 households were significantly affected and thousands more were seriously disrupted (Australian Government, 2010). As well as destroying homes, businesses, crops, livestock and natural environments, the fires in Esperance in 2015 resulted in four deaths and in 2016 fires in Yarloop killed two people. In the last few weeks in NSW and Queensland, six people were killed and many injured. And none of these statistics include the many people who are injured or whose lives end prematurely because of the air pollution from major fires or who suffer the debilitating effects of the trauma resulting from exposure to fire.

Children are particularly vulnerable. Assessment of children's wellbeing following catastrophic bushfires in Australia has indicated increases in depression, separation anxiety and concerns about safety as well as a tendency to re-experience the events. In adolescents, additional problems are evident: substance abuse, increased risk-taking, aggressive

behaviour and incoherent thinking.[11] A small number of studies have also documented cognitive deficits in children exposed to natural disasters[12]. Follow up interviews with children, young people and their parents four to five years after these same bushfires Victoria in 2009 revealed significant dislocation and disruption in every aspect of their lives[13].

As the WA Government's issues paper, "Climate Change in Western Australia" makes clear, "Western Australia's fire risk has increased over the past four decades, and fire seasons have lengthened due to warming, drying conditions." Australia's 2018 state of the climate report notes a "long-term increase in extreme fire weather, and in the length of the fire season, across large parts of Australia," and that "Climate change, including increasing temperatures, is contributing to these changes." [14] There are also credible projections that the number of days of *Very High* to *Catastrophic* bushfire danger is increasing and projected to become even worse. The Bushfire and Natural Hazards CRC has predicted[15] that in Western Australia several conditions are contributing to above-normal fire potential this summer: rainfall deficiencies across most of the south-west of WA; the seventh-driest autumn on record; forecast drier and warmer than average conditions though to October; and the resulting decrease in soil moisture and increased stress in woody vegetation.

One of the consequences of these changing climatic conditions is that prescribed burning to reduce fuel loads is becoming more difficult – there are shorter windows for cool burns; drier vegetation; an increased risk of prescribed burns getting out of control and greater vulnerability of already stressed native vegetation and wildlife. Evidence from both cultural burning practices and contemporary ecological and fire science[16] leads to the conclusion that prescribed burning should no longer be formula based, but should be guided by the specifics of site – the vegetation and animal species; soil types and ecologies; fuel load, moisture levels, extent and continuity of vegetation types; atmospheric conditions: humidity, wind speed and direction; previous burning regimes and cycles. Nuance in implementation and careful preparation are needed more than ever given the changes already occurring because of climate change.

It is clear that the risk from bushfires has increased, too, because of urban expansion into fire prone areas on the urban fringe and increased housing construction in rural areas at bushfire risk. Australian governments have identified land-use planning as a critical step in managing natural hazards, but little appears to have been done to further this objective. In fact, in 2011, the Council of Australian Governments declared that "locating new or expanding existing settlements and infrastructure in areas exposed to unreasonable risk is irresponsible", yet we continue to see approval given to urban expansion into hazardous

---

[11] Fullerton, C., & Ursano, R. (2005). Psychological and psychpathological consequences of disasters. In J. J. López-Ibor, G. Christodolou, M. Maj, N. Sartorious, & A. Okasha (Eds.), *Disasters and mental health* (pp. 13-36). West Sussex: Wiley.
[12] Parslow, R. A., & Jorm, A. F. (2007). Pretrauma and postrauma neurocognitive functioning and PTSD symptoms in a community sample of young adults. *American Journal of Psychiatry*, 164, 509–515.
[13] Gibbs, L., Block, K., Harms, L., MacDougall, C.., Baker, E., Ireton, G., Forbes, D., Richardson, J. Waters, E. (2015). Children and young people's wellbeing post-disaster: Safety and stability are critical. *International Journal of Disaster Risk Reduction*, 14, (2)015, 195-201.
[14] http://www.bom.gov.au/state-of-the-climate/State-of-the-Climate-2018.pdf
[15] https://www.bnhcrc.com.au/news/2019/bushfire-outlooks-means-you-need-be-prepared
[16] http://pbc2019.com.au/abstracts.php

areas against expert advice[17]. Without policy change, these risks are likely to accelerate even further with increases in population, increased "tree-change" (amenity) migration and climate change.

These changes represent increased threat to both human lives and livelihoods, as well as to the natural environment. As the issues paper also warns, "climate change will see a need for greater emphasis on disaster preparedness, and increase the challenge of protecting infrastructure and vulnerable communities." This requires co- ordinated government policy, an understanding of the role that communities can play in fire preparedness and response and increased expenditure in key areas.

Recognition of the elevated risks from fire has prompted questions about what influences the capacity of people and communities to prevent and/or respond effectively to natural disasters such as bushfires. The realisation that the demands on formal fire-fighting resources may outstrip their capacity to fight large scale fires should prompt us to ask how community-based mitigation and preparedness can be better harnessed to reduce fire risk. As research here in WA has shown[18], bushfires often expose major gaps in the social organisation of communities and the quality of emergency management, particularly in relation to the extent that community members are engaged in prevention and response. Breakdowns occur in government agencies, community services, and neighbourhood networks, and in how they work together. The community safety model, which has developed out of this understanding, proposes that effective preparation and response require all sectors of the community to work together.

Despite bushfires occurring regularly, and widespread publicity and targeted education about bushfire risks, many exposed households still fail to undertake the recommended actions to mitigate fire risk, although they do appear to recognise the risk to which they are exposed. It also appears that the capacity of communities to prepare for and respond to bushfires is limited and precarious.

Recommendations:

The issues paper conclusions clearly point to the need to reduce the likelihood of bushfires in the first place through better planning and preventive measures; to reduce people's exposure to bushfire risk; and to facilitate effective, timely responses to bushfire emergencies. The recent, unseasonal catastrophic bushfire in eastern Australia have highlighted the need for policies which contribute to both mitigation and adaptation. What is needed is:

- Changes to planning policies to prevent major housing developments in areas of severe fire risk. Avoiding such risk should be given the highest priority in land-use planning, particularly when zoning land as residential. Emergency services should be consulted early to help minimise future risk;
- A re-assessment of fuel reduction strategies and formula driven regimes in the light of findings that climate change is decreasing the opportunities to carry out carefully

[17] https://thewest.com.au/news/perth-hills/planning-minister-approves-fire-prone-perth-hills-subdivision-ng-b881071351z

[18] http://www.bushfirecrc.com/sites/default/files/managed/resource/community_level_influence_on_individual_behaviours_final_report.pdf

planned hazard reduction burning. Evidence suggests that it is more important to reduce fuel close to housing and infrastructure, particularly within 40 metres, since this appears to be a major influence on the risk that they will burn down[19];

- Better funded emergency services and equipment to enable rapid responses to prevent the spread of fires;
- A thorough investigation into whether the current, largely voluntary bushfire fighting force can be expected to cope in the event of widespread and prolonged fire events such as those recently experienced in Queensland and New South Wales; there is clear evidence that volunteering is in decline;
- Greater emphasis on community preparedness and the development of well-publicised and detailed fire plans in fire prone areas;
- Close co-operation with local governments to support fire prevention and timely local responses.

3. Policies to manage forests for climate change mitigation

Surprisingly, the only detailed references to forests in the issues paper are to "urban forests", yet it is well established that deforestation is a major driver of climate change and, conversely, that forest conservation and revegetation can be significant contributors to mitigating climate change and reducing its impacts. Forests, especially old growth forests, draw down and store significant volumes of carbon from the atmosphere. Indeed it is estimated that if we stopped logging south west native forests we could transform them from being a source of carbon emissions to being a sink, with an estimated 5 million tonnes per year of sequestration.

The most recent IPCC report underlines the fact that reducing deforestation and forest degradation are among of the most effective options for mitigating climate change. It is estimated that such actions could cut greenhouse gas emissions by as much as a third, yet this option is not canvassed in the WA issues paper. In the Paris agreement forests were formally recognised (Article 5), and governments and other parties urged to conserve and enhance sinks and reservoirs of greenhouse gases, including forests. It also recommended that they should carry out and support actions which reduce emissions from deforestation and forest degradation, emphasising the contribution of conservation, sustainable management of forests and enhancement of forest carbon.

There are many reasons to embrace policy which protects native forests from being logged, cleared and burned carelessly: protection of our unique and declining wildlife; enhanced human wellbeing; and recreation and economic opportunities, including tourism, beekeeping and arts and culture. But mitigating climate change is also now central. Since it has been established that old growth forests store carbon longer and more securely than logged or plantation forests[20] and that Australian eucalypt forest are among the most

[19] Gibbons, P., van Bommel, L., Gill, A.M., Cary, G.J., Driscoll, D.A., Bradstock, R.A., Knight, E., Moritz, M.A., Stephens, S.L. & Lindenmayer, D.B. (2012) Land management practices associated with house loss in wildfires. *PLoS ONE*, **7**, e29212.

[20] https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0139640

carbon dense on the planet,[21] protection of old growth forests is particularly important. Not only would it contribute to reducing accumulated atmospheric CO2 but also to conservation of WA's unique plant and animal species. Retention of forests and revegetation could also result in improvements to local climates, including cooling and increasing rainfall.

Recommendations

Policies and programs should be adopted to**:**

- Provide for the better protection of native forests, moving away from clearing and logging them, recognising their importance in drawing down and storing carbon;
- Expand revegetation and reafforestation programs to provide for improved native ecosystems and habitats;
- Support the continued transition of the existing timber industry into managed plantations and farm forestry.

Western Australia needs to play its part in slowing climate change and helping our country make the transition to a zero carbon world. At the same time, the state Government should confront the reality of the accelerating risks to people's health and wellbeing and act to protect their lives and livelihoods from climate change driven damage.

[21] https://www.pnas.org/content/106/28/11635