Inquiry into the Climate Risk Assessment

Submission by Professor Andrew Pitman, AO, FAA

I was the Director of the ARC Centre of Excellence for Climate Extremes. In that role, I developed a very detailed understanding of the state of climate risk in Australia and I therefore thought some comments to this Inquiry could be useful. I am also the Chair of the Academy of Science's National Committee for Earth System Science and climate risk is central to our agenda.

I will deal with the Terms of Reference in turn.

(a) the Government's secrecy and withholding of the Climate Risk Assessment (the assessment) from the Australian public since December 2024;

I do not understand why there is secrecy. Climate risk exists, it is worsening in some sectors and will continue to worsen as emissions of greenhouse gases continue. The very best way to manage that risk is an open process of risk identification, an open critique of methods by those involved in climate risk, peer review, and a process of improvement. There is no way that the assessment will be definitive. It will have strengths, and it will have weaknesses. Withholding the assessment simply delays a process that needs to be established that gradually improves the assessment. That process should have started a decade ago.

In short, secrecy leads to delay. Consequently, Australians, the Australian economy, our financial system, the ability to meet requirements under mandatory disclosure, the viability of nature-based solutions, and the ability of individuals, federal departments, state governments and businesses to plan is more limited than it needs to be. That is simply not in the national interest.

(b) the research, consultation and preparation of the assessment by the Department of Climate Change, Energy, the Environment and Water;

My personal view is that the assessment has not been able to access the best research, and widely consult on methods and best practice, as well as it could have done. This does not imply criticism of those who prepared the assessment – I am sure they did as good a job as they could. However, a robust Climate Risk Assessment is phenomenally hard, and deep within the technical capabilities required are contested methods, different approaches and mixed views. No organisation has full line of sight over this and the assessment should have been undertaken more openly in my view.

I can accept all this as the inevitability of the first Climate Risk Assessment. I am, however, concerned that I see no sign of the development of a future-focussed process where the best researchers, the best assessors of risk (e.g. the insurance industry), Federal and State governments and so on are being brought into the inevitable "Phase 2" of this process. I restate – there is simply no chance that the assessment will be definitive and to move it from the first attempt and to refine it over time requires an open, consultative and properly funded process.

(c) the expected ongoing impacts upon the Australian community that are contained within the assessment;

I cannot answer that because as a member of the Australian community I have not seen what is contained within the assessment.

(d) the budgetary costs of both climate driven natural disasters and any government adaptation plans;

I do not think we know how to calculate climate-driven costs reliably although there are some impressive attempts to do so. Supporting groups to develop strong economic costing methods would be welcome.

The adaptation plans really do not exist in my view. When I read plans they tend to be high-level and thoughtful, but I do not think government has begun to understand the scale of adaptation required. The National Environmental Science Program's Climate Systems Hub has invested in an excellent data-base of adaptation[1] but a lot of the examples are plans to adapt (not actions to adapt) and ultimately government is going to have to invest a great deal in adapting to minimize vulnerability.

It is well known that investment in adaptation saves money – avoiding investment in disaster recovery with benefit-cost ratios ranging[2] from 2:1 to 10:1. Indeed, the National Emergency Management Agency (NEMA) finds that every dollar spent on disaster risk reduction provides an estimated $9.60 return on investment. The challenge is not understanding what needs investment – government can choose drought resilience, sea level rise protection, heat and humidity responses, flood risk, resilient agriculture to the extent possible, water security and so on. Prioritisation, and the recognition of where (in a geographical sense) will emerge as the key areas of vulnerability is not yet possible (see comments under (f)) and in my view the way the assessment has been done, under a cloak of confidentiality, acts as an impediment to the research needed to improve things in the future.

(e) the Government's ongoing approach to transparency related to reducing emissions and adaptation to a world currently on track for 2.6 to 3.1 degrees of warming

Government funds The National Environmental Science Program's Climate Systems Hub which has a strong adaptation focus. This is quite transparent with 182 reports posted on line and freely accessible[3]. The Government also funds the Climate Commission, which is active in publishing multiple reports, including on emission reductions.

There may be examples of where there is a lack of transparency related to emissions and adaptation, but I cannot comment on things that I could not know about because they were not openly available.

(f) any other related matters.

First, the creation of the assessment is welcomed and once public the "what comes next" is important. Government should consider legislating an update to the assessment every 5 years, and the development of a specific research and development plan to improve the assessment over a 5, 10 and 15 year time horizon. Some improvements will take 10-15 years to properly resolve and cannot be done in 5 years. This process needs to be resourced via "team-Australia" with genuine engagement across all research and operational entities. It is a critical national need to make the next assessment as good as it can be, not as good as some fraction of the Australian community can achieve.

Second, future assessments will build on the understanding of climate science, weather science and associated risks. In 2024, the Australian Academy of Science published the decadal plan for Australian Earth System Science[4], a process I led. In writing this decadal plan, it was noted that Australia had lost ambition in weather and climate research and investment in research was disorganised. The plan identified five questions:

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[1] https://australianadaptationdatabase.unimelb.edu.au
[2] https://www.oecd.org/en/publications/climate-adaptation-investment-framework_8686fc27-en.html
[3] https://nesp2climate.com.au/resources/
[4] https://www.science.org.au/files/userfiles/support/reports-and-plans/2024/decadal-plan-earth-system-science-2024-33.pdf

1. How can terrestrial and marine systems be managed to support net zero ambitions and positive environmental outcomes?

2. Where is Australia at risk of abrupt changes in weather and climate, including but not limited to tipping points?

3. Where is freshwater availability in Australia resilient to climate change, and where does it require adaptation strategies to ensure supplies for human consumption, agriculture and natural ecosystems?

4. What exposure do urban areas have to climate change, including climate extremes and air quality Interactions?

5. Where will changes in high impact weather events support and/or undermine net zero ambition and where can associated risks be managed effectively?

These are questions that we should know the answers to, but we do not. We could know the answers but there are fundamental impediments in Australia. There is no cross-institutional leadership or coordination of weather and climate research – The University sector acts under a different agenda to CSIRO, who act under a different agenda to the Bureau of Meteorology. There is little integration of expertise of the State governments, beyond general chats. Climate Risk assessment is hard – it requires a full integration of national capability. This cannot happen when the three major components are set up to complete in a funding environment so tight that no group can act in the national interest above their institutional interest.

In my view there are three things Australia needs to resolve before a robust climate risk assessment can be achieved, embedded in national thinking and updated as a process informed by user needs.

1. *We need weather and climate science coordinated. This could be the establishment of an Institute[5] or the re-creation of a joint program similar to the Australian Climate Science Program[6] or via the re-creation of the High Level Coordination Group, with actual authority, that attempted to coordinate climate science in Australia. Irrespective of the mechanism, the need for coordination is urgent.*

2. *Investment in weather and climate science needs to reflect opportunity achievable by coordinated and strategic research and reflect the risk of on-going mediocrity. Some vital elements are in place – including observations by CSIRO and the Bureau of Meteorology, the ACCESS NRI[7], the ARC Centre of Excellence for the Weather of the 21st Century[8] and the National Environmental Science Program's Climate Systems Hub. However, major elements have been lost that are fundamental to our ability to assess risk[9].*

3. *If Australia wants a sovereign capability to examine climate risk it has no option but to invest on the long-term in high-resolution climate model development to parallel the model infrastructure provided through the ACCESS NRI. To have a sovereign capability, Australia has to invest in high performance computing and high-performance data systems. Our current planned investment forces an outcome of mediocre capability, or no capability at all. This is not in the national interest.*

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[5] See Recommendation 1, https://www.science.org.au/files/userfiles/support/reports-and-plans/2024/decadal-plan-earth-system-science-2024-33.pdf
[6] This ran from 1989-2016 (https://www.cawcr.gov.au/projects/Climatechange/) - but excluded the Universities.
[7] https://www.access-nri.org.au
[8] https://www.21centuryweather.org.au
[9] This might include atmospheric science, cloud research, atmospheric chemistry, boundary layer processes, physical hydrology, vegetation dynamics and some other areas.