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We acknowledge and celebrate the First Australians on whose traditional lands we work, and pay our respect to the elders past and present.

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Introduction

Thank you for the opportunity to provide a submission to the Productivity Commission: *Murray-Darling Basin Plan: Implementation review*. We have targeted our comments regarding the Murray-Darling Basin (MDB) Plan to two questions asked by the Productivity Commission's *Terms of Reference*, as a reflection of our particular areas of expertise:

> *Q.4 How well is the Plan responding to a changing climate? How should this be improved?*
> *Q.8. Does the implementation of the Plan reflect a commitment to the best available scientific knowledge? How well is this knowledge communicated? What improvements should be made?*

Of note, an analysis of the science-practice-policy interface has informed this submission. Recommendations are provided throughout the document.

The authors from the ANU Institute for Water Futures (IWF) are experts in water management and governance, drought resilience, climate change, agriculture, environmental policy, public health, strategic planning, community development, organisational and intersectoral collaboration. IWF has an extensive research program on water governance and management in the MDB, including a focus on the role of the MDB and the potential for the Basin Plan to better incorporate climate change. We believe this to be a matter of urgency and national significance; and the opportunity provided by the implementation review, the Basin Plan review and the *Water Act 2007* revision is of critical importance.

How well is the MDB Plan responding to a changing climate? How should this be improved?

It is clear the current measures in the Plan are inadequate in the context of a changing climate. We base this critique on our perspective that adaptive management and adaptative mechanisms in the Plan do not anticipate and prepare for future climate change. Rather, they facilitate adaption to climate variability post-hoc. While being responsive to variability is critical, these mechanisms do not catalyse conversations and tangible steps towards transitioning communities, economies, industries and ecologies in the Basin to prepare for a lower, and much more variable, water future. A need clearly indicated in a Murray-Darling Basin inquiry report by the SA Royal Commission (2019). As such, the present settings for the Plan might be supporting incremental adaption to current events. However, these may be maladaptive when viewed in the context of the dramatically reduced inflows projected for the Basin.

Recommendation

There is a critical need for science-based, participatory, foresight processes across the Basin. At a scale relevant to local communities - perhaps via Local Government Authorities (LGAs) or Natural Resources Management (NRM) bodies - to identify: i) which priority social, cultural, economic, political and environmental values matter most (and for whom); and ii) how a finite amount of water can be equitably utilised across the Basin.

The magnitude of the climate change projections for the Basin requires a fundamental shift in the current ways of how water is allocated and used. This will need long lead times for communities and industries to identify and work towards transition planning. Local scale transition planning will need to connect to cross-scale processes to ensure Basin-wide water

consumption targets are met, and Basin-scale values are maintained. This will require cross-sector, cross-jurisdictional planning which situates water policy and management within the context of agricultural policy, regional development, and natural resource management. We recognise this is an incredibly difficult ask.

Recommendations

While attention needs to be directed towards the 'what' of climate adaption (ie. technologies to support water efficient agriculture), it is equally important to consider how adaptation will be enabled through integrated, cross-jurisdictional and cross-sector planning to anticipate change, and support communities and industries to transition.

A key question to be addressed is: which organisational entities across the various actors in the Basin (eg. Murray Darling Basin Authority, state governments, regional NRM bodies, local governments, non-government organisations, irrigation trusts, corporations and industry bodies) are best placed to facilitate regional transition planning in the Basin? Ideally, there is inclusive representation of each entity, in addition to ensuring community input, at all regional forums.

We base our findings and recommendations on the following issues revealed by recent projects:

1. Analysis of recommendations to reviews and inquiries into the governance of the MDB since the inception of *National Water Initiative* (NWI) (1994) was undertaken by Wyborn et al (2023). This study found recommendations largely focused on incremental reforms maintaining the status quo in water governance of the MDB. In particular, climate change recommendations predominantly concerned gathering further technical information, rather than identifying steps towards adaptive or anticipatory actions. Moreover, the analysis found inquiries perpetuating a logic of 'win-win' policy outcomes are unlikely to address the substantial reforms in power and governance required to adequately address further climate risks in the Basin, nor redress water justice to First Nations.

2. Policy analysis of climate and water policies from the federal government and all Basin states and territories (across the MDB geographical catchment area) (Samnakay et al 2023 - in review), identified various constraints to climate adaptive water policy in the MDB. The analysis finds while existing policies require climate change to be considered in water governance in the Basin, the framing of climate risk is constrained primarily to water supply and security. This limits adaption discussions to supply-side and technological measures, rather than approaching climate adaption as a cross-scale and cross-jurisdictional problem requiring societal conversation about regional economic adjustment and transitional planning. This study encountered an absence of transformative approaches to water planning and management within policy documents. Instead, policies focused on managing climate risks and impacts through extant policies and gradual adjustments. This finding implies small tinkering around the edges of the fundamental problems is more appealing (or less demanding), rather than developing new visions, for a changed future and implementing timely, resourced, efficient transition processes to achieve necessary transformation of water governance across the Basin.

3. A survey of NRM bodies across Australia identified extant capacities to undertake foresight planning in the Basin and beyond) (Alexandra and Wyborn 2023 - in review). This study identified a growing need for participatory foresight in the context of climate change. Yet,

despite efforts of NRM bodies to do so, they face a range of barriers associated with broader scale policies and institutions. Notably, these related to short-term funding cycles, shifting goal-posts of Federal and State policies, and top-down directives contrary to local-scale priority setting. Similarly, a study by Olsson (2022), of the implementation of the *Goulburn-Murray Resilience Strategy 2020* (Greater Shepparton City Council 2020), found that despite a community-level initiative to develop a forward-looking plan for supporting the region and building resilience in the face of a lower water future, state-level policy directives ran counter to some of the transition actions identified in the Strategy. Notably, this study revealed issues with government culture and an unwillingness to take risks, as barriers to planning for climate change (Olsson et al 2023 - in review).

4. A yet to be published analysis of interviews with 42 experts involved in Basin governance from across Federal and State governments, academia, advocacy (conservation and industry groups), and consultants (Wyborn et al 2023 - in preparation) identified two broad opposing perspectives on existing MDB Plan mechanisms in the context of climate change:
   - for some participants, the Plan's adaptive mechanisms and cyclical reviews address climate change
   - others raised concerns that consideration of climate change are not defined, strategic, sophisticated or systematic. These critiques centred around: i) the Plan objectives were not developed using models of the projected future climate; and, ii) robustness of the underlying climate information used to establish the sustainable diversion limit (SDL), as the basis of the Plan. Of interest, objectives to 'protect and restore' in the MDB Plan cannot realistically be attained in a changing climate, leading some interviewees to suggest these objectives need to be revised.

   Importantly, all participants believed the next Plan must go beyond current settings to better address climate change. They identified potential strategies, including:
   - changing water management levers (ie. gradual reduction in SDL over a 10-year horizon)
   - conservation measures to address broader threats to Basin ecosystems, requiring the use of future climate projects in planning
   - changes to water associated levers at regional level (ie. catchment planning, development strategies)
   - community empowerment to support local participation in decision-making (either through local governments or NRM bodies).

   Some suggested embarking on a process of triage to identify assets worth saving or losing (ie. ecological, economic, social), as a focus of resourcing at the cost of others. A process of exploring triage would result in awareness of system-level and community-based vulnerabilities and risks, opportunity-costs, resource allocation priorities, feedback loops and trade-offs (acceptable compromises), within short- to long-term timeframes, and consideration of potential unexpected outcomes and emerging issues. A triage process would ideally consider issues of urgency, within the specific time, place and context. Across all strategies identified by participants, there was a strong emphasis on enabling local scale decision-making and prioritisation. There has been some academic discussion about 'conservation triage' (Wilson and Law 2016), and within the MDB (Schweizer et al 2022). However, more work is required to understand whether and how triage approaches could be implemented through participatory processes within the MDB.

Recommendation

Processes to engage communities and businesses about enhancing the Basins Plan's ability to better address climate change will need to acknowledge and enable input into decisions regarding trade-offs (not necessarily win-win); transformations rather than tinkering, and the importance of taking a long-term view.

Does the implementation of the Plan reflect a commitment to the best available scientific knowledge? How well is this knowledge communicated? What improvements should be made?

The requirement for commitment to the best available scientific knowledge is broadly commendable, and the Murray-Darling Basin Authority (MDBA) has invested in significant programs, such as the *Water and Environment Research Program* (WERP) to ensure relevant and accessible science. However, it is important to review the kind of science that is preferred and privileged in this context, and determine whether more innovative and diverse approaches to 'best available scientific knowledge' are needed. Discipline-based siloed, conventional research will have increasingly limited relevance as the complexity of Basin challenges increases.

In a recent review of risks affecting the Murray-Darling Basin, Pittock et al (2023) indicate the difference between singular and 'synergistic' risks. Single risks may be considered 'according to sectorial, jurisdictional, legislative or managerial relevance' (2023:5). Whilst synergistic risks are more 'complex or compound risks, result from the combined, cumulative effects of risk factors that interact to increase the likelihood of a risk eventuating' (2023:6). In these situations, use of 'systems thinking' and 'resilience thinking' can be helpful to identify and manage risks; including those risks identified as arising from or associated with climate change.

Systems thinking requires examining the various internal components and dynamic relationships of a system, in this case the MDB - noting synergies, co-benefits, trade-offs, and feedback loops (Meadows 2008). This approach is important in efforts to avoid silo effects (Tett 2015). An alternative view is to examine the interface of a system with other systems: land use planning, housing, agriculture, trade, law (Monbiot 2021). 'Resilience thinking includes consideration of incompleteness with strategies directed at the ability to enable a system to anticipate and adapt to potential disturbances' (Pittock et al 2023:6). Risks to the MDB identified by Pittock et al (2023) include: groundwater; water infrastructure; water quality; trees and forests; climate change; measurement and modelling of risk; governance and regulation of risks; risk interactions and assessment of complex risk.

Recommendation

Science programs and related inputs into the Basin Plan should be reviewed against criteria that looks holistically at the systemic challenges facing the MDB, and determine whether science investments should be redirected to more systemic studies with a focus on resilience of communities and landscapes.

Alexandra (2022) specifically reviewed MDB climate risks, as well as the methods and approaches used to assess and respond to these over the last two decades. Over this period, changes in approach arise from increased public awareness and understanding, and the improved science of sustainable yields. The science indicates the need to plan for hotter, dryer futures and declining water streamflows (during and post-drought), because multiple factors are affecting streamflow (eg. declining rainfall, carbon dioxide fertilisation, bushfires). These changes are leading to water insecurity and ecological impacts, so that in 'future droughts, major rivers could be without flows, towns without reliable water supplies, irrigation industries crippled, and riverine ecosystems - like the Lower lakes -fundamentally altered' (Alexandra 2022:13). Given this situation, new assessment methods are needed to determine the nature of systemic climate-risks and adaptive risk governance options that will work under conditions of increasing uncertainty.

In a related paper, Alexandra (2023), considered 'political and community insights into water management under climate risks' and the importance of improved (evidence-based) policy development and implementation in the (urgent) near future. Research is vital for gaining evidence to help inform climate change risk analysis, discussion, problem-solving, decision-making and action (eg. contingent and post-natural flow planning, revision of the MDB Plan). Integrating climate adaptation research into discussions and dialogues at community and regional levels will help overcome existing policy constraints (Alexandra 2023). Since climate risks are likely to be ongoing (and escalating), exploration of multiple policy options is necessary to inform the next steps in managing the MDB. Best available science can usefully inform those options, but should not determine them.

Lessons can be learnt from food systems and health systems, whereby people's 'lived experience' (experiential knowledge) is increasingly viewed as important to inform systemic transformation, planning, implementation and governance arrangements for better outcomes (Australian Commission in Safety and Quality in Health Care 2023, Centre for Food Policy 2023, Consumer Health Forum 2023).

Recommendations

Planning in the MDB requires comprehensive and multi-scaled climate risk assessment to inform policy and management responses. These should be wide ranging their consideration of risks, and explore policy responses to minimise or mitigate the social, economic and environmental consequences.

The social and cultural impacts of water dependency (availability and loss) should be identified and included as part of the science evidence base, enabling community dialogue, policy development and implementation. Care should be taken to ensure 'best available science' is not unduly privileged in relation to First Nations' knowledge, community lived experience, and detailed local and regional ecological knowledge. In turn, MDB data reporting should be publicly transparent, to foster community and institutional trust and engagement; especially for those directly impacted by residing and working within the MDB catchment area, and fulfilling environmental health objectives.

Conclusion

We acknowledge the complexity and multiple objectives that need to be balanced by the Basin Plan, and recognise implementation is challenging. It is equally important the Basin Plan evolves with changing contexts; an imperative of having a Plan that is climate smart, and based on holistic and systematic understandings of science and research will undoubtedly become more and more pressing. Overcoming the tendency for incremental 'win-win' policy and planning approaches, to instead embrace change and enable transitions and transformations, may be daunting. However, it will ensure the Plan remains relevant over time.

We hope these summary remarks are useful. The authors are happy to provide further comments if required.

References

Alexandra J 2022 *Climate risk assessment in the MDB - a review*. Manuscript. Canberra, ACT: Institute for Water Futures (IWF) and Institute for Climate, Energy and Disaster Solutions (ICEDS), Australian National University.

Alexandra J 2023 *Political and community insights into water management under climate risks in Australia's Murray-Darling Basin*. Manuscript. Canberra, ACT: Institute for Water Futures (IWF) and Institute for Climate, Energy and Disaster Solutions (ICEDS), Australian National University.

Alexandra J and Wyborn C 2023 Foresight in natural resource management: A case study in Australia. *Futures*. (in review).

Australian Commission in Safety and Quality in Health Care 2023 *Partnering with consumers.* Sydney, NSW. Website: https://www.safetyandquality.gov.au/our-work/partnering-consumers accessed: 25 July 2023.

Centre for Food Policy 2023 *Generating insights from 'lived experience' for more equitable, effective food policy*. London: City University of London. Website: https://researchcentres.city.ac.uk/food-policy#unit=research accessed: 25 July 2023.

Consumer Health Forum 2023 *About CHF*. Canberra, ACT. Website: https://chf.org.au/about-chf accessed: 25 July 2023.

Greater Shepparton City Council 2020 *Goulburn-Murray Resilience Strategy 2020.* Shepparton, Victoria.

Meadows D 2008 *Thinking in systems: A primer*. Vermont: Chelsea Green Publishing. ISBN: 978-1-60358-0557-7.

Monbiot 2022 *Regenesis: Feeding the world without devouring the planet*. London: Allen Lane.

Olsson R 2022 *The role of communities in building regional resilience: A case study of the Goulburn Murray Resilience Strategy*. Honours thesis. Canberra: Fenner School of Environment and Society, Australian National University.

Olsson R, Wyborn C and van Kerkhoff L 2023 The role of communities in making climate adaption decisions: A case study in Australia's Murray-Darling Basin. *Regional Environmental Change*. (in review).

Pittock J, Corbett S, Colloff MJ, Wyrwoll P, Alexandra J, Bevis S, Chipperfield K, Croke B, Lane P, Ross A and Williams J 2023 A review of the risks to shared water resources in the Murray Daring Basin. *Australasian Journal of Water Resources*. 27(1):1-17. https://doi.org/10.1080/13241583.2023.2190493

Samnakay N, Alexandra J, Wyborn C 2023 Climate adaptive water policy in Australia's Murray-Darling Basin - Soft options or hard commitments? *Ecology and Society*. (in review).

SA Royal Commission 2019 *Murray-Darling Basin Royal Commission report*. Adelaide: Government of South Australia. 29 January.

Schweizer V, Colloff MJ and Pittock j 2022 Damned and saved: A conservation triage framework for wetlands under climate change in the Murray-Darling Basin, Australia. *Environmental Management*. 70(4):549-64. Doi:10.1007/s00267-022-01692-x.

Tett G 2015 *The silo effect: Why putting everything in its place isn't such a bright idea*. London: Little Brown.

Wilson KA and Law EA 2016 Ethics of conservation triage. *Frontiers in Ecology and Evolution*. 4(September):1-8. Doi:10.3389/fevo.2016.00112.

Wyborn C, Alexandra C and Venketasubramanian S 2023 *Enabling anticipatory adaptation to climate change in the Murray-Darling Basin Plan*. (in preparation).

Wyborn CA, van Kerkhoff LE, Colloff MJ, Alexandra J and Olsson R 2023 The politics of adaptive governance: Water reform, climate change, and First Nations' justice in Australia's Murray Darling Basin. *Ecology and Society.* 28(1). https://doi.org/10.5751/ES-13641-280104