ATSE

SUBMISSION TO THE

Productivity Commission's National Water Reform Inquiry Issues Paper

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ATSE SUBMISSION ON THE NATIONAL WATER REFORM ISSUES PAPER

The Australian Academy of Technology and Engineering (ATSE)[1] welcomes the opportunity to provide input to the Productivity Commission's National Water Reform inquiry.

ATSE Key Recommendation

The governments of Australia should develop, and commit to, a new decadal strategy for national water reform. A decadal strategy must ensure a secure, sustainable, and equitable water supply for all Australian communities, industries and the environment by taking a holistic view of water sources.

Introduction

Australia has a history of world-leading water reform. The 1994 Council of Australian Governments Water Reform Framework and the 2004 National Water Initiative (NWI) were seminal intergovernmental agreements that drove valuable reform for two decades. However, with the exception of very recent developments on groundwater, climate change, and engagement with Indigenous peoples, water reform has been mostly absent from the national agenda in recent years.

In 2013, the Council of Australian Governments (COAG) Standing Council on Environment and Water was disbanded, and in 2015 the National Water Commission was abolished. ATSE believes that these decisions were short sighted, as they diffused responsibility for implementing the NWI and reduced the national impetus for water reform. The 2016 State of the Environment report[2] found that "progress has slowed in areas such as development of comprehensive water plans, improvements in sustainable water use, standardisation and nationalisation of water markets, and broader adoption of water accounting."

This reform fatigue has placed Australian water policy and governance at serious risk of failing to meet the challenges of increasing competition for water and the associated water stress in a changing climate. Australia lacks a clear leadership framework to drive the next generation of reform. It is important that Australian governments work proactively and collaboratively to develop and implement water policy that drives investment, innovation, equity, sustainability and water resilience for the benefit of Australian communities.

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1 ATSE advocates for a future in which technological sciences, engineering and innovation contribute significantly to Australia's social, economic and environmental wellbeing. The Academy is empowered in its mission by some 800 Fellows drawn from industry, academia, research institutes and government, who represent the brightest and the best in technological sciences and engineering in Australia. The Academy provides robust, independent and trusted evidence-based advice on technological issues of national importance. ATSE fosters national and international collaboration and encourages technology transfer for economic, social and environmental benefit.

2 Argent, RM. (2017) Australia state of the environment 2016: inland water, Independent report to the Australian Government Minister for the Environment and Energy, Australian Government Department of the Environment and Energy, Canberra.

Australia needs a new generation of evidence-based water reform goals, not just a progress report on the current NWI. Whilst the NWI drove significant progress, a number of reform areas were underdone. Recent research[3] on the issues arising from water reform to date, has identified a number of economic, social, and legal issues which need urgent attention in the next phase of water policy reform. Balancing the multiple tensions of the water-energy-industry-climate nexus is a key challenge for Australia's governments. Without a framework that addresses these interactions, Australia risks isolated policy decisions that create significant impacts and challenges for third parties.

Key benefits of water reform to date

The NWI has helped to drive significant reform of Australia's water sector. Some benefits of past water reforms include:

- The unbundling of land titles from water rights.
- The development of markets for water entitlements and allocations.
- The ability to migrate water from low value uses to high value uses depending on market demand. It has been estimated that water trading in the southern Murray-Darling Basin (MDB) added AUD 220 million to Australia's GDP in 2008-09; with net production benefits of AUD 79 million in New South Wales, AUD 16 million in South Australia, and AUD 271 million in Victoria.
- The ability to trade water across state borders from interconnected systems. Despite a decline in irrigated water use of about 70 per cent between 2000–2001 and 2007–2008, the nominal gross value of irrigated agricultural production in the MDB fell, in nominal terms, by less than 1 per cent. A critical factor in this adjustment was the substitution to higher value crops and horticulture facilitated by water markets.[4]
- Improved transparency of water markets, as private sector water brokers have developed platforms to facilitate their operation.
- The ability (albeit limited) to store allocations from one season to another, subject to storage capacity being available.
- Development of private capital investment in water.

Governance and leadership

The abolition of the National Water Commission and of the Standing Council (of Ministers) for Environment and Water has stalled significant water reform. Although water was transferred at Commonwealth level to the Department of Agriculture and Water and a Ministerial Forum was created, it is outside of the COAG structure. To the best of ATSE's knowledge, water reform has not been on the Forum's agenda since its creation. Without independent oversight and facilitation and effective coordinated national focus at Commonwealth, States and Territories inter-governmental level, there is reduced public accountability, and less impetus for progress on water reform.

Australia needs independent expert national leadership to oversee a new agenda of national water reform. In the absence of COAG attention to for water issues, Australia needs to implement other

3 e.g. Carmody, et al. (2016) The future of water reform in Australia — starting a conversation. Australian Environment Review, 31(4), 132-137; Environmental and Planning Law Journal: July 2016 (Special Issue – Water Law), 33(4).

4 Grafton, R. Q., Pittock, J., Williams, J., Jiang, Q., Possingham, H., & Quiggin, J. (2014) Water Planning and Hydro-Climatic Change in the Murray-Darling Basin, Australia. Ambio, 43(8), 1082–1092. http://doi.org/10.1007/s13280-014-0495-x

mechanisms to put water back on the national agenda and drive collaboration between the state, territory and commonwealth governments on water reform issues.

Supporting evidence-based water management

Evidence-based water management must be informed by well-designed monitoring practices, and sound analysis and research. The 2016 State of the Environment report found that the resources allocated to water quality monitoring, analysis and reporting have reduced, and this has increased the risk of poor water resources management.[5] This reduction in monitoring and analysis investment could lead to a lack of community confidence in water management programs, particularly from an environmental objectives perspective. Regular monitoring practices that are commensurate with risk are essential. Australia would benefit from an independent audit that assesses changes in quality and quantity (flows) in key riverine and groundwater ecosystems and seeks to relate its findings to current and past water management/planning decisions. Regular independent evaluations of the impacts of water-related programs and policies are essential.

There needs to be considerably more investment in strategic research and science to support improved water management. Stable and adequate investment in strategic research that supports water management, planning and industry priorities is essential to solve Australia's many unique water challenges and to develop and maintain expertise and research capacity. Strategic research and development in land and water sciences and engineering is essential to support evidence-based water planning and integrated catchment management. Continuity of research funding will help to drive innovation in the water industry. ATSE recommends that the Commission considers the creation of a long-term fund along the lines of the South African Water Research Commission[6], which is supported by a levy on metered water.

Developing future reform priorities

ATSE considers that the Commission's preliminary framework for national water reform priorities is generally sound. However, there needs to be a transparent process of measuring compliance and progress on a regular basis. Specific areas that should be targeted for further reform include:

Climate change

To date, Australia has not adequately addressed the complex nexus between climate change mitigation and adaptation in water management law and policy.[7] However, ATSE is pleased to note the recent release of a new module of the NWI policy guidelines for water planning and management that explicitly supports consideration of climate change and extreme events.[8] These guidelines need to be widely implemented but there is currently no framework to monitor, assess and report on progress of implementation. An adaptive approach should be taken to managing climate change impacts and a clear reporting mechanism is essential to support this.

5 Argent RM (2017) Australia state of the environment 2016: inland water, independent report to the Australian Government Minister for the Environment and Energy, Australian Government Department of the Environment and Energy, Canberra.

6 For more information on the South African Water Research Commission, see: http://www.wrc.org.za/

7 Carmody, E. (2017) Climate change is water change: integrating water management, mitigation and adaptation laws and policies [available at http://nswparliament.intersearch.com.au/jspui/bitstream/1/1119592/1/Climate%20change%20is%20water%20change.pdf]

8 Australian Government. (2017) Considering Climate Change and Extreme Events in Water Planning and Management [available at http://www.agriculture.gov.au/SiteCollectionDocuments/water/climate-change.pdf]

Environmental water management

Environmental water management needs to be informed by sound hydrological research and evidence. Best practice environmental management is not as simple as acquiring environmental water and minimising extractions. The policies that affect the health of environmental water systems are generally not well integrated. ATSE's recent submission to *the Standing Committee on Agriculture and Water Resources' Inquiry into Water Use Efficiency in Australian Agriculture* discussed the need for environmental water management and planning to be informed by an improved understanding of the interactions between water extraction and use, and surface and groundwater systems, including the eco-systems that depend on them, at a regional-catchment and basin scale.[9] Recognition of the interactions between water quantity and quality in environmental flows, and the effects of riverine and floodplain land use and management is critical. Water management and associated land management objectives should be integrated.

The 2016 State of the Environment report found that water quality trends in Australia are mostly stable or unclear. The report rated the condition of water ecosystems as largely poor. The resources allocated to water quality monitoring, analysis and reporting have reduced, and this has increased the management risks to water resources. ATSE calls for the consistent application of indicators of the health of water-dependent ecosystems to help improve their management. It is essential that Australia's water management and planning bodies are adequately resourced.

Groundwater

Professor Craig Simmons FTSE, discussed the groundwater-related inadequacies of the NWI in ATSE's *Focus* Magazine[10], including issues related to "mining and unconventional gas development, changes to technology such as managed aquifer recharge, and the use of groundwater in drought response. Other distinctions regarding groundwater that are not well represented in the NWI policy instrument include:

- groundwater quality and salinity;
- the nature of aquifers – such as the important distinction between confined and unconfined aquifers;
- groundwater mining and over-drafting often applied to paleoresources and large regional aquifers;
- the difficulty of developing a consistent approach across geological terrains; and overall, the comparatively low knowledge base of groundwater relative to the size of the management challenges"

ATSE welcomes the recent publication of the *National Groundwater Strategic Framework 2016–2026.*[11] This framework identifies three priority objectives for groundwater planning and management: Sustainable extraction and optimal use; providing investment confidence; and planning and managing now for the future. Other priority actions could include: improving the conjunctive management of groundwater and surface water; identifying water-stressed groundwater systems and providing adequate environmental water for their recovery; and extending water markets to groundwater areas approaching full allocation.

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9 ATSE (2017) ATSE submission to the Standing Committee On Agriculture and Water Resources Inquiry Into Water Use Efficiency In Australian Agriculture [available at http://www.atse.org.au/content/publications/submissions/natural-resources/water-use-efficiency-australian-agriculture.aspx**Error! Hyperlink reference not valid.**]

10 Simmons, C (2015) Stewarding our hidden groundwater asset, pp.13-16 in: ATSE (2015). Australia's liquid asset: Meeting our reform challenges. FOCUS Magazine, No. 189, April 2015 [available at https://www.atse.org.au/Documents/focus/189-australias-liquid-asset.pdf]

11 Commonwealth of Australia (2017), National Groundwater Strategic Framework 2016–2026, [available at http://www.agriculture.gov.au/water/policy/nwi/national-groundwater]

Urban water

Reforms should aim to improve the operational efficiency of the water sector; drive efficient investment in asset maintenance, upgrades, and augmentation; clarify governance structures of the sector; and tackle the emerging challenges presented by climate change.

Priority areas for urban water reform include:

- Improving the relationships between urban planning and water policy, and driving community and stakeholder involvement in the development of local water plans.
- Driving the widespread implementation of water sensitive urban design. Adoption is typically voluntary and as such it is currently patchy, localised, and small in scale. It may be beneficial to consider incentives or statutory requirements to expand its implementation.
- The role of decentralised systems and more effective third-party access regimes, capital recycling and private capital in infrastructure development and renewal.
- Increasing competition in the delivery of water-related services, within policy settings that protect public benefit.

Water recycling

The introduction of purified recycled water (PRW) into the drinking water supply is an important option to improve Australia's long-term water security. ATSE strongly encourages objective and even-handed consideration of PRW as one option for communities to augment their water supplies. A recent ATSE report[12] concluded that direct potable reuse (DPR) "can safely supply drinking water directly into the water distribution system" and noted that "current Australian regulatory arrangements can already accommodate soundly designed and operated DPR systems." While there is no immediate need to introduce DPR, Australia should consider developing and social acceptance in the community to improve its long-term potential as a secure source of water. Community engagement will be essential to raise public awareness of the potential advantages of DPR and address perceived safety concerns about recycled water. DPR should be considered as a viable water resource management strategy alongside other urban supply options to enhance Australia's future water security.

Equitable water allocation and management across all sectors

Water should be consistently managed across all sectors. Incorporating all water users (including the mining and petroleum industries) within one framework will help to address the complex intersections between food, water, energy and environmental issues. New South Wales has some provisions that address the need for integrated water and mining planning. In South Australia, co-produced water is not considered to require an entitlement unless it is used for some productive purpose such as minimising dust on roads. This encourages wasteful evaporation of water. Resolving the equitable management of water across different sectors (while acknowledging the inherent differences in their water needs) would help to resolve conflicts between sectors such as the mineral resources, energy, and agricultural industries. This will require the development of new methods for assessing and managing the cumulative impacts of these sectors' operations.

12 Khan, S (2014) Drinking Water through recycling – The benefits and costs of supplying direct to the distribution system [available at https://www.atse.org.au/content/publications/reports/natural-resources/drinking-water-through-recycling.aspx]

Indigenous water rights

ATSE's Position Statement on national water management reform highlights the importance of developing a greater understanding and appreciation of water-related cultural and economic needs and interests of Indigenous Australians.[13] ATSE commends the recent release of a new NWI policy module, aimed at supporting water planners and managers to develop and implement inclusive water planning processes that support the social, spiritual and customary objectives of Indigenous peoples.[14]

Recommendations

To avoid a future water crisis, ATSE calls on all the governments of Australia to develop and commit to a **decadal strategy for national water reform** that will ensure secure, sustainable, and equitable water supplies for Australian communities, industries and the environment. Such a decadal strategy for national water reform should:

- Fund an independent expert body with the skills to reinvigorate and drive progressive water reform, and assess governments' progress against the decadal plan.
- Invest in water quality and quantity monitoring to provide water planners and managers with essential evidence to support their decision making.
- Invest in strategic water research and development that supports evidence-based water planning and integrated catchment management.
- Mandate the explicit consideration of climate change impact on water planning and investment decisions.
- Develop improved national policy principles and guidelines for integrated, holistic environmental water management and planning.
- Revitalise urban water policy and governance.
- Consider the potential for direct potable reuse (DPR) of recycled water in drinking water distribution systems.
- Drive widespread implementation of the National Groundwater Strategic Framework.
- Ensure consistent and equitable management of water across all sectors of the Australian economy.
- Deliver national action on water rights for Australia's Indigenous peoples.
- Include all levels of government, and regional catchment bodies and authorities.
- Introduce regular, independent, transparent, and effective auditing of water reform processes.

13 ATSE (2014). National Water Management: New Reform Challenges [available at https://www.atse.org.au/atse/content/publications/policy/national-water-management.aspx]

14 Australian Government. (2017). Engaging Indigenous Peoples in Water Planning and Management. [available at http://www.agriculture.gov.au/SiteCollectionDocuments/water/indigenous-engagement.pdf]

Recommended reading

ATSE (2014) *National Water Management: New Reform Challenges* [available at https://www.atse.org.au/atse/content/publications/policy/national-water-management.aspx]

ATSE (2014) *Implementing the National Water Initiative: 2014 Triennial Assessment of Water Reform Progress in Australia* [available at http://www.atse.org.au/content/publications/submissions/natural-resources/implementing-national-water-initiative.aspx]

ATSE (2015) *Australia's liquid asset: Meeting our reform challenges*. Focus Magazine, No. 189, April 2015 [available at https://www.atse.org.au/Documents/focus/189-australias-liquid-asset.pdf]

ATSE (2017) *ATSE submission to the Standing Committee on Agriculture and Water Resources Inquiry Into Water Use Efficiency In Australian Agriculture* [available at http://www.atse.org.au/content/submissions.aspx?Submissions_collection=7#Submissions_collection]

Carmody, et al. (2016) *The future of water reform in Australia — starting a conversation*. Australian Environment Review, 31(4), 132-137

Khan, S (2014) *Drinking Water through recycling – The benefits and costs of supplying direct to the distribution system* [available at https://www.atse.org.au/content/publications/reports/natural-resources/drinking-water-through-recycling.aspx]

Williams, J. (2017) *Turning the tide of water reform* [available at https://www.policyforum.net/turning-tide-water-reform/]