

SUBMISSION

Submission to the Productivity Commission

Submission to the National Water Reform 2024 consultation

2 February 2024

The Australian Academy of Technological Sciences and Engineering (ATSE) is a Learned Academy of independent, non-political experts helping Australians understand and use technology to solve complex problems. Bringing together Australia's leading thinkers in applied science, technology and engineering, ATSE provides impartial, practical and evidence-based advice on how to achieve sustainable solutions and advance prosperity.

As Australia's blueprint for water reform, the National Water Initiative (NWI) is an important opportunity for ensuring sustainable management of Australia's water resources. ATSE's submission calls for a nationally led, locally implemented, contemporary NWI which considers climate change, urban water, water quality, Indigenous interests, the processes for future investments in water infrastructure, and improved data and knowledge about water. ATSE calls for the establishment of a renewed National Water Commission (NWC) with authority and resources sufficient to catalyse necessary reforms by water managers across Australia. ATSE is keen to see the previous reform agenda resume and extended to deal with a new range of contemporary reform issues. ATSE calls for a commitment to and evolution of the NWI to meet current and impending crises in national water, thereby enabling economic, health, social and productive outcomes for Australia, through the following actions:

Recommendation 1: Apply an Environment / Social / Governance (ESG) framework as the foundation of the NWI.

Recommendation 2: Define and design the role of government, governance and institutions to lead and deliver outcomes.

Recommendation 3: Re-establish and evolve the National Water Commission.

Recommendation 4: Implement structures to transparently uphold the principles of the NWI.

Recommendation 5: Account for uncertainty, including the effects of climate change and population growth.

Recommendation 6: Manage for security of water quality as well as quantity, acknowledging changing community expectations.

Recommendation 7: Include a focus on urban water.

Recommendation 8: Embed Aboriginal and Torres Strait Islander engagement and Traditional Knowledge in the NWI.

Recommendation 9: Prioritise knowledge generation, including through investing in digital technologies, enabling data-driven decisions and investments.

Driving better outcomes with an ESG framework

It is timely to create a new, contemporary NWI – rather than amend the existing NWI. Increased environmental pressures and competing interests must be understood and managed to secure Australia's water supply for a growing population. In recent years, governance structures have lacked the capacity, legitimacy and authority to fairly and sustainably manage and conserve water resources holistically. Water policy decisions require long-term engagement with other policy arms of government and with stakeholders, and the cultivation of a broader, shared commitment to equity between users and the common good. Sustainability over generations is a first prerequisite for a national water initiative.

ATSE recommends applying an ESG (environmental, social, and governance) framework to water management across Australia which would provide an evolved and contemporary lens for the equitable distribution of water among present and future stakeholders. ESG criteria, derived from investment frameworks, have been applied as a de-risking strategy for successful and sustainable water management including by Melbourne Water, Macao Water Supply, Dubai Electricity and Water Authority, and WaterPlan. An ESG framework would capture the key challenges and provide a lens for decision making, reporting and accountability in the Australian water landscape. A reporting framework such as the Global Reporting Initiative (GRI) could be applied to evolve the NWI, heightening transparency. ATSE considers that future Australian Government investments in water infrastructure should be subject to assessment through an ESG framework.

Applying an ESG framework would bring the NWI into line with the new corporate sustainability reporting regime, through the Australian Government's initiative to require ESG based climate-related financial disclosure for large businesses and financial institutions. While the NWI is out of scope of the financial disclosure legislation, the indirect impacts to each water-related organisation and sources of funding will be within scope. The proposed legislation will also pave the way for the Australian Accounting Standards Board (AASB) to set sustainability standards through legislative amendments, which will then apply to water-related entities.

Recommendation 1: Apply an Environment / Social / Governance (ESG) framework as the foundation of the NWI.

Establishing fit-for-purpose governance structures

The Australian population is highly urbanised while the landscape is both geographically large and diverse. A successful National Water Initiative has to be adaptive and flexible to actively support all uses and users of water, from the coastal cities to the remote heart of Australia.

Strong and enduring governance structures are required to provide support and transparency for delivering the NWI. National framing and accountability combined with local delivery will provide the best chance of success. This will be complex and require institutional expertise and adequate resourcing for long-term planning. The current crisis-driven approach resulting from competing pressures on water decision-making and negotiations between state and the Federal Government limits the current NWI's ability to plan for changing climates and population growth. An NWI led by the Commonwealth and used as a benchmark to assess the reform progress of water managers in the Commonwealth, States and Territories would be more effective in this role.

To complement the refreshed reform agenda, ATSE calls for the creation of a contemporary National Water Commission (NWC) to drive the reform process. The NWC previously drove policy and supported implementation and audit of many facets of water management effectively. It invested in new technologies and raised the level of debate and understanding of the NWI commitment. It gave the NWI a voice and avenue for effective outcomes.

A re-established NWC will require evolved governance structures to empower it in times of crisis and enable it to operate with the social license required with changing community expectations. It will require the authority to issue public assessments of reform progress, or lack of it. An NWC requires effective policy, jurisdictional coordination and governance to encompass urban water, environmental and ecosystem outcomes and industrial needs. As the NWC will require buy-in from all levels of government, it is proposed that it should report to the Prime Minister and to National Cabinet. Embedding defined roles, responsibilities, accountabilities, consultation and informed (RACI) parties and stakeholders in the NWI would drive clarity and empower transparent processes.

Recommendation 2: Define and design the role of government, governance and institutions to lead and deliver outcomes.

Recommendation 3: Re-establish and evolve the National Water Commission.

Applying the principles of the NWI

The current NWI outlines how proposals for investment in new or refurbished water infrastructure should be assessed as economically viable and ecologically sustainable, prior to the investment. However, this due diligence has not been followed, with project announcements being made before an assessment could occur. Announcements of projects should be restricted to, accompanied by, a business case and environmental impact assessment so that an informed investment decision can be made.

Pricing policies have also been a point of failure in applying the NWI including "full cost recovery for water services" (except in exceptional circumstances where a Community Service Obligation means that some government subsidy is deemed necessary). This has primarily occurred where the Australian Government has directly funded water infrastructure projects with no mechanism to recover costs through water sales. Where water infrastructure investments are made exclusively or primarily for economic purposes, pricing should achieve full cost recovery to taxpayers, in accordance with the NWI principles.

A more appropriate governance model would be for the Commonwealth to provide funding to the states, for the states to then select projects and invest according to policy. The current practice of Commonwealth grants for specific projects creates perverse incentives for states to undertake projects that attract grants even if they may be less economically favourable overall. An alternative model to be considered is the Commonwealth retaining some ownership of funded infrastructure, allowing the Commonwealth to receive income generated from that investment.

Recommendation 4: Provide for governance structures to adhere to the principles of the NWI.

Managing for water security

ATSE agrees the NWI must specifically account for a changing climate which remains the single most significant threat to Australian productivity and quality of life. Delivering climate-resilient infrastructure is a necessary part of the solution as the impacts of climate change often negatively impact water supply and quality. Impacts on communities can be direct – such as water security issues of drought, floods and environmental degradation and loss of natural capital. Or they can be indirect – in terms of food security, public health and in responses to heat waves and wildfires.

Current water modelling does not account for uncertainties, including those associated with climate change. Future pressures on Australian water resources require the use of adaptive management approaches and modelling and decision-making tools that explicitly acknowledge and incorporate uncertainty. New adaptive approaches are needed to enable water planning processes to evolve as aquatic systems and our knowledge of them, change.

It is also important to manage for resilience into the future. While debate often focuses on water quantity, environmental and other outcomes also hinge upon other aspects such as water quality, timing, duration, variability, and temperature. Ecosystems will not return to a preferred reference state through the restoration of water quantity alone. The environmental health of many of Australia's natural water systems is already seriously degraded and is continuing to degrade from successive droughts, bushfires and reflooding.

Water scarcity is only one dimension of water security. It also includes security from flooding hazards (such as the devastating floods many cities are currently experiencing), ecological security from anthropogenic pollution of waterways and data and operating systems security in the face of increasing cybersecurity risks.

We cannot meet the provision of safe urban water for all Australians no matter if they live in cities, regional or remote areas without effective short, medium and long-term planning for drinking water and sanitation which Australia has committed to meet in light of Sustainable Development Goal 6 (clean water and sanitation for all). Implementing a new NWI would align with Australia's global obligations including to Agenda2030 and commitments to climate change mitigation and adaptation.

Recommendation 5: Account for uncertainty, including the effects of climate change and population growth.

Recommendation 6: Manage for security of water quality as well as quantity, acknowledging changing community expectations.

Embedding urban water in the NWI

Australia is one of the most urbanised nations – 86% of the population lives in urban areas. This will increase, with the population expected to nearly double by 2066, and 80% of new arrivals choosing to live in cities and towns. Cities are complex adaptive systems, with multiple interconnected elements converging, concentrating, and exacerbating many of the impacts of climate change on water. Urban densification and renewal to accommodate anticipated population growth will require a new wave of infrastructure investment.

Urban water management is critical to an effective NWI. While agricultural water management has been extensively considered in the previous NWI, urban water management was not adequately incorporated. Embedding urban water in the NWI necessitates the inclusion of different stakeholders, including state water departments as policy developers and urban water utilities as the main service providers. Since the National Water Commission's 2011 report on the [future direction of urban water in Australia](#), the sector has focused on its changing role. The report encouraged retailers to realise more multifunctional and flexible urban water systems that deliver a broader range of services and outcomes for communities. Future urban water infrastructure will harvest and recycle water from multiple sources (for example, catchment water, stormwater, wastewater, greywater, seawater), minimise ecological footprints, and require a more flexible combination of centralised and decentralised systems.

Water governance arrangements will also need to be reframed to view cities as water supply catchments, harnessing the full potential of wastewater and stormwater. Water is an essential element of place making, both from maintaining/enhancing the environmental values of surrounding waterways and in the amenity and cultural connection of the place. The way we manage urban water influences almost every aspect of our urban environment and quality of life.

The Australian Government, through the NWI, can play an important role in formulating a national framework for contemporary urban water management and incentivising their implementation according to the physical and institutional contexts of individual jurisdictions at the state, municipal and community levels.

Recommendation 7: Include urban water as a key focus for the NWI.

Establishing the knowledge basis for the NWI

The NWI must be evidence-based, including both research and development (R&D) and ongoing data collection from improved digital water monitoring and management technologies. Australia currently lacks a coordinated national strategic plan for water research. A far deeper understanding is needed of economic, socio-cultural, Aboriginal and Torres Strait Islander, and ecological values, together with the associated uncertainties, and these need to be transparently incorporated into decisions along with a clear articulation of trade-offs.

Adaptive management is not possible without adequate modelling of Australia's water resource systems and their interconnections such as assessment and monitoring of soil-landscape systems and water quality. All water – urban (including wastewater and recycled water), environmental, cultural, and industrial (including water used but not consumed, such as for hydroelectricity) – must be covered by the NWI. This must be underpinned by a publicly available "data lake" that covers water quantity and water quality for all forms of water, using monitoring data, modelling and other relevant data inputs (such as satellite imagery and weather). This should prioritise the development and implementation of water monitoring using digital technologies to provide timely and consistent volumetric water quantity and water quality monitoring data across states, stakeholders, and institutions. This should include:

- Monitoring and measuring groundwater and surface water connectivity.
- Centralised, inter-stakeholder and publicly available modelling of attributes, including surface water-groundwater interactions, urban water cycles, flow regimes, water quality for various time-series and timescales, climate change scenarios, uses and users.
- A single source of risk-based modelled attributes, impacts and outcomes.
- Monitoring, reporting and independently assessing water security through SMART metrics.

Requisite knowledge extends beyond the biophysical, and includes knowledge about values and aspirations. Traditional Knowledge is important for managing water resources, and integrating Indigenous perspectives and expertise goes beyond appointing single representatives. Genuine engagement with communities is needed at a local level. It is critical that future water management decisions include a strong focus on delivering Indigenous water rights and creating processes to include Indigenous people in water planning and management processes following the approach outlined by the [Our Knowledge, Our Way](#) guidelines, including sharing and weaving knowledge.

A robust knowledge basis feeds back into governance, providing the evidence needed for decision making including on project funding.

Recommendation 8: Embed Aboriginal and Torres Strait Islander engagement and Traditional Knowledge in the NWI.

Recommendation 9: Prioritise knowledge generation, including through investing in digital technologies, enabling data-driven decisions and investments.

ATSE thanks the Productivity Commission for the opportunity to respond to the National Water Reform 2024 consultation. For further information, please contact academypolicyteam@atse.org.au.

Appendix: Commission's 2020 Inquiry

ATSE welcomes the Terms of Reference request to provide feedback regarding the strengthening or adding of various elements of the 2020 Inquiry. Whilst much of this is reflected in the above recommendations, we have reviewed the specific aspects of the 13 areas noted in the 2020 Inquiry Report and their sub-text. In light of policy developments, population growth, climate change, community expectations and environmental needs coming to light since the 2020 Inquiry, we note that all stated elements remain contemporary, and that indeed many have made some progress, or are planned to progress. However, there are several that require substantive steps forward in a very near term to mitigate risks of poor outcomes for Australia. In no specific order, these are:

1. **A refreshed intent:** Develop new elements covering Aboriginal and Torres Strait Islander people's interests in water, and infrastructure development. Significantly enhance the environmental management and water accounting (system integrity) elements. (3.5). *This should be further with the use of digital technologies, be evidence-based and support outcomes with an actions focus.*
2. **Water entitlements and planning:** Enhance water planning provisions to better reflect current best practice and embed processes to better account for climate change including in relation to: dealing with extreme scenarios; water quality issues; rebalancing; modelling climate; and provisions for allocating risk. (6.2) *Define criteria on SMART basis, align to ESG framework and enhance funding for water quantity and quality modelling.*
3. **Environmental management:** Establish clear processes for reviewing progress on environmental outcomes. (8.4). Embed criteria for prioritising environmental watering, and objectives for environmental watering under different climate scenarios. (8.5) *Ensure contemporary and standard definitions and use digital tools to support information sharing and access. Enable digital modelling and shared platforms across geographical ecosystems and catchments.*
4. **Aboriginal and Torres Strait Islander people's interests in water:** Co-design a new NWI element dedicated to Aboriginal and Torres Strait Islander people's interests in water and involvement in water management. (9.1) Improve cultural outcomes using existing frameworks. (9.2) Improve access to water for economic development. (9.3). *Implement and align to an ESG framework for transparency and materiality recognition and associated monitored actions.*
5. **System integrity:** Ensure system integrity through fit-for-purpose metering and measurement, registers and effective compliance and enforcement systems. (10.2). Ensure the integrity of water system management via effective information provision. (10.3). Ensure information on the broader water context Implement and aligns with users' needs. (10.4). *Invest in and use digital technologies for water quality and water quantity of all water forms, and enhance digital capability for community and information sharing.*
6. **Urban water services:** Update the National Water Urban Planning Principles and embed them in the NWI. (12.1). *Strengthen in response to population growth, urbanisation and climate change.*
7. Subject all urban water service providers to performance monitoring and reporting. (12.3). *Strengthen digital technologies, shared platforms, data-lakes and SMART metrics on single-source definitions.*
8. Commit to ensuring affordable access to a basic level of water services for all Australians. At a minimum, these would include safe and reliable drinking water. Where subsidies are needed, they should be provided as transparent community service obligation payments. (12.4). Include principles for governance of regional and remote water services where local governments retain ownership of utilities. (12.5). Monitor and report on water quality and service outcomes in remote Aboriginal and Torres Strait Islander communities. (12.6). *Apply SMART metrics and implement water service assessment via an ESG framework, cognisant of all sub-elements of SDG 6. Equality and equity to be defined and supports across city, regional, rural, remote and Indigenous communities. Strengthen mobile and remote monitoring for real time service assessment for quality and quantity metrics.*
9. **Infrastructure development:** Develop an element to guide investment in water infrastructure. Restate the high-level requirement for all infrastructure to be assessed as economically viable and ecologically sustainable prior to the commitment of funding, with cost recovery from users the norm. Add a further requirement that infrastructure development processes are culturally responsive to Traditional Owners' interests to ensure deep engagement and, at a minimum, protection of cultural assets. (14.1). Agree to criteria on how major projects can demonstrate adherence to the NWI requirements for infrastructure. (14.2). Clarify institutional roles and responsibilities underpinning government investment. (14.3). *Implement a robust independent infrastructure investment and governance framework based on ESG principles. Use transparent criteria and definitions that are publicly transparent. Instil reporting requirements associated with any funding, balance incentives and define national led outcomes versus state, regional and local delivery.*
10. **Knowledge, capacity and capability building:** Commit to a culture of evidence-based decision making, innovation and continuous improvement to underpin successful implementation. (16.1). *Invest in, develop and implement digital-based technologies and tools to support information sharing and public access. Undertake a review of capacity and capability needs given current and future needs and develop this review against a RACI method.*