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WATER REFORM FOR ALL
A National Response to a Water Emergency

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Cover image: Dry river bed in the Mutawintji National Park, outback NSW Australia

PREFACE

In the space of a few weeks, the lives of millions of Australians were turned upside down by the devastating bushfire season of 2019-20. This crisis revealed to the world the precariousness of Australia's relationship with nature and highlighted the limitations of our approach to the governance and management of our natural resources. These limitations are arguably most evident in relation to water, an essential but scarce resource, and one which poses huge challenges for policymakers charged with balancing cultural, economic, natural and social imperatives. Australia's recent experience suggests our current policy frameworks are insufficient to meet those challenges, and that we need to find alternatives.

This brief seeks to open a dialogue on what those alternatives might be. The authors have faith that good public policy is not beyond our capabilities; indeed they acknowledge Australia's world-renowned expertise in water policy. But they argue we need a new approach, one which draws on the long experience and expertise of the First Australians, which pays attention to questions of human health and ecological survival, and which provides a framework for action in the short-medium and longer-term. The authors do not pretend that they have all the answers, rather they offer a series of principles from which to work, and a set of questions with which to begin that work. The brief is clear though that a new approach requires a national conversation involving all of us.

The ANU is uniquely positioned to stimulate this conversation. As the National University, it is part of our mission to support the development and implementation of good public policy, and the authors of this report are all active contributors from the local to the global levels. The Crawford School of Public Policy is at the centre of many conversations about contemporary policy challenges. Informed by our principles of sustainability, integrity, and capability we work with leaders, governments, public, private and not-for-profit organisations, as well as citizens and communities to bring values, evidence and analysis to policy-making for the future. This brief is part of that contribution.

Professor Helen Sullivan
Director, Crawford School of Public Policy



The Darling river at Bourke in drought conditions, bone dry upstream of the weir.

1. INTRODUCTION

After more than three decades of intense activity, Australia's world-renowned water reform project is failing to deliver what was promised, and what is required. In the early water reform years of the 1990s and early 2000s, it seemed possible to define sustainability and to develop comprehensive integrated policy responses to achieve this goal. If Australia had achieved its water reform promise, it would have complemented the successes of Australia's First Peoples who sustainably managed extreme climate variability for many thousands of years.

From the very beginning of European settlement, water security has been an elusive goal, sometimes glimpsed but never attained. Despite more than two hundred years of water management experience (and in spite of thousands of years of Indigenous water management), Australia still has many towns across the country requiring emergency water responses in times of drought.

In 2020, long-accepted policy approaches are once again in question. Within the Murray-Darling Basin (MDB), some jurisdictions openly doubt the value of catchment-wide management. Even the formula for water sharing across state borders, one of the foundations of the national federation contract negotiated over a century ago, is under attack. The assumptions, water values and even some of the science that previously underpinned water reform no longer provide a shared foundation for the national policy debate. It is in this context that Australia faces a water emergency.

For all of us focussed on the challenges of an increasingly uncertain water future, it is time to return to basics, reassess what is sensible and feasible, and to consider and debate new ways forward. This water emergency demands a constructive response from all who are concerned and knowledgeable about Australian water reform.



Aerial view of a dry dam in the far west of New South Wales, Australia.

This is a policy brief that begins a dialogue with all Australians on water reform. It was prepared in response to the national water emergency that has been exacerbated by the 2017-2020 drought and the 2019-20 bushfires.

The New Normal

The unprecedented bushfires of 2019-20 change everything. Australians can no longer pretend that the calamities of a drying and increasingly warmer country will not affect them. While the focus in the aftermath of the fires has been on the influence of climate change, much of the impact of climate change will occur through the frequency, volume, timing and evaporation of water on our continent.

The new normal is that where most Australians live it will likely get drier, and all of Australia will get hotter. Rainfall will become more unpredictable and extreme weather events, such as cyclones, more intense. This will make it more difficult for water managers who have struggled to respond to Australia's natural 'boom and bust' of water availability through droughts and floods. Further, water planning has, so far, struggled to respond to the climate change impacts that are already occurring, let alone develop an actively adaptive strategy to the future effects of climate change.

To cope with the current water emergency, we need to extract less water and ensure our rivers, lakes and wetlands have the water needed at the right time to deliver the full set of ecosystem services: water supply for humans; habitat for aquatic and terrestrial animals and plants; water quality and flood regulation; nutrient cycling; recreation; and, importantly, access and use of water by the First Peoples of Australia and Australians living on the land and in cities. Without stronger protection of these critical services, all Australians will suffer, including the families and businesses who extract water to grow crops.

Arguably, the first steps of water reform to ensure long-term sustainability began in the 1990s and were accelerated during the Millennium Drought of the 2000s. These reforms resulted in an intergovernmental agreement on water in 2004 called the National Water Initiative (NWI) and a federal Water Act in 2007 that upended a century of exclusive state jurisdiction over water – including the water rights and interests of Indigenous peoples. This reform process has stalled. Instead, a much narrower or 'frontier' view of water and its role in the environment, society and the economy has reemerged. This frontier view has as its core the perspective that water only has value when it is extracted and that a key plank of water 'reform' should be facilitating water extraction by subsidising water infrastructure. This view of how water should be used poses large risks, especially for Northern Australia, which mostly does not have large human-made storages, and the North's Aboriginal Traditional Owners.

In this brief, we outline pathways to respond to Australia's water emergency. We propose a national dialogue to place Australia's water reform back 'on track' and to fully implement the 2004 National Water Initiative. In making this proposal, we are not naive. All of us have been involved in water reform and some of us, like many communities who have been 'consulted' (or not), suffer from 'reform fatigue'. Nevertheless, we are determined to support those who are currently excluded but who wish to be part of a national dialogue, to argue the case for water reform for all, and to work towards a sustainable water future for Australia.

2. FIRST PEOPLES FIRST

Water reform in this country is much older than Australia has existed as a nation. Importantly, Aboriginal well-being is integral to the development of broad-based water policy. Further, Aboriginal water rights are necessary to achieve positive outcomes in Aboriginal health and self-determination as well as supporting Aboriginal economic development.

The inherent relationships of Aboriginal peoples with land and water are regulated by traditional knowledge. For generations, Aboriginal peoples have developed significant water knowledge for resource use. Aboriginal water knowledge, traditional sharing practices, climate and seasonal weather knowledge all underpin water use knowledge. Aboriginal customary water use cannot be decoupled from the relationship with the environment and water resources because Aboriginal water concepts are central to community and kinship relationships. Unlike Western legal concepts, water cannot be separated from the land because Aboriginal creation stories have laid the foundations for Aboriginal water values.

The first, and tragic, water 'reform' was the acquisition of water sources and water bodies, typically without compensation or agreement of First Peoples. Overlaying this dispossession was the imposition of British common law that gave the recognised 'settlers' (owners) of riverside, or 'riparian', land access rights to freshwater. Increasing water scarcity from a burgeoning settler population eventually led to the transformation of most riparian water rights into state-owned rights in the nineteenth century.

The twentieth century witnessed a boom in water extractions aided by state-sponsored dam construction. The purpose of state support was to assist non-Indigenous Australians move 'on to the land'. This focus on putting 'water to good use' for production or navigation coincided with a view that water that flows to the sea or that nurtures cultural or environmental sites is 'wasted'. Unfortunately, among some people, this outlook continues to this day and underpins the development of the new Federal National Water Grid Authority and also renewed calls for an updated Bradfield scheme to pump water from coastal northern rivers across the Great Dividing Range. The fundamental assumptions of this perspective are that: (1) water scarcity can be 'solved' by building more infrastructure; and (2) water that is not extracted has little or no value.

A 'frontier mentality' about water and its value is fundamentally flawed. This viewpoint is a major cause of the unfolding water emergency in Southern Australia and is driving an emerging water crisis in Northern Australia. Up north, proponents of the frontier mentality are advocating for new dams (to be paid for by taxpayers) and the reallocation of water from streams and groundwater to so-called 'productive' uses and users (including the proponents of such schemes). If these plans were to be implemented, this would be another 'water grab' that would reduce the welfare of the vast majority of Australians. This welfare loss would be borne by taxpayers who would pay for schemes that are not economically viable without government subsidies and, especially, the First Peoples and Aboriginal Traditional Owner groups on whose Country in the North these schemes are proposed.

A contrast to the frontier view of water is that of the First Peoples who have always viewed water as integral to their Country. Water in this dry land has always been fundamental to life and something treasured that generates benefits for all, and for all time. Recognising the intrinsic value of water beyond its so-called 'productive' use must be central to our collective response to Australia's water emergency. To be clear, we are not proposing a return to a pre-Colonial view of how water is governed or used. This is neither feasible nor desirable. Instead, we are arguing for an alternative to the dominant 2020 water policy paradigm and supporting the voices in government, industry and the community already calling for a more holistic view. This alternative gives explicit consideration and priority to non-market and Indigenous water values alongside irrigation, town water supplies, and other water uses.

A worldview similar to our own was, for a while, widely held by Australian decision-makers. All the decision-makers and governments who signed the 2004 National Water Initiative, publicly agreed that “water may be viewed as part of Australia’s natural capital, serving a number of important productive, environmental and social objectives”; stressed the importance to “recognise Indigenous needs in relation to water access and management” (which is often ignored and is not mandated to meet water requirements); and sought to “identify and acknowledge surface and groundwater systems of high conservation value, and manage these systems to protect and enhance those values”. These water governance principles were supposed to be the foundation for state/territory water plans and would be verified through water accounting that would ensure “... adequate measurement, monitoring and reporting systems are in place in all jurisdictions, to support public and investor confidence in the amount of water being traded, extracted for consumptive use, and recovered and managed for environmental and other public benefit outcomes”.

Fast forward to 2020 and the responses to the 2017-2020 drought across South-Eastern Australia demonstrate how far we have deviated from those principles. There has also been a fundamental shift in policy implementation and political rhetoric around water. Rather than building on the principles of sustainable water reform outlined in the 2004 National Water Initiative, some key Australian decision-makers have gone back to the past to revive illusive pipe dreams that have time, and time again, failed to deliver what Australians want and what Australia needs: water security and healthy, living waterways. Years after the National Water Initiative was signed by governments, state water sharing plans have been established and implemented that contradict the principles of the National Water Initiative and water justice. As a result, some water sharing plans fail to give priority to key water uses, including town and household water supplies, and, at best, pay lip service to environmental and cultural values and Indigenous knowledge.



Dried lake in the Australian outback

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3. WATER HEALTH RISKS

The health of Australia's waterways is critical to our physical and mental well-being, especially in the time of COVID-19. Cities, towns and communities need reliable supplies of good quality drinking water. Food production depends on water availability. Swimming, fishing, harvesting traditional medicine, boating and numerous other activities all rely on healthy riparian ecosystems.

The drought that began in early 2017 in South-Eastern Australia was a key driver of the 2019-20 bushfires. The immediate impact of these fires includes water infrastructure damage and drinking water treatment systems going off-line due to power loss. In the aftermath of a fire, ash, debris and microbiological contaminants from dead animals can put further pressure on drinking water supplies. The extra nutrient loading can also increase algal growth, causing oxygen depletion and fish deaths. All of these factors place extra pressure on water treatment systems and, if these plants are compromised, could lead to illnesses such as gastroenteritis, and skin and eye infections. Fires also release chemical contaminants such as lead, copper, chromium and mercury, which then wash into waterways.

Drought and increasing fire severity are increasing water health risks, but water governance has also failed. We know that water allocation should prioritise critical human needs and that drinking water supply planning should account and plan for climate change. Yet, despite existing plans, rural towns have literally run out of fresh drinking water, and others are at risk. These towns include: Bimbi, Braidwood, Byrock, Cambooya, Caragabal, Clifton, Collarenebri, Condoblin, Coolabah Village, Delegate, Denmark, Engawala, Euchareena, Imanpa, Inglewood, Fifield, Girilambone, Miriam Vale, Mount Hope, Mungindi, Murrurundi, Oxley, Scotdesco, Stanthorpe, Tarana, Tottenham, Walgett, Wilcannia, Wutunugurra, Yuendumu, and more. These towns are not just dots on a map. They are communities whose very existence is threatened if Australian decision-makers fail to protect the fundamental right of all its citizens and deliver basic water needs to these communities. The critical and life-saving importance of providing basic water needs has been made even more stark with COVID-19.

Compounding the stress of drought, too many small remote and regional communities are 'falling through the cracks' of drinking water service provision. Compared with cities, many small communities face relatively high rates of water supply disruption and water quality test 'failures' due to microbiological contamination. Water quality can be very good in some locations, but in others water can be 'hard' with an unpleasant taste or contain high levels of nitrate, which puts babies at risk of Methemoglobinemia ('blue baby syndrome'). Some very small, remote Indigenous homelands communities have no drinking water service provider, meaning that their water is not always treated and is rarely tested to check for quality. Even when specific drinking water supply problems are well-known and communities have drinking water service providers, it can be difficult to get action to remedy water quality and water availability problems, thereby exacerbating public health risks.

Health risks differ between and across communities. Water quality and reliability of water supply vary greatly across Australia. Within communities, age, sex, income and pre-existing health factors play a role in any health response to water quality that fails to meet drinking or bathing standards. Ensuring drinking water is available and preventing water-borne diseases must always be the first priority. Beyond the immediate effects of microbial contamination, there are also longer-term health impacts that arise from unacceptably high levels of non-biological water contaminants. The health impacts include both physical health and the psychological distress of running out of water or drinking poor-quality water. The danger of some of these long-term impacts on public health being exacerbated by fire and extreme weather events needs to be incorporated in plans as the intensity and duration of bushfire seasons is likely to become more severe in the future.

Physical and mental health impacts of unclean water need to be considered through a water justice lens. Socio-economically disadvantaged and minority populations without strong social networks are less likely to be able to cope with the loss of their drinking water supplies. As yet, we have little understanding of the magnitude of water availability and quality deficiencies for these populations and the follow-on effects for their health and well-being. This requires that water and health, together, be a key priority in ensuring water reform for all.



Australian Rainbow Lorikeets (*Trichoglossus moluccanus*) drinks from water tap, Outback Australia.

4. ECOLOGICAL HARMS AND RISKS

The 2019-20 bushfires follow two years of extreme drought in Southern and Eastern Australia. In the Murray-Darling Basin, poor water management has combined with low rainfall to cause rivers to dry up, mass fish kills, and distress among Aboriginal communities. While measures were agreed to conserve and restore rivers in the 2012-2026 Basin Plan, key elements of these plans have not been delivered. In 2018, for instance, the Federal Australian Parliament agreed to reduce the reallocation of water to sustain the environment of the Barka – Darling River from 390 to 320 billion litres per year, months before it ran dry. Implementation issues remain for measures to restore floodplains that would allow water to spill out of river channels and inundate floodplain wetlands. Gaps in governance and lack of accountability have also seen complex rules ignored, exploited, or changed to favour the interests of powerful agricultural companies and lobby groups.

Fires in Southern and Eastern Australia burnt around 7.5 million hectares of the highlands and coast. The fires started unseasonably early and are unprecedented in the extent and severity of the area burnt. Although many of Australia's ecosystems are adapted to fire, others are not. For instance, rainforests and riparian forests in normally moist environments were extensively burnt.

Freshwater ecosystems have been negatively impacted in a number of ways – including Indigenous communities' access and use of water. Species living at the edge of waterways and in streamside forests have been directly incinerated. Shade and protection from wind has been lost, resulting in higher water temperatures and increased evaporation that may stress surviving wildlife. The loss of this screening vegetation also facilitates hunting by predators.

In early 2020, the first inflows after the devastating fires are already washing ash into streams, clogging fish gills, and adding nutrients that drive algal blooms. Sediment damages habitat when it is washed into waterways and fills in the gaps between rocks and deep holes in riverbeds where many species shelter in cool water and breed. While fires tend to burn forests in patches and leave refuges for terrestrial animals, many of the impacts flow downstream to systematically degrade the habitat of aquatic animals.

An extensive number of freshwater fauna are affected by the recent bushfires. The provisional list of 113 priority fauna species negatively impacted by bushfires released by the federal minister in February 2020 includes at least 61 (54%) freshwater species. Heading the list is the iconic platypus, a species that appears to have been in serious decline even before the fires. Also included are 3 turtle species, 17 frogs, 22 crayfish and 17 fish. Rounding out the list is an alpine stonefly, although there are likely to be many other invertebrates that are also threatened. Further, there are other listed species that depend on the moist, streamside forest habitats that have been badly degraded.

These ecological impacts of drought, poor water management and bushfires may be long lived. When aquatic animal species are wiped out in particular rivers, they may not be able to recolonise from surviving populations in other waterways. Of particular concern is the burning of the peat swamps that form mountain wetlands and provide shelter for animals like corroboree frogs. Exacerbating the problem is that, after large fires, the fast-growing eucalyptus forests can transpire more water than the older trees that were burnt. In time, this can substantially reduce inflows into streams for up to several decades.

Short-Term Actions for Ecosystem Restoration

In the short term, surviving and regenerating freshwater ecosystems need to be restored – with the consultation and engagement of Indigenous communities and Indigenous Ranger groups. A number of government programs are off to a good start in promising to cull feral predators like cats and foxes, as well as grazing animals like pigs, deer and goats. In our view, the New South Wales and Victorian governments need to activate their plans to remove feral horses in the Alps that are damaging the swamp habitats and streams that shelter animals like corroboree frogs and the stocky galaxias fish. Given that so many infested riverside forests are now accessible, it is a key time to control regrowth of weed plants like willows, blackberry and lantana.

In the medium-term, existing under-funded restoration programs need to be expanded, including fencing livestock out of waterways, installing off-stream watering points for these animals, and replanting along stream banks. Many aquatic animals only live in water of a particular temperature. Native vegetation restoration on banks will help shade and cool streams, reduce evaporation, provide organic material to the food chain, and reduce inflows of sediments and chemicals from adjoining farms and urban areas. Deep holes in rivers and streams are also important refuges for aquatic animals in times of extreme heat and drought. They are being filled in with eroded sediment, especially after fires. Drawing on traditional and local knowledge of where deep holes were in rivers, there is the potential to team up with the sand and gravel industry to restore these critical habitats.

Hundreds of weirs and old road crossings that block fish migration need to be removed or have fish ladders added. Our aquatic species are highly sensitive and will not breed unless the water is the right temperature in the right season. Releases of overly cold water from the bottom of dams needs to be more widely controlled by retrofitting better water release structures. These measures to reoperate existing water infrastructure can be undertaken as they are upgraded to meet higher engineering safety standards required for new 'hydrologies' in a changing climate and with Indigenous science.

Freshwater habitats and animals, like the iconic platypus, are greatly valued by many Australians. Thus, many are likely to strongly support restoration through reinvigorated land (river) care programs. These recovery and restoration activities would also provide valuable rural employment opportunities in drought and fire afflicted communities. Despite emergency measures to relocate threatened animals, many fire-impacted and threatened aquatic animals also have official recovery plans that have not been implemented due to lack of funding. In the Murray-Darling Basin, for example, state governments withdrew funding for the Native Fish Strategy in 2013. The impending release of a new strategy and the post-fire response is an opportunity for governments to provide support for, and take, effective action in response to Australia's water emergency.



Birds in small amount of water in Gilbert River in the outback of Queensland in Australia.

5. A CALL FOR TRANSFORMATIVE CHANGE

Australians need to collectively reassess and rethink how to sustainably manage water resources over the long-term. This cannot wait. A first and immediate step forward would be to incorporate the multiple values of water into a national response to the 2017-20 drought and the 2019-2020 bushfires. Other key steps needed to deliver transformative change include: 1) incorporate (via modelling and with actions) extreme weather events (such as droughts and bushfires), and their linked causes, into water and land planning and make such planning standard practice; 2) develop better strategies to manage water as a resource of 'booms' and 'busts' rather than based on long-term averages, including managing groundwater as a flexible form of storage; 3) experiment and test the benefits of new and innovative strategies for water management with pilot projects; and 4) genuinely consult, engage and ensure the significant participation of First Peoples, and also enshrine Indigenous values, knowledge and Indigenous science within water reform.

Increased frequency and severity of drought and bushfires has created a 'new normal' in the unprecedented interactions between biophysical drivers and consequences for people and environment. These changes, in turn, are driving new social dynamics, community/stakeholder networks and power relationships, with the real possibility there will emerge new marginalised groups. Our point is that water reform is not just an environmental issue. It is fundamentally a social, economic and political process that requires honest and open debate and equitable knowledge-sharing. In response to this challenge, we propose the following principles to provide a foundation for water reform for all:

- a. **Establish shared visions and goals that are community-based and co-produced**, involving day-to-day decision-making based on articulated values and full consideration of marginalised groups and First Peoples. Visioning the process of change can then focus on moving beyond rebuilding and restoring what was before the crisis, and instead use these crises as an opportunity for transformation.
- b. Develop **clarity of roles and responsibilities**, including an ability and willingness to review and update adaptation plans, actions and visions.
- c. Understand adaptation as the **anticipation of and response to ongoing, persistent escalation of stresses**, including drought, climate change, fires, globalisation and governance failures. Adaptation pathways need to be identified to guide decision-making under uncertainty in the water sector. Such adaptation has to be an integral part of water sharing plans; the 'theory' and concepts need to be translated into the practice of managing water on a day-to-day basis. This will require, among other considerations, assessment of cumulative risks and the resilience (robustness, recovery time and resistance) of ecosystems to recover from droughts and bushfires and other negative shocks.
- d. **Invest in advanced technology** for understanding, predicting and monitoring water in the changing Australian landscape, and growing the evidence base on which water reform can be based. Remote sensing techniques and other technologies exist that can be used to measure changes in water resources, and we need to exploit the available information. This can inform monitoring for active management of river systems and also provide information relevant to water compliance issues, while carefully managing risks associated with new technologies.
- e. **Implement actions as experiments for learning** within a long-term framework for interface between top-down and bottom-up approaches, including a public policy discourse that encourages active adaptive and iterative management, such as revisiting consideration of roles over who leads and generates change.
- f. **Integrate** bottom-up community-based adaptation, including from Indigenous communities, into top-down government policy and governance. This will help to ensure that high-level decisions are made in the interests of communities and, also, that local actions are consistent with the bigger picture.

These actions are not an academic exercise. They demand **national conversations** seeded by: consideration of **futures literacy** (capability to imagine the future and apply that imagination to current decisions); the meaningful inclusion and recognition of **First People's land, water and fire knowledge and values**; and **community-driven change** and **adaptation actions at different scales** (local-regional-state).

In the short-term (1-2 years), we propose a **‘Water for Australia’s Future Forum’** that focuses on developing partnerships, networks and actions for change. This is critically important because top-down water reform has stalled. To be effective, these national, regional and local conversations must span the entire network of roles and responsibilities, from local families and communities, Indigenous communities, businesses and farmers, civil society organisations, and local, state and federal governments.

We do not expect these national conversations to result in a consensus. Rather, such dialogues, coupled with active listening, would be a catalyst and a forum for change. They would provide a ‘meeting place’ where everyone’s voices can be heard and bottom-up pathways can be developed to deliver water reform in the public good.

While we view these conversations as necessary, we do not believe that they are sufficient. They are a starting point. For example, the updating of approval processes and water sharing plans, collecting evidence and monitoring the state of the environment, valuing non-market values, and many other actions are required to effectively respond to the water emergency.

We propose the following questions to spark national water reform conversations:

1. Who is responsible for what? How do the decisions and actions of one group affect others, and affect the access and availability of water? How can we map the institutional decision-making ‘landscapes’ for water?
2. What amounts of water are being harvested from river, groundwater and other systems? And where, when and by whom?
3. How much do we know about future change? What knowledges (including traditional knowledge) and opportunities need to be identified to assist in visioning the future? How might we map out adaptation pathways to guide decision-making under uncertainty?
4. How can we understand the range of values that water has in our community and society?
5. Where do our visions for the future of water align? Where are they different?
6. What are the principles, protocols and processes to follow to arrive at water reform for all?
7. How do our existing rules and institutions enable or hinder our efforts to achieve our shared vision?
8. To what extent do our visions and goals integrate and anticipate ongoing and cumulative changes in water availability under climate change, increased extraction and demand, changing agricultural production and shifting community values on the environment?
9. What restitution is needed in the context of water and country for the First Peoples of Australia?
10. What industries/economies would be suited to a water scarce future, and how can we ‘cultivate’ them?

These national conversations on water will generate a range of ideas and options for water management and allocation in the context of a drying continent and more extreme weather events. With government investments at the federal and state levels, crowdfunding and philanthropic support, the most promising options could be trialled with communities to discover what works and what does not.

Trialled options that arise from national conversations, and the willingness to explore water reform that benefits all, would be the foundation for medium- to long-term (e.g. to 2030) transformational change. This renewed water reform process would be supported by interactions within a network of communities who have developed and are implementing changes to improve water security and preparedness for extreme events.

National conversations on water reform for all need to be championed by a nationally respected and suitably qualified institution. Australia used to have the National Water Commission (NWC) which was established in 2004 to monitor, audit and assess progress on water reform under the National Water Initiative. But the NWC was abolished in 2014, with the responsible federal minister stating: “Given both the substantial progress already made in water reform and the current fiscal environment, there is no longer adequate justification for a stand-alone agency to monitor Australia’s progress on water reform”.

In our view, the water emergency demonstrates that water reform for all has stalled. The NWC's abolition was a step backwards. Its abolition was estimated to save some \$20 million; an exceedingly tiny cost compared to the many billions already spent on subsidising water infrastructure ostensibly to achieve the sustainable diversion limits in the Murray-Darling Basin Plan. Re-establishing an expert and independent national water agency to convene the national conversations and to place water reform back on track would be a high-value investment in Australia's future. We have trusted, independent, stand-alone agencies like the Reserve Bank and the Australian Competition and Consumer Commission to oversee the nation's economy and markets; as a nation we absolutely need an equivalent institution to oversee the management of our most precious natural resource: water.

Longer-Term Actions

In the long-term, there are many actions needed to deliver water reform for all. The reliability and quality of water supply must be improved in ways that do not simply involve building more dams. Alternatives include recycling wastewater and undertaking managed aquifer recharge. Regional organisations must also be further empowered to manage our waterways in locally appropriate ways.

Implementation of the Murray Darling Basin Plan must be reinvigorated through specific actions, including: a) restoration of floodplains; b) an increase in environmental water and stream flows at all times needed; c) an audit of the 'shared risks' to water resources in the Basin that include the extraction and storage of water; d) restoration of a Basin-wide environmental and cultural outcomes monitoring programs; e) incorporation of appropriate Aboriginal Water Holders to provide certainty of water allocations for Aboriginal communities; and f) a requirement that specific actions in anticipation of climate change risks be fully incorporated and accounted for in the next Basin Plan, including in the calculation of catchment and Basin-scale sustainable diversion limits.

Specific long-term actions are required at the national level, such as field-level water auditing, but less obvious actions will also emerge from our national conversations on water reform for all. From an implementation perspective, local, regional and Indigenous organisations need legal mandates and independent income streams (for example, from rates or water fees) to sustain core capacities. Complementing these organisations, sustainable and increased funding of Indigenous land and sea ranger programs is necessary to support Australian environments, for Country to fully benefit from traditional ecological knowledge, and to draw from Indigenous science and the capacities of Indigenous communities to effectively manage freshwater ecosystems.

Water Reform for All

We propose to renew and build on the water reform agenda of the 2000s to deliver sustainable outcomes for all Australians and to renew relationships with First Peoples. This requires a different approach to the increasingly top-down processes of public policy in relation to water governance. In our view, there is a need to reinvigorate bottom-up and community driven processes that give voice to all Australians, and not just those who make a living from extracting a public resource, to deliver transformational change to respond to our water emergency. Without a much greater investment in such a process and grassroots involvement in water planning and decision-making, Australia's water crises will continue and, within the cycles of drought and floods, get worse. This is a future that we can, and must, change for the better.



Dry river bed of Todd River near the old Telegraph Station in Alice Springs, Australia.

WATER POLICY BRIEF

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Quentin Grafton is Professor of Economics and Chairholder UNESCO Chair in Water Economics and Transboundary Water Governance. He is an Australian Laureate Fellow (2020-2025), a Fellow of the Academy of Social Sciences in Australia, and both a former President (2017-18) and Distinguished Fellow of the Australasian Agricultural and Resource Economics Society (AARES).

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Katherine Taylor

Kat Taylor is a PhD candidate at the ANU's Crawford School of Public Policy. Through her work in Perth and regional Australia, she has experience in water policy, wastewater irrigation, household water efficiency and drinking water risk management. Kat is the Managing Editor of Global Water Forum.

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Paul Tregoning

Professor Paul Tregoning is a geodesist who derives estimates of changes on Earth from satellite data. His expertise lies in the analysis of observations made onboard the satellites, leading to accurate estimates of global and regional sea level rise, changes in continental total water storage, mass balance of polar regions.

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