



Briefing Paper No 4: Water for the Murray-Darling – Healthy Rivers, Healthy People

Introduction

Australia is the driest inhabited continent on earth, with the least amount of water in rivers, the lowest run-off and the smallest area of permanent wetlands of all the continents.¹ Water is a scarce resource in Australia, and over-extraction in the nation's rivers has led to a very real risk of collapsing river ecosystems.^{2,3} Many of the ecosystems in the Murray Darling Basin (made up of river channels, floodplains and wetlands) are in 'poor' or 'very poor' health.⁴ The rivers in Victoria and Lower Lakes and Coorong in South Australia are in a 'critical' condition.⁵ Diversion of environmental flows has reduced river flow to the Murray mouth by 60%.⁶

Irrigated agriculture is the largest consumer of water in the Murray Darling Basin, and supports important industries for the production of food and fibre.⁷ However the development of industries dependent on irrigation along this river system has led to over-extraction of water and insufficient quantities being available to maintain ecosystem health and for cultural and recreational purposes. Reduction in water availability from river systems has also led to increased demand for groundwater, however the Commonwealth Scientific and Industrial Research Organisation (CSIRO) says "current groundwater use is unsustainable" in many areas of the Murray Darling Basin and requires intervention to prevent further reductions in groundwater levels.⁸

The predictions for the Murray Darling Basin in relation to climate change suggest surface water availability will decline, and in the south these declines are likely to be "very substantial".⁹ Climate change means annual rainfall is likely to decline, and rainfall runoff and stream flows will be reduced. Droughts are likely to become more severe, while extreme rainfall may become more intense.¹⁰ This has implications for the availability of water for rivers, for industry, and for the maintenance of ecosystems and biodiversity.¹¹ All aspects of water resources as influenced by climate change have the potential for adverse outcomes for human health.¹²

The interdependence of human health and healthy ecosystems

Healthy rivers underpin human economic, social and environmental wellbeing.¹³ Human health and the natural environment are inextricably linked: the health of human populations 'depends fundamentally on the quality of the environment in which they reside and on the capacity of the environment to provide goods and services'.¹⁴

Protection of the natural environment is therefore a strategy to protect human health - as senior health and medical researchers have indicated: 'protection of the environment and its ecosystems is a fundamental public health strategy for promoting wellbeing and preventing illness'.¹⁵

Water health and human health are linked. Water insecurity and poor water quality affects communities and industries dependent on healthy water, and can lead to increased health risks,¹⁶ loss of income, reduced recreation and tourism opportunities, and increased water treatment costs.¹⁷ Prolonged drought and water insecurity has significant adverse impacts on human health.¹⁸ There are significant mental health risks associated with inland water insecurity, including depression¹⁹ and solastalgia.²⁰ Many people in communities in the Murray Darling Basin have been experiencing adverse physical and mental health impacts from inadequate water availability due to prolonged drought, climate change and over-allocation.²¹ People experience feelings of grief and hopelessness as they observe what has become for many communities a chronic natural disaster.²² There are personal financial impacts, as well as the loss of community assets as people leave, leading to a decline in services and social support.²³ Support for communities to transition to sustainable water use is a vital aspect of water reform and sustainable regional development.²⁴

Retaining or restoring natural flow variability to Australian river systems is vital to maintaining water quality,²⁵ and ensuring its safety and availability for a wide range of societal purposes, including the maintenance of human health and wellbeing.

River health is important for Indigenous cultural wellbeing. The lands, waters and natural resources within the Murray-Darling Basin have important cultural significance to the many Indigenous groups living within the Basin.²⁶ "A healthy river is vital for the well-being of Indigenous peoples and their ability to care for country".²⁷ A decline in river systems affects the culture of the Indigenous peoples, who lose traditional sources of food and medicines, sacred sites, and opportunities for economic development.

Adequate environmental flows are necessary to avoid risks to human health from algal blooms. Toxic blue-green algal blooms are a sign of rivers under stress. However current land and water management practices in Australia, combined with our generally arid climate and climate change, are leading to the creation of conditions in which blue-green algae thrive. Loss of flow in rivers and weir pools provides conditions for excess growth of blue green algae and formation of toxins lethal to livestock and harmful to humans^{28,29} The toxins from blue green algae include neurotoxins, as occurred in the Darling River poisoning, hepatic toxins in the River Murray, and swimmers affected by skin and eye irritations and acute allergic responses.³⁰ There is also experimental evidence of cancers associated with blue green algal toxins.³¹

Declining river flows are linked to algal blooms: Rivers 'rarely experience algal bloom outbreaks during periods of high flow'. Preventing algal blooms can save millions of dollars in water treatment costs and environmental damage.³²

What's needed?

- **Health impact assessment:** Greater efforts are needed to evaluate the human health impacts of a range of scenarios in relation to the restoration of environmental flows to the Murray Darling Basin. There are already documented adverse physical and mental health impacts from inadequate water security in many communities in the Murray Darling Basin. These human health impacts must be carefully evaluated and the implications considered in the development and implementation of the Basin Plan.
- **Evidence based policy:** It is not clear what the basis of scientific evidence is for the figure of 2800GL* of reduced extraction being proposed by the Murray Darling Basin Authority. This falls far short of the 7600GL target that has been nominated for long-term sustainability.³³ The Wentworth Group of Concerned Scientists and many river and environmental scientists³⁴ suggest that a minimum of 4000GL must be returned to the river system to restore ecosystem health.³⁵ Any decisions being made as to the quantity of water being allocated must be made on the basis of credible scientific evidence.
- **Improvements in efficiency of water use:** Reducing water use for agricultural and industrial purposes must be a priority. Support for improvements to water efficiency infrastructure (including reuse and recycling), and strategies to improve retention of water in soils are vital to using Australia's limited water resources more efficiently.
- **Rethinking of plans for ground water extraction:** Plans to increase the level of groundwater extraction for mining are of serious concern. There is already widespread concern regarding risks to groundwater quality from coal seam gas mining and in relation to discharge of wastewater in terms of adverse impacts on public health and the health of the rivers and wetlands in the Murray Darling Basin.³⁶ Coal seam gas mining poses other potential risks to public health due to inadequate regulation of the chemicals used, and consumes large volumes of water that could be used for other, healthier, purposes.³⁷
- **Investment in sustainable regional development:** The declining availability of water has already negatively impacted many communities in the Murray Darling Basin. The development of the Murray Darling Basin Plan, to which the federal government has committed \$12 billion, must include assisting communities to transition to ones in which there is sustainable use of water for social and economic purposes. This may include supporting communities to explore opportunities for the development of new industries to create secure socioeconomic futures to substitute for existing industries dependent on unsustainable water use.³⁸
- **Impacts of climate change:** The predictions regarding changes to water availability due to climate change are not currently being adequately incorporated into the development of national water plans. It is likely the Australian climate will become drier in future decades, and plans for national water reform must take account of, and prepare for, a changed climate future.

References

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*Prior to the development of industries dependent on water extraction, the average flow through the Murray Darling Basin was 12, 233 GL. The average flow has now been reduced to around 4,700GL. (WGCS, *ibid*).