

The Murray-Darling Basin Plan: An environmental and social tight-rope

Covering one seventh of Australia, the Murray Darling Basin is one of the largest river basins in the world¹ and contains 440 000km of rivers, 30 000 wetlands and one world heritage site². The variety of ecosystems within the basin is as diverse as the size of the basin and provides a variety of habitats for flora and fauna including more than 60 fish species and around 98 species of waterbirds. Covering four states and the ACT and with 3.4 million³ people relying on water from the Basin, the management of the Basin is a political tightrope. Nevertheless, unless serious action is taken sooner rather than later the beauty, diversity and ecological significance of the Basin could be permanently lost.

The Impact of River Regulation on the Environment

Since European Settlement Australia's inland rivers have experienced a dramatic degradation of their riverine ecosystems through the introduction of exotic species of flora and fauna, European agricultural practices, land clearing and the regulation of rivers (dams, weirs etc.)⁴. The regulation of rivers in particular has had a significant impact by changing the flow regime of rivers. Rivers have naturally varying flows from very low flows during times of drought to large floods. They may trigger fish and bird breeding events⁵ or be necessary for seasonal cleansing of wetlands. However, river regulation impedes these natural regimes in order to provide a more reliable water source for agriculture.

River regulation and water use have dramatically increased resulting in the over-allocation of available resources to irrigators at the expense of the environment. Between the 1920's and 1990's the volume of water allocated for towns, irrigators and industries increased from 2000 GL/y to 11000 GL/y (550% increase)⁶. By the 1990's the annual volume of water licensed for irrigation within the major rivers of the Basin was 15.8 GL/y while the divertible water resource was only 12.4GL⁷. In other words, the volume of water allocated for irrigation licenses was 27% greater than the capacity of the infrastructure to provide this resource⁸.

These practices have had significant effects on ecosystems including,

- Twenty out of the twenty three river catchments in the Basin have been rated as 'poor' or 'very poor' with respect to their ecosystem health⁹
- A 60% reduction in the long term average volume of water flowing through the Murray Mouth (5100 GL/y instead of 12500 GL/y)¹⁰
- Increases in the frequency and severity of algal blooms
- Increases in river and dryland salinity

Perhaps the most affected parts of riverine ecosystems due to regulation are floodplain wetlands¹¹ which play an important part in providing temporary or permanent habitats for many kinds of fish, birdlife and plant species and can act as indicators to the impact river regulation has on riverine ecosystems.

The Need for Reform

It is clear by the degradation of ecosystems within the Murray Darling Basin requires drastic and immediate reform is required to Australia's existing water management policies to return them to health. There are three fronts in which reform is mostly needed.

Water for the environment

Reform is needed to provide sufficient environmental allocation for a sustainable ecological basin: improvements are needed in water quality (including reduced turbidity and fewer algal blooms) and in the health of natural ecosystems and aquatic biodiversity¹².

Political and economic analysis

Australia is a resource based economy both economically and culturally. As such, politicians, economists and other interest groups mostly take the side of irrigators rather than the environment in the arm-wrestle for water allocations. For economists: irrigators contribute to national production, the environment does not! For politicians: irrigators vote, the environment does not! The environment can neither pay nor speak for itself.

The sociopolitical debate of water allocations demands that the argument for environmental water allocations be evident in economic terms. A 'thresh-hold' value approach is generally taken by economists requiring the economic benefits of environmental allocation exceed the agricultural loss before the environmental flows can be justified¹³. It is easy to prove the benefits of the irrigation industry in economic terms but is much more difficult to quantify the economic benefits of a rejuvenated wetland. The measurement problem is exacerbated by the fact that environmental benefits are generally long-term¹⁴.

A major shift is required to acknowledge the essential role the environment plays in underpinning economic development¹⁵. It is a sociopolitical shift from one of seeing the environment as a rival for resources, to one of understanding the environment as an underpinning asset which is essential to any future for the agricultural industry. It is a shift to environmental responsibility and sustainable thinking.

River Management

The Murray Darling Basin Authority stated in their *Guide to the Proposed Basin Plan* that,
The Basin and its communities are facing significant challenges and risks. Many of these challenges and risks are the direct result of the actions of successive governments over the history of the Basin. In retrospect many of these decisions failed to strike a long-term balance between meeting the needs of the environment and those of a growing economy and population¹⁶.

This is a succinct summary of the unfortunate history of river management in Australia: too often driven by narrow sectoral interests.

Murray-Darling Basin Plan

In the *Water Act 2007*, the Basin States (New South Wales, South Australia, Victoria, Queensland) agreed to hand over some powers to the Commonwealth Government in a bid to plan a Basin wide sustainable long term solution to the problems of water management within the basin. Essentially, the Murray Darling Basin Plan aims to address requirements identified by the Commonwealth Government as part of the Water Act 2007 by determining appropriate sustainable diversion limits (SDLs) for each catchment. SDLs represent the volume of water which can be allocated to farmers, towns and industries after the environment has received what it requires to protect key environmental assets and outcomes¹⁷.

Currently the average volume of water allocated to the environment is 19100 GL/y. The investigations done preceding the Murray Darling Basin Plan have indicated that this amount falls short of an environmentally sustainable volume. It is believed that a further 3000 GL/y to 7600 GL/y is required¹⁸ to bring significant environmental benefits including improvements to the overall health of the Basin, the recovering of threatened species and an increase in long term average of water flowing through the Murray Mouth¹⁹.

Social Consequences of Reform

More water allocations for the environment translates into less water allocations for local farmers and industries. The public reaction towards the Basin Plan has come with opposition to this reality with visible signs of resistance and anger from those in local communities. With a Basin population of 2.1 million²⁰ either directly or indirectly dependent on agriculture, it is inevitable that any proposed changes will meet significant public opposition.

According to the Basin Authority's analysis, the approximate impact to local communities if the lowest increase in environmental water allocations is adopted (3000 GL/y) is a loss in gross value of irrigated agriculture across the Basin by \$805 million/y and Basin reduction of 800 full-time jobs. The overall reduction in the Basin's long-term gross regional product is expected to be approximately 1.1%²¹.

Delay is Not an Option

River regulation in the Murray Darling Basin has resulted in significant environmental degradation and further delay in significant reform could have irreversible consequences. However, the impact of water management changes on local communities is likely to ensure that the debate remains somewhat polarised with large opposition to any major reform. What is important to realise is that delay will not only have significant consequences for the

environment but will have long term negative impacts on local communities. Delay is not an option.

*Edmund Rice Centre gratefully acknowledges the work of Alexander Abbey msc in the preparation of this issue of **Just Comment***

Bibliography

Abbey, Alexander. Thesis: *Conflicts of water allocation between Irrigators and the Environment on the Lachlan River*. University of New South Wales: Sydney, 2007.

Jayasuriya, R.T. 'Modelling the economic impact of environmental flows for regulated rivers in New South Wales, Australia.' *Water Science and Technology* 48, no. 7 (International Water Association: London, 2003): 157-164

Kingsford, Richard T. 'Review: Ecological impacts of dams, water diversions and river management on floodplain wetlands in Australia', *Austral Ecology* 25, (2000), 109-127

Murray–Darling Basin Authority, *Guide to the proposed Basin Plan: overview*, Murray–Darling Basin Authority: Canberra, 2010.



¹ Murray–Darling Basin Authority, *Guide to the proposed Basin Plan: overview*, (Murray–Darling Basin Authority: Canberra, 2010), 13.

² *Ibid.* 59.

³ *Ibid.* xxvii.

⁴ Alexander Abbey, Thesis: *Conflicts of water allocation between Irrigators and the Environment on the Lachlan River*, (University of New South Wales: Sydney, 2007), 18.

⁵ R.T. Jayasuriya, 'Modelling the economic impact of environmental flows for regulated rivers in New South Wales, Australia', *Water Science and Technology* 48, no. 7 (2003): 157.

⁶ Murray–Darling Basin Authority, *Guide to Basin Plan*, xv.

⁷ Richard T Kingsford, 'Review: Ecological impacts of dams, water diversions and river management on floodplain wetlands in Australia', *Austral Ecology* 25, (2000): 120, Table 3.

⁸ Data collected between 1987 and 1993. While the allocation licenses are 127% of the water resource which can be diverted it is impossible to meet this demand. This results in irrigators being restricted to diverting only a percentage of their total licence. During the years 1987 and 1993 the average annual diversion was 87% of the diversion resource.

⁹ Murray–Darling Basin Authority, *Guide to Basin Plan*, xv.

¹⁰ *Ibid.* xviii.

¹¹ Kingsford, 'Ecological impacts on wetlands': 109.

¹² Jayasuriya, 'Economic impact of environmental flows': 157.

¹³ *Ibid.* 159.

¹⁴ Abbey, *Conflicts of water allocation*, 8.

¹⁵ Murray–Darling Basin Authority, *Guide to Basin Plan*, xiv.

¹⁶ Murray–Darling Basin Authority, *Guide to Basin Plan*, xiv.

¹⁷ Murray–Darling Basin Authority, *Guide to Basin Plan*, 103.

¹⁸ *Ibid.* xiv.

¹⁹ *Ibid.* xxvi.

²⁰ *Ibid.* 15.

²¹ Murray–Darling Basin Authority, *Guide to Basin Plan*, xxvii.