Facing up to the Water Crisis in the Murray-Darling Basin

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Introduction

Much of Australia seems to be drying and we are now facing real water scarcity for many of our cities and for rural areas. The Murray-Darling Basin extends across one-seventh of the continent and contains 20 major rivers. It is the economic powerhouse of rural Australia, producing about 40% of the agricultural income and contains about ¾ of the irrigated land in the country. It is home to around two million people and directly supports another million including those in Adelaide and much of South Australia. The long-term inflow to the Murray River is around 10, 500 GL, but the average over the last six years has been around 40% of this at 4300 GL. We appear to have returned to a drier period following an unusually wet period between 1950 and 1990. Many other rivers in Sth Eastern Australia have shown a similar drop over the last 10-15 years. The major storages of the Basin are now almost empty, irrigation allocations have been slashed and emergency planning is underway to ensure water supplies for the city of Adelaide. Urban and rural Australians dependent on the waters of the Murray now face an unwelcome adjustment.

This crisis has been brought on by the climate shift and the serious drought we are now seeing, but the fact that we allowed the system to run to empty is another symptom of our failure to manage the waters of the Basin in a sustainable way and now many communities and the environment are suffering what may be permanent damage.

The history of water development in the Murray-Darling Basin is a history of articulate interest groups seeking to have the waters used for their particular advantage. There has always been a tension between the upstream States and the downstream State who have had differing views. This has not changed over the century since the Corowa Conference of 1902 where the challenge was to develop a workable mechanism to manage the shared resources of the Basin.

The partnership of six Governments attempting to manage the Basin, developed over a century of conflict about water, worked adequately in a time of expansion and growth, but over the last decade has shown itself unable to come to terms with over allocation and cope with a drying Basin.

The Prime Minister has recognized this failure of governance of the MDB and has addressed it with his proposal that powers be transferred to the Commonwealth to manage the MDB as a single system and providing $10 billion to address water security issues in Australia. Most commentators have welcomed the Prime Ministers plan, and there is widespread agreement that something had to be done. Even Victoria, so far refusing to sign

the agreement, acknowledges that action is needed; they just differ on the means. While welcoming the initiative, many are concerned about the detail as to what has to happen and are concerned they will suffer.

Agreeing on the Goal

As we confront the challenges of the MDB, let us agree on the overall objective, for which I believe there is wide consensus. We seek a healthy river and we seek to share the available water in a fair way between the cities and rural communities dependent on the river. Let us not lose sight of this shared outcome, although there will be much to argue over in terms of the necessary actions to bring this about.

What Actions Have Been Agreed

The ACT, New South Wales, Queensland and South Australia have agreed to refer powers over the MDB to the Commonwealth, presumably through a process of mirror legislation due to be introduced during 2007. The Commonwealth has agreed to establish an expert Body, the Murray Darling Authority to advise the Federal Minister for Environment and Water.

Under the referral of powers, the Commonwealth will take responsibility for key water management functions in the MDB, including:

- preparing a Basin-wide strategic plan setting a sustainable cap on surface and groundwater use at the Basin and individual catchment level;
- establishing Basin-wide water quality objectives;
- setting standards for catchment level plans, including for the management of interception and floodplain activities;
- seasonal allocation of water resources;
- directing the operation of rural bulk water supply systems;
- environmental water management; and
- setting rules for water trading and charging regimes.

What Needs to be Done Now

The principles for going forward are clear, and have already been agreed by the Prime Minister and the Premiers in the National Water Initiative. In going forward the Prime Minister and the signatory Premiers have accepted that we need to manage the MDB as a single system, not as a series of vaguely connected pieces.

I intend to address seven key actions that I believe to be important in delivering a sustainable MDB.

- Stop further extractions
- Establish preliminary estimates of the Sustainable levels of extraction of each river, based on best available scientific advice.

- Build a single register of all water entitlements
- Ensure seasonal allocations made to each entitlement holder are within these sustainable levels of extraction, and allow some water to refill empty storages.
- Establish an independent and professional environment water manager for the MDB to use all environmental water
- Don't just throw money out the door to meet some treasury target but insist on serious cost benefit assessment of all infrastructure projects and invest to create wealth and develop an irrigation industry that can pay its own way.
- Integrate the management of land and water. Strengthen regional catchment bodies to help deliver on river health, interception and water theft issues

Stop Further Extractions
Proposition

The waters of the MDB were over-allocated by the nineteen eighties when the degradation of the river became obvious.

An effort to slow degradation with a cap to prevent further extraction had only limited success. Queensland and the ACT never bothered to establish a cap, and NSW regularly flouted their cap. There were no sanctions other than naming and shaming. Establishing a cap and a water market meant that extractions from the river increased as sleeper licences were activated and used or sold. Capping surface water without capping groundwater led to people just switching to groundwater, and since it is all the same water this just took more water from the streams. Stock and domestic water was left outside the controls, and huge amounts of water are just taken.

The Living Murray, with its first step of returning 500GL to the Murray became a stumble as rural interests blocked using the market to recover water but could not find worthwhile infrastructure investments to recover the water.

Actions Required

A moratorium on any further extractions of water from the Basin until sustainable levels of extraction have been established and demonstrated.. This includes extractions of surface or groundwater, on stock and domestic extractions and on interception activities like farm dams and plantations. All extractions must be licensed and measured.

A compliance regime must be established to address the widespread theft of water in irrigation and dryland areas that is stealing water from downstream entitlement holders and the environment.

Establish Sustainable Levels of Extraction
Proposition

Ecological systems have a certain capacity to recover from changes. As wet and dry periods come along, different sets of organisms are favored and may become dominant, but

most still have the capacity to hang on until times favor them again. We call this the resilience of systems. We now appreciate that the resilience of a system is an important element in allowing it to cope with changed circumstances. We also appreciate that we have often reduced the natural resilience of systems, thus making them vulnerable to collapse when conditions change.

We are just starting to understand the elements that contribute resilience to a river system, and how we have inadvertently diminished this capacity to recover. Australian rivers commonly dry up and form a chain of ponds where organisms hang on until flow starts again. By allowing land uses that have caused erosion in the catchments we have commonly filled these pools, which act as refuges, with sand, thus reducing the places where organisms can survive. We have built weirs and dams across rivers to let us control water, but these prevent organisms moving upstream and downstream to places where they can survive hard times. We have captured water in dams, and diverted it from rivers thus reducing aquatic habitats, we have changed the pulses of water that naturally went down a river by capturing them in dams, and releasing them at unseasonal times, commonly causing rivers to be bank full in summer and dry in winter as dams refill.

This is a challenging area for science, but current thinking indicates that the goal of ecological management is to restore or maintain resilience so the systems can cope with the shocks of climate or other factors they experience. It takes extreme events like droughts and floods to let us see whether we have kept resilience in our systems. We are not managing these systems for some benign "average" condition, but so they can cope with the extremes that characterize the Australian climate and our agricultural markets. A drought that at the time of Federation had little long term impact, when it came again at the start of this century has had a devastating impact.

As we lose resilience in a system we approach some threshold where the system flips to some alternative system. We commonly don't know we are on a threshold until we hit it, and commonly they are hard to reverse. The Darling flipped to an algal bloom in the early nineties, but fortunately recovered. Such algal blooms are however common in the weir pools of the Lower Murray. In this drought we have lost many redgums on the floodplain of the Murray, a threshold we did not foresee and one that is probably irreversible.

There is widespread agreement that the MDB as a whole is over allocated, but there is no agreement as to what are sustainable levels of extraction. Jurisdictions have all had differing definitions of over allocation. Some use a simple hydraulic approach that if water is there it can't be over allocated, totally ignoring the impacts on downstream river health.

Most reaches of the MDB have had some scientific assessment of the flow needs of the river, but these have commonly not been treated as seriously as the social and economic demands on the river. By the time flow management plans have been agreed by the community only small amounts of water have been returned to the environment and the scientific assessment has not driven allocations.

Actions Required

Establish a high-level expert scientific group to advise the new MDA to propose an interim approach to defining sustainable levels of extraction from rivers and groundwater systems for different climate zones within the MDB. Their immediate task is to determine how to implement the Living Murray target of returning 1500GL of water to the main stem of the Murray, and provide an appropriate target for the Darling.

This group should be charged with identifying the maximum possible consumptive pool of water that can be taken from the system to support agriculture and communities, while maintaining acceptable river health. This expert group should review the assembled scientific basis for flow guidelines for each tributary and reach of the river to ensure they are based on the best available scientific advice and that the agreed methods are used. This scientific assessment must be public and will probably be contested by various interest groups.

The new MDA should consider this expert advice and agree on timetables to restore systems to sustainable levels of extraction. They also need to establish ways of reviewing the sustainable levels as more information is gained about river health, and as the climate shift becomes more apparent.

Accelerate the implementation of the Sustainable Rivers Audit across the Basin so we have an ongoing measurement of river health to inform the community and decision makers and validate or allow revision of the scientific judgments being made.

Build a Single Register of all Water Entitlements
Proposition

It is essential we have a single register of all of the water entitlements that have been issued by Governments for surface and groundwater resources across the Basin.

States have been developing their own registries of water entitlements, and all are at different stages of development. Like the railways of the 1800's, there are serious concerns that these individual registries will not be compatible across State borders. This would inhibit the development of an effective water market across the basin. Many registries of groundwater licences are rudimentary or absent.

Actions Required

Review the registry efforts of each jurisdiction and develop a single registry based on the nest elements of each and implement as a single register across the MDB for all surface and groundwater entitlements.

Seasonal Allocations of Water
Proposition

Holders of each water entitlement get an annual allocation of water. The entitlement, while specified as a volume of water is really a share of the available consumptive pool of water and the seasonal allocation is like a dividend payment.

It seems that with the climate shift we are now experiencing inflows to the MDB are around half of what they were in earlier wetter times, it may be that the annual allocation of water will now only ever be around half of what the entitlement notionally says. This is how the system has always worked, and entitlement holders cannot expect to get access to water that doesn't exist, not should they expect to pinch someone else's water, including that allocated to the environment.

Actions Required

Seasonal allocations must be made periodically, giving a share of the defined consumptive pool to entitlement holders

Allocations can be traded on the water market, allowing those with greater need to purchase the water they require. This includes town's dependent of the river for domestic supplies that should have a basic water capita entitlement and should purchase additional water.

The Environmental Manager should enter the water market in particular valleys to acquire water for the environment as required for nominated ecological assets, and transfer this water to an environmental trust as a water entitlement with the same characteristics of the entitlements held by irrigators..

The Government may also enter the water market to acquire entitlements where reconfiguring of irrigation systems makes ongoing supply to particular regions not economically viable.

Establish an Independent Environmental Water Manager
Proposition

It is not appropriate to have the organization that manages the physical infrastructure or that makes allocations also act as the environmental manager. The environmental manager may be seeking to trade water, and there would be conflicts of interest if they both set the operating rules and acted as trader.

Water plans will identify particular environmental assets that need particular watering regimes, and the general health of the river will be assessed by the Sustainable Rivers Audit.

Action Required

Establish an Independent Environmental Manager to acquire and manage environmental water to protect identified environmental assets and the general health of the river system (river stem, floodplain and wetlands and estuary). The Environmental Manager needs to

determine appropriate watering regimes and be responsible for both rule based and licence based water to ensure maintenance of the environmental assets. The Manager should have the capacity to buy and sell on the water market.

Smart Infrastructure Investment

Proposition

The Government has allocated $6 billion dollars to upgrade water infrastructure. It is apparent that the irrigation industry we developed in the 20th century has been unable to create enough wealth to pay its way. The amount collected from irrigators for water has clearly not been sufficient to maintain infrastructure, and now the taxpayers are expected to rebuild a run down system.

Australia does need an efficient irrigation industry that can crate enough wealth to pay its way. It is therefore important that we take this opportunity to build a new irrigation system for the 21st century, not just rebuild the failed system of the past.

The irrigation of the 21st century must at least double the wealth, from half of the water. It will do with smart measurement, good control systems, and delivery of water to plant roots, reduction in wastage like evaporation and seepage and perhaps new crops and new industries.

There will be many proposals brought to Government to fund the replacement of infrastructure that people have not bothered to maintain. These should be rejected. All infrastructure investments must be subjected to serious cost benefit and environmental assessment and we should only invest where the irrigation can create sufficient wealth to pay the full costs of the infrastructure and its operation, and the environmental externalities. That is what sustainability is about. Investment should only proceed when all of the principles of the National Water Initiative are in place,

Actions Required

Irrigation companies will develop investment plans for their systems and for individual farms. These investment proposals need to be assessed by the new MDA, and these assessments should be public. They should confirm that all elements of the NWI are in place, that pricing is appropriate to pay the costs and that customers can create sufficient wealth to pay for the investments.

Better water measurement within the distribution system and on farms is essential to effective management of water. An audit should be undertaken of flow measurement at all major off-takes to ensure irrigators are actually getting their entitlement, and not more.

Funds have been allocated to the Bureau of Meteorology to update the river flow measuring systems and develop a real time web based reporting system for river flow. In my view we need to commit around $200 million to a MDB Groundwater assessment program to

identify sustainable yields of groundwater systems. This requires a series of observation bores and pumping tests, again with public reporting of data and interpretations.

We need an increased investment in irrigation research to build these new irrigation industries.

Integrate the Management of Land and Water
Proposition

We know that what happens on land determines the amount and quality of water in rivers, and the specific statements in the Prime Ministers Plan focus on water quality require a strong linkage to land management to control salinity, turbidity from erosion and nutrients causing algal blooms.

The Federal Government has been investing through the Natural Heritage Trust and the National Action Plan for Salinity and Water Quality in the development of regional catchment management bodies and these could provide an ideal vehicle to deliver various elements of the Plan.

Individual valleys already have, or need to have, targets for the export of water, nutrients, salt and turbidity from their valleys to the main river stem.
The National Water Initiative specifies the need to control interception activities of plantation forests and farm dams, and the CMA's would be well placed to set local rules and assist with compliance in these areas, as well as with pollutants. The CMA's already have a role in riparian management and repair, and the identification and measurement of the health of environmental assets

Actions Required

Involve the CMAS in developing and implementing the basin wide plan, through the identification of environmental assets, the approval of interception activities, and the management of nutrient and soil pollutants to waterways. The MDA needs to establish guidelines and have an audit role, but local management of many of these activities is necessary.

Challenges to the Commonwealth in Moving Forward

The previous governance of the MDB failed because powerful interest groups were able to stall actions they felt might hurt them. These interest groups are still pushing their rights to whatever water remains in the Basin, and the Federal Government, presently a coalition of the Liberal and National parties, will not find these issues easy to resolve either. Some argue that the failure of the past arrangement was due to the failure of these two coalition parties to agree on the way forward and provide leadership on the Basin, and these tensions appear to continue, although with water policy now centralized under a single Minister it should be easier to develop a coherent position. The National Party Leader Mr Vaille was

reported in the Sydney Morning Herald this month as saying infrastructure investment was the priority and purchase of water was to be a last resort (SMH 6/3/07).

The National Water Initiative envisages that a market will be used to allocate water between competing uses once the consumptive pool of water is identified. This market should include cities and towns dependent on the waters of the Basin, although many will argue they should be excluded from this competitive arena and just given the water they seek. If water is to be recovered fro the environment it can be recovered through purchase on the water market or through improving the efficiency of infrastructure.

In the past with multiple Governments involved it has been easy to blame the other levels of Government for the failure to confront these issues. The Commonwealth will no longer have anyone with which to share the blame and will have to make some tough decisions that will be highly contested. They will be responsible for deciding the consumptive pool of water available to be traded, and for establishing market rules and access conditions and prices that give us a sustainable system.

The Commonwealth has not had experience in operating a water system such as the MDB, and will need quickly to build its technical skill base in hydrology, freshwater ecology, irrigation and water economics.

It promises to be an exciting year as the legislation is developed and debated and the details of the new arrangements are worked out. It is a once in a lifetime opportunity to develop a sustainable and healthy Murray Darling Basin. There is much to be done.

Readings

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