# Australian Water Policy: Options for the Future

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## Introduction

Water is an extremely complicated, complex and fascinating subject. We talk about a national water challenge, and we talk about water as our greatest environmental challenge. The Prime Minister thinks of it in those terms. The answers to this national challenge, however, are almost infinite. The problem might be national but the solutions are very, very local. All the time we have to remind ourselves about certain fundamental features of water.

One aspect which is very easy to forget, particularly by those who plan transcontinental aqueducts, is that a thousand litres of water is a cubic metre and weighs one tonne. And unless gravity is doing the work, it costs an enormous amount to move it around, particularly over long distances. We can talk about Australia having a great deal of water — we really do, if you ignore the arid centre of Australia, where there is virtually no precipitation and no agriculture and very few people.

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As our average annual rainfall is about 700 mm you can't say Australia is short of water overall, but the mean is meaningless.

That's true of most hydrological means, especially in a country like Australia where there is so much variability of precipitation and stream flow, but it's also true because most of our water is in the tropical north. The Murray–Darling Basin, our most productive agriculture region with 75% of all of our irrigated agriculture, survives with just 6% of our total run-off.

## The National Water Initiative

The irrigation sector contributes an enormous amount to the Australian economy, and indeed irrigation feeds the world. Nevertheless a lot of people are critical of irrigation, especially because of the inevitable or almost inevitable build-up of salinity. All irrigation systems have within them the potential seeds of their own destruction.

At least, however, we are more aware of that risk and better able to manage it than, for example, the Mesopotamians. We are in a better position to choose the soil types to irrigate than were the founders of irrigation in Australia a hundred years ago.

Two and a half million hectares of Australia — about 0.5% of our land mass — is irrigated. This area has been growing until the very recent drought. In the last twenty years or so the extraction of surface water for irrigation in the Murray–Darling Basin has doubled. In NSW the extraction of ground water, largely for irrigation, has increased three-fold.

[1] This is an edited version of the presentation

The key focus of the National Water Initiative is our water policy. As a politician I would describe the purpose of the policy as '…to ensure that we have a secure and sustainable water future'. More detail is available at the National Water Initiative website[8].

The National Water Initiative recognises that we have been over-extracting and over-exploiting a scarce resource. In the view of many, the resource itself is diminishing because of climate change. The National Water Initiative has been described by the *Economist* as the gold standard of water policy and water planning to which all other nations should aspire. This assessment was published at the same time as California was said to have the world's worst water policy, which I thought was an interesting contrast.

Yesterday I launched a book by British academic Roger Bate, working for the American Enterprise Institute, called *All the Water in the World* [9]. This publication looks at water trading regimes around the world, and concludes that Australia's National Water Policy is the world's best.

These assessments are important to bear in mind because Australians tend to be very self-critical and self-deprecating. It is important to bear in mind that not withstanding the challenges and the frustrations in reforming such a fundamental part of our economy, we are at least doing better than anybody else.

The key to the National Water Initiative is a shared vision. The Initiative, to which all Australian governments now subscribe, is an inter-governmental agreement launched in 2004. It seeks to ensure that our water future is secure and sustainable. How does it do that?

It seeks to balance allocation between consumptive use (water used in large measure for agriculture but also for industry, for towns, for mining and so forth) and the environment. We should not so exhaust our rivers, our ground water and our wetlands that the environment continues to suffer, as it has done in some areas in our larger river systems, to provide for consumption.

Getting this balance right entails a reallocation of water, and those of you who follow agriculture news would know very well that this has been a very controversial process. Everyone has a proprietary feeling about their water; nobody likes their entitlements or their allocations being reduced.

There has been a very painful structural adjustment process recently, particularly in NSW, relating to ground water. But it is something that has to be done. We have to get the consumptive share right, and then we have to share appropriately the risks: the risk of science concluding that the share needs to be shifted one way or another, or of climate change reducing the overall amount of water that is available.

This year we continue into our sixth year of drought in the Murray–Darling Basin; and so far the in-flows are at a record low. We are endeavouring to reallocate the cake at the same time as that cake is diminishing, which adds to the pain and stress within rural communities.

## A global challenge

It is important to look beyond our borders from time to time, as others face challenges similar to ours. I have a particular interest in the water challenges in northern China and India, where the over-extraction of ground water is placing at very grave risk the agricultural production which feeds hundreds of millions of people. The over-extraction of ground water, and the failure to recognise the interaction between ground water and surface water, is one of the key issues that we have to grapple with all over the world. We are grappling with it now in Australia. We have not fully recognised or accepted that surface water and ground water really is the same water in most cases; a megalitre taken out of the ground will almost certainly result in a megalitre not finding its way to a stream. More importantly, that reduction in stream flow may be postponed for many decades. Some of you may have seen photos by Rick Evans, a hydrologist[10], of the impact of over-extraction of ground water in parts of the United States where the streams of whole regions have dried up: even when it rains they still don't flow, because they have become losing streams rather than gaining streams. In other words the water table has been depleted so much that even when wa-

[8] http://www.nwc.gov.au/NWI/index.cfm

[9] http://www.aei.org/books/bookID.862,filter.all/book_detail.asp

[10] http://www.skmconsulting.com/Markets/environmental/Staff+Profile_Rory+Nathan.htm

ter runs into the stream, it is then mobilised to top up the ground water.

### *Crops, rainfall and streamflow*

Another issue that we have to cope with — and again we recognise it, but many people would say it is something that we need to be more focused on — is the effect of forests on our catchments. There has been a historical tendency to assume that all trees are good. But we must recognise that a hectare of blue gums consumes a great deal of water — often as much as a hectare of irrigated crops.

The Water Corporation in Western Australia, a Perth-based state-wide water utility, has examined how more water can be obtained, especially for Perth[11]. There are enormous problems in Western Australia because of climate change: in the last decade or so streamflow into Perth catchments has declined by nearly two-thirds. The precipitation elasticity there is very high — as it is in many other parts of Australia — so relatively small changes in rainfall result in very large changes in stream flow.

Options for addressing Perth's water supply problem include changing catchment management, desalination, recycling, tapping ground water, buying water from irrigators after doing a deal to replace open channels with pipes, and so forth. The cost per kilolitre of water from every one of those additional source was estimated. The cheapest new water, by a very long way, will be obtained by thinning forests in the catchments, many of which were planted when water yield was not an issue.

## Water markets and efficiency

Another issue is irrigation efficiency. Through various agencies — CRCs, the CSIRO and others — the Commonwealth supports and promotes irrigation efficiency. The National Water Commission[12] advises government on the disposition of a two-billion-dollar Australian Government Water Fund that has supported a number of projects to improve irrigation efficiency, including better metering in the Central Irrigation Trust in South Australia and better use of open channels through total channel control[13]. In the Wimmera Mallee Pipeline project area of Victoria, we — together with the state and local landowners — are funding an enormous project to replace 8000 km of incredibly inefficient and leaking channels with 4000 km of piped reticulation infrastructure[14].

The key to irrigation efficiency, however, is the market: and that is why trading is so important. The more water is valued, the more it will tend to be used efficiently, because things that are cheap or undervalued are used less prudently than those that are highly valued.

A little while ago I was with the Chinese Vice-Minister of Water who told me how in northern China they had virtually outlawed flood irrigation and were moving to dripper techniques, and in this change they were working with the Israelis. Why has Israel been a leader in irrigation efficiency? Because it has so little water. Water is used most efficiently where there is least of it.

### *Some losses are more apparent than real*

Some irrigators at Oakey Creek in Queensland benefit from effluent from Toowoomba, so they have different views on the recycling of that water and retaining it in within Toowoomba. Just as one community's effluent might be another's vital source of irrigation water, so the up-stream farmer's 'wasted' excess water may be a vital source of irrigation water for the down-stream farmer. When we are acquiring water for the environment by improving water infrastructure, as we do through programs associated with the Living Murray initiative[15], we are depriving other portions of the environment of it because in many cases the better infrastructure reduces leakage to the ground.

### *Evaporative loss*

Evaporative loss, however, is a genuine loss unless you believe that any evaporation is going to precipitate just over the next hill. And in a country like Australia with evaporation rates commonly (and particularly in irrigation areas) of 2.5–3 m annually, the evaporative loss can be enormous.

[11] http://www.watercorporation.com.au/_files/publicationsregister/23/RI_annrep0405.pdf

[12] http://www.nwc.gov.au/about/index.cfm

[13] http://www.malcolmturnbull.com.au/news/article.aspx?ID=424

[14] http://www.nwc.gov.au/publications/project_info_VIC_wimmera.cfm

[15] http://www.thelivingmurray.mdbc.gov.au/

The Menindee Lakes, a storage on the Darling River and part of the Murray–Darling System, is said to lose 425 GL a year in evaporation — about as much water as Melbourne consumes. That's a huge amount of water to be lost to evaporation.

On-farm storages, particularly on cotton farms, are also extremely inefficient because they too have a large surface area relative to the volume of water stored. Unfortunately there isn't a lot you can do about evaporation if you have to store water in very flat country. There is a limit as to how high embankment walls can be made, as the cost of earth-moving increases faster than does the height of the wall.

In terms of future policy we are becoming increasingly focused on the amount of water that is lost through evaporation.

### *Water trading*

I will briefly discuss the controversial topic of trading and purchasing water for the environment. We have a commitment to acquire 500 GL of permanent water by 2009 for the Living Murray initiative. This water will support six iconic sites on the river — wetlands of one kind or another, or forests, which in the pre-regulation era would have been periodically flooded in the normal life of the river.

We believe we have acquired through infrastructure measures, in collaboration with the states, something in the order of 300 GL towards our target, but we are still 200 GL short. So we have just developed, for comment initially, '*A water through efficiency request for tender*'[16] which is an offer to buy water from willing sellers — but the water must be water that has become or will become available through efficiency measures. That is a tender with a twist, and the twist is designed to acquire a material amount of water without reducing the volume actually available for productive use.

## Conclusion

I have briefly described some of the initiatives we have underway in an extensive and diverse industry.

We will be publishing a paper a little later in the year on the economics of urban water. All of our big cities, with the exception of Hobart, are very water stressed. In many cases that is because of the ways in which restrictions have been used to manage demand and therefore preserve the cash flow and the dividends of the governments that own the relevant water companies. We want to encourage more focus and debate on that.

Finally, it is part of my job to reach out to you and encourage you to talk to me on this huge topic. It is a vital issue, and we need your help to ensuring that our water future is truly a secure and sustainable one. Thank you very much.

[16] http://www.malcolmturnbull.com.au/news/article.aspx?ID=536