TRADING ON OUR REPUTATION

Australia's water management is still leading the way, even in drought, argues **Roger Bate**

Billy Elliot is a delightful film and musical about a twelve-year-old boy growing up in the harsh world of a northern English mining community on the verge of collapse during the 1984 miners' strike. Billy dreams of becoming a ballet dancer and, against the odds, his personal triumph is poignantly weighed against the tragic demise of the mining community he eventually leaves.

While back home in London in October I saw the musical with my family and was struck not so much by the inevitability of the collapse of British mining, due to myriad cheaper sources of fuel, but by the equally inevitable opposition among the miners to accept their fate.

Rural regions the world over face similar problems to the British miners of the 1980s, especially over water use, and Australia's rural regions are facing them sooner than most. The current drought and the Australian Government's response are bringing out the best, and occasionally the worst, in the debate over water. And while the process is painful for some, Australia's political process is undeniably doing a good job by undertaking policies which are broadly equitable and dynamically efficient. Because it is not burying its head in the sand, and praying for rain, or just giving the farmers exactly what they want, it is doing a vastly better job than most places around the world. The Howard government is probably being more sensitive to farmers' needs than the Thatcher government was to the miners', while doing what is required, just as the Iron Lady did in Britain 22 years ago. But as the drought persists and the pressure mounts for action to help farmers, this is no time for the government to go wobbly.

The problem

Australia, like most of the developed world, faces increasing water shortages. Much of this is endogenously driven through economic development, although it is possible that increasing water scarcity and the current Australian drought are exacerbated by climate change. In terms of immediate policy, however, all efforts should focus on improving sustainable water allocations to ensure as little wasted water as makes sense economically.

Australia, like the rest of the world, has enough water but it is often not used efficiently, especially in poorer countries, and at current rates it will run out soon in the more arid and wasteful areas. While resolution of international disputes is difficult (and critical in the Middle East), improving allocation of national resources everywhere is far less so;

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especially with regards to the allocation of water for agricultural use, so often ignored by political commentators.

Background

Water isn't everywhere, and rarely where you most want it, especially for farming

In 1995, Canada had over 105,000 cubic metres of water per person, whereas Tunisia had only 500 cubic metres, Algeria 625 cubic metres and South Africa 1,400 cubic metres. Some countries have vast supplies of water but it's in the wrong place. Examples include the western United States, India and China, and regrettably these areas are also prone to floods. Sumita Dasgupta, a water expert from the Delhi-based Center for Science and Environment, underscored this point when she noted: 'We're in an extremely fragile situation. Access to clean drinking water is a problem for tens of thousands of people in India.'[1] To this end, all these countries have undertaken, or are about to undertake, huge water storage and diversion projects.

In non-OECD countries, agricultural water use as a percentage of total water use is at least 75%; in some countries the figure is closer to 90% (Table 1). To make matters worse, countries with high agricultural water needs because of low rainfall tend to be countries where water is extremely scarce. In OECD countries, agriculture uses 45% of available water. Water for domestic purposes takes up the smallest proportion in all countries. It is, therefore, important to improve efficiency of agricultural water use, since it has a greater impact on overall freshwater supply than any other form of intervention.

Furthermore, the global irrigated area is increasing every decade. Of the 274 million irrigated hectares of the world, 207 million are in rich countries and only 67 million in the far more populous poorer nations. While most of the resources for irrigation have been tapped in the richer countries, the potential for growth in poorer nations is still high, especially in Africa. Many countries are already water poor and improvements

Table 1: The prominence and value of agriculture in water use

	Agricultural water use as percentage of total water use	Agriculture as percentage of GDP
United States	41	>1.6
Japan	62	>1.5
Germany	20	1.2
Italy	45	2.7
Brazil	62	6
Russian Federation	18	5.2
China	68	14.8
Ethiopia	93	41.8
Guinea-Bissau	91	69
Niger	95	40
Sierra Leone	93	52.5
Tanzania	93	43.4
Cambodia	98	35.6
Myanmar	98	59.9
Nepal	96	40.1
Haiti	94	27.1
Guyana	97	30.8
Senegal	90	16.9

Sources: World Bank, 2000; Food and Agricultural Organisation of the UN, 2000.

in crop selection and irrigation technology, which allow less water to be used efficiently per irrigated hectare, are urgently required, otherwise water shortages will accelerate even more rapidly than today.

If water was used better in agriculture there would be far more water available for non-commercial uses and for the poor. Indeed in countries where rights have been defined and traded, water for the rural poor has increased in volume and lowered in price; the best example is Chile.[2] Aside from the obvious economic sense such a policy makes, there is a moral imperative for pushing for this reform—better quality water reduces disease and death.

Australia's trading system along the Murray-Darling Basin (MDB) is the most sophisticated and effective water trading system in the world.

The best generic response

California, Colorado, Chile, South Africa and Australia provide the best examples of how trading can take place. All have seen improvements in farm output, benefits for the poor and for the environment. States in western United States have decent systems of rights and rules for trading them. But overblown environmental concerns about individual trades limits trading so much that few benefits result. So far the greatest environmental gains from trading are probably the examples of South Africa and Chile, where dams that were planned to augment water supplies were found to be unnecessary because of improved efficiency in water use. Although, the market value of water trading in South Africa is relatively small (a few million dollars),[3] the indirect costs from efficiency gains were greater. The Mountain View Dam proposed for the Elands River in South Africa and the Puclaro Dam in the Limari Basin of Chile were not built. This saved tens of millions of dollars and probably lowered ecological stress. It is possible other examples exist where trading has led to a declining demand for dam development; as of now those instances are yet to be reported. It is interesting to note, however, that China, with nearly half the world's large dams, has no water trading.

The Australian model: An in-depth look

Australia's trading system along the Murray-Darling Basin (MDB) is the most sophisticated and effective water trading system in the world; it should be analysed closely by governments of poor, semi-arid nations and indeed by all developing countries.

A study of trades in South Australia and the Goulburn-Murray Irrigation District (GMID) in Victoria,[4] both of which first experimented with trading in 1987, demonstrates the demand for and benefit from adopting a market-based system. Trades in South Australia have doubled since 1994, both in terms of volume and number, and prices have steadily risen.[5] Progress is perhaps best exemplified by the 'Watermove' website (www.watermove.com.au) now operating in the GMID. This sophisticated system allows users to trade water on the internet. Moreover, it breaks down the right to water into its constituent parts, including access and distribution.[6]

A similar pattern has held in the GMID, where a thriving dairy farming sector has propagated strong demand for available water. Regardless of which specific sector buys the water, the clear pattern in both areas has been a shift to higher value production and more efficient water use. Trading in both areas promoted a reduction in low-value cropping activity like cereal production, as dairy farmers purchased 69% of all water sold in the GMID. Vineyards, horticulture, and non-farming enterprise owners bought the bulk of traded water in South Australia.[7]

The increased economic efficiency from allowing water trading benefits the entire region where the market exists. Indeed, the annual net benefit to trade in Victoria alone is estimated at a present value of over US$100 million.[8] Likewise, in New South Wales, a conservative estimate places the figure between US$60 million and US$100 million per year in agricultural output.[9] Importantly, the transfers in these regions represent not only a shift to higher value economic activities, but also a shift to more efficient water use. Water purchasers in South Australia were ten times more likely to use drip irrigation than water sellers, and three

times more likely to use sophisticated irrigation scheduling techniques, because of the incentives created by trading.[10]

In another study examining all trades conducted along the MDB, Gary Sturgess and Michael Wright report an increase in farm income resulting from water transfers. The number of water transfers, total area transferred and income gained for each year over the corresponding timeframe, demonstrates the efficiency potential of water markets, especially during periods of scarcity (Table 2). Sturgess and Wright concluded that, 'If benefits of this scale can be obtained by a system of water transfers circumscribed by regional barriers, the benefits that would flow from redefinition of water property rights to allow the free transfer of water between regions … would be greater still.'[11]

Table 2: Total change in farm income resulting from water transfers—Murray-Darling river basin

Year	Number of transfers	Total Volume ML (000s)	Increase in income (A$ millions)
1987/88*	687	340	17
1988/89	280	85	5.6
1990/91	435	120	10

** Represents the worst drought years.*

Water trading systems are still disparate among states but greater collaboration has helped harmonise systems with conflicting institutions. Additionally, the system has shed some clarity on trading rules[12] and has illuminated two particular features which make Australia's trading system well worth emulating: First, an exchange rate system for interstate trades ensures that prices reflect the inherently higher security of rights in downstream states (like South Australia)[13] and second, the MDB Authority created a separate entitlement to accommodate conveyance losses as water travels south, from trades from NSW and Victoria to South Australia, to overcome Australia's high evaporation rates.[14] Though still a work in progress, Australia's transformation from a centralised allocation system to a flexible, market-oriented one has already reaped dividends, both economically and environmentally.

Australia is an advanced nation and is better poised to sustain an efficient trading system than less developed countries. However, Australia is also the driest continent and it has already done the hard work needed to establish a successful model; a model that poorer arid countries need to learn from.

Mature debate

What is undeniable is the honesty of the debate over water in Australia (and especially so during a drought). In most other places, from Britain and France to US and Mexico and especially in the Middle East, water debates are couched in largely bogus terms of food security (why farmers must be subsidised further), the sanctity of water (and hence why water should be free as a human right), and/or the importance of national ownership of water resources (illogical socialist arguments). The result is almost universal state control of water and often farm output, continued wastage of water with pandering to special interests and no vision of the long-term problems for retaining the status quo. But in Australia, with a few rhetorical exceptions, the debate is about how to allow markets to work, to help increasingly destitute farmers in non-price distorting ways, and to provide water to its most valued uses.

Summing up the common sense approach is Mike Young, Professor of Water Economics and Management at the University of Adelaide, who recently commented on the impact of permanent water trading on struggling farmers: 'That's meant they've been able to, as they themselves say, exit with dignity, they've had enough money to go and do something else, often in the same district, sometimes elsewhere, but that is part of the ongoing structural adjustment processes for rural Australia'.

Reporter Ben Knight correctly explains that when some farmers sell their rights permanently and exit irrigation, the fixed costs of upkeep of irrigation channels is spread over far fewer farmers. Others such as Pat Byrne, a farm consultant and Vice President of the National Civic Council, are more emotive with their concerns on this topic:

'The idea of trading from low value to high value agriculture is a flawed concept, we need low value agriculture' in order to provide enough irrigators to support the systems.

Echoing Mr Byrne's concerns, and to allegedly ensure some fixed coverage of irrigation systems is maintained, NSW is charging exit fees for those permanently selling water. But as the more rational government-supported Productivity Commission has explained, those fees are restricting trading and has recommended against them. (I can think of no other government-backed agency in any country that would give such honest advice at such a sensitive time).

Other local knowledgeable people are saying that successful farmers (the vast majority) are not selling: 'I think the willing sellers are the people that have their backs to the wall, either being forced by their financial institutions or from their age wanting to get out of farming and they just see that under the present conditions there is probably very limited future for them' said Deputy Chair of the Goulburn-Murray water services committee, Laurie Maxted.

Of course there is some debate on the trading approach. Many of arguments trotted out by British miners in 1984 are echoed by some of Australia's farmers and their political allies: National Party Senator Barnaby Joyce says the life of country towns is in peril because of the permanent sale of water rights to urban centers and non-farm uses: 'What'll happen is the function of small towns based around irrigation on a sustainable basis will lose their water to others … that probably don't have the same history, the same infrastructure, economic and social infrastructure based around them'. Absolutely true Senator, but delaying the onset of those changes by preventing water trades will help no one in the long run.

The worst commentary I encountered was from Sharon Beder, visiting professor at the university of Wollongong, whose satirical rhetoric is of the 'I'll set up a straw man and then knock him down' variety. Unfortunately for her she fails:

> The Market makes sure that a scarce resource is allocated to the highest valued uses. If a Toorak resident is willing to spend more to water his manicured garden than a Broadmeadows mother is willing to spend washing her dishes, then clearly he values the water more.

The response one is supposed to feel is outrage for the poor mother. But what the good professor ignores, but was probably picked up by many readers of her column in *The Age*, is the fact that without the market the wealthy gardener and poorer mother would have far less water to fight over, and ultimately domestic water for key uses will always be affordable if more wasteful uses are priced correctly through markets. And if the poor are hardest hit by water price rises then they can be supported centrally through other social methods, which distort incentives less, not through artificially lowering the price of water, which always leads to waste.

But with these notable exceptions the debate has been about the long-term viability of rural and urban communities and improving water allocations, which is the right way to go—and a lesson that the rest of the world can learn from.

Projects and policies that provide beneficial long run improvements must continue to drive change because for some urban centres, such as Adelaide, water scarcity is set to become worse. The Prime Minister even scarily suggested recently that this conurbation could run dry by 2026. John Howard is right to alert people to the long run danger, but must not go wobbly and promote all manner of water schemes and farm assistance efforts.

Ultimately farming and other industries will continue inefficient practices if other non-water related subsidies remain. And the Howard government, and any successor, must continue to push, over time, for these subsidies to be removed entirely. It is on this question that I have the most serious doubts about the Howard government's ability to see change to the end. When the drought passes, ALL subsidised water delivery must be ended as soon as possible.

Farming can remain an enjoyable lifestyle, and a profession to be admired, but it must still be an economic business. If it isn't, exit strategies such as selling water rights and land title to competitors (including other industries), must be further encouraged. The one policy that should be ended immediately is NSW charging exit fees on water trades—the Productivity Commission demands

are right and should be followed.

It is encouraging to see the way that Australia is tackling the drought and long-term water shortages. Indeed, if water trading had not been instituted in the 1980s and 1990s, and stuck with through the current drought, then it is likely we would have seen the total destruction of some rural regions as water availability would have collapsed by now. Others must learn from the overwhelmingly sensible Australian policies or face the dire consequences themselves in the years to come.

Endnotes

[1] 'India to Import Water by 2025', *Sify News*, 19 February 2004. Available at: http://www.consumeronline.org/guest/focus/linkDetails.asp?ID=%7BD5E4F18A-1847-4999-AA42-862FBD74C028%7D, accessed 9 December 2005.

[2] Robert Hearne, 'Institutional and Organisational Arrangements for Water Markets in Chile' in *Markets for Water: Potential and performance* eds. K William Easter, Mark Rosegrant and Ariel Dinar (Norwell, MA: Kluwer Academic Publishers, 1998).

[3] Roger Bate, Richard Tren and Lorraine Mooney, *An Econometric and Institutional Economic Analysis of Water Use in the Crocodile River Catchment, Mpumalanga Province, South Africa* (Pretoria: Water Research Commission Project K5/855, 1999).

[4] Henning Bjornlund and Jennifer McKay, 'Aspects of Water Markets for Developing Countries: Experiences from Australia, Chile and the US', *Environment and Development Economics* 7 (2002), pp 769–95.

[5] As above.

[6] Malcolm Turnbull, 'New ideas for Australia's oldest challenge: Water policy for the 21st century', Policymakers speech to The Centre for Independent Studies, 22 February 2006.

[7] Bjornland and McKay, 'Aspects of Water Markets for Developing Countries'.

[8] Department of Natural Resources and Environment, *The Value of Water: A guide to water trading in Victoria* (Melbourne: NRE, December 2001), p 17.

[9] ACILTasman Economic Policy Strategy, *Water Trading in Australia: Current Trends and Prospective Instruments to Improve Water Market Function*, Prepared for the Water Reform Working Group, June 2003.

[10] Bjornlund and McKay, 'Aspects of Water Markets for Developing Countries'.

[11] Gary Sturgess and Michael Wright, *Water Rights in Rural New South Wales: The Evolution of a Property Rights System* (Sydney: The Centre For Independent Studies, 1993), pp 23–4.

[12] Neil Byron, personal communication with Roger Bate, 15 November 2004.

[13] Since the water rights structure in Australia is for a catchment of serial rivers, the further downstream a user is situated, the greater the number of water sources available to supply him with water. Hence, water rights in South Australia (the southernmost state) are more 'secure', meaning they have a higher probability of being met in a given year than water rights further upstream in NSW and Victoria (Neil Byron, personal communication, 2004).

[14] Most trades are sufficiently small that adjustments for conveyance losses are not required (Neil Byron, personal communication, 2004).