

## **Water Trading – Panacea or Placebo**

**By James Cox and Richard Warner**

### **Introduction**

Water trading is often seen as the cure for all the ills of the inland rivers of south eastern Australia. The current drought and broader concerns about the availability and management of water have led to calls for immediate action to institute and accelerate water trading.

State governments are often seen as part of the problem. In particular it has been argued that:

- The scarcity of water has been made much worse for both irrigators and the environment by the over-allocation of rural water entitlements;
- The effect of this over-allocation have been made much worse by impediments to water trading instituted by recalcitrant State governments.

In my talk today I propose to consider the benefits and limitations of water trading – what trading can achieve and what is better performed by other instruments. I will also consider the contributions that trading can make to address the problems in the Murray Darling basin.

The case for trading is that it encourages water to move to the uses which are the most highly valued by society. For a trade to occur, a willing seller must deal with a willing buyer. This voluntary transaction benefits both parties. Society as a whole will also benefit unless there are significant adverse effects on third parties (such as the environment) which are not addressed by other policies and for which compensation is not paid.

Trading is most likely to be effective in encouraging good use of water where ownership of water is clearly defined and where there are clear rules governing the acquisition and sale of water. Australian governments (including NSW) have made considerable efforts recently to separate the title for water from the title to land and to clarify who owns water.

Trading is most likely to be effective in moving water to its best use if all potential uses can compete for water on an equal basis. This includes environmental and town uses as well as agricultural use. (Governments or interested individuals or groups might purchase water on behalf of the environment.) This suggests that any existing restrictions on trading may need to be reconsidered, including restrictions on trading between catchments and interstate trading of water.

The establishment of effective systems for trading water has been a notable achievement of the NSW public sector and its counterparts. Australian arrangements for water trading are in advance of those that occur in most other parts of the world, According to Roger Bate, an expert from the United State, "all jurisdictions, notably in the U.S. states noted here and other western states, could do worse than adopt some of the trading knowledge learned in Australia."

Water trading is already quite active. In 2004/05 there were over 1600 temporary trades amounting to 290,000ML in NSW. These trades amounted to around 1% of the average volume of water diverted from the Murray during that year. Interstate transfers of water

amounted to 7.5% of these temporary trades. The amount of water traded in NSW has increased rapidly in recent years. We understand that most trades occur between farmers rather than between farming and other users.

In Victoria in the same year there were 7,800 temporary trades amounting to 370,000ML of water. In addition, there were 825 permanent trades amounting to 83,000ML of water.

There are also limitations to trading. Some of these limitations arise because of the physical nature of water and the catchments from which it is taken. For example:

- Water is heavy and bulky and is expensive to transport except by gravity through rivers and streams. It would not be economic, for example, to take water from the Murray and sell it upstream to Queensland.
- There can also be environmental issues and difficulties associated with trading water particularly where run of river schemes are used to transfer it.

Other limits arise from concerns about the consequences of water trading for particular communities and the distribution of income. Competition increases prosperity by encouraging greater efficiency in the use of resources but often disrupts established ways of doing things in the process. Those who are concerned about the future of particular communities may understandably be concerned about extending the scope of competition.

Others may doubt the effectiveness of trading. Many farmers value the farming lifestyle and would be reluctant to give up their entitlement to water, particularly in the short term, even if they could profit from doing so.

Much investment in irrigation is a sunk cost which cannot readily be transferred to another user. Owners (both government and private) may be willing to accept a low rate of return. This makes it easier for farmers who wish to do so to remain on the land for some time.

The rules governing the transfer of water in NSW (ie, who can trade with whom) are very complex. Rules are imposed both by State Government authorities and by privately owned irrigation companies on behalf of their members. These organisations must provide their approval before trading can take place.

Trading can only occur where there is a physical, hydrological link between valleys. In addition, trading can only occur where a Water Sharing Plan is in place and to the extent permitted by the Water Sharing Plan. Some plans have limited the movement of water in and out of a river. Some private irrigation companies have tried to limit trade for example by imposing entry and exit fees. There are, however, moves to remove these.

In practice, water trading is likely to form one component of a broader policy approach to address the problems of the inland rivers. Other policies such as better information about what water is available and (as we will argue later) full recovery of the costs of providing infrastructure are required to make water trading work. Moreover, trading is likely to be supplemented by a cap on allocations and, it seems, further public investment in irrigation infrastructure.

The Prime Minister's recent National Plan for Water Security demonstrates in our view a degree of ambivalence about the ability of water trading to address the problems of the inland rivers. Some elements of the package are clearly consistent with the market approach. (These include the proposal to spend up to \$3 billion to buy back water entitlements and assist marginal irrigators to exit the industry, and the proposal to spend some \$480m in improving water monitoring and measurement and data collecting, storage and analysis.) The proposal to spend some \$600 million on revising the cap and the MDBC operations arises from a planning rather than a market-based approach. However, a cap can operate in conjunction with trading as occurs in NSW at present.

However, the proposal to spend \$6 billion over 10 years "to modernise irrigation infrastructure both on and off farms to save water and increase efficiency of water use" would seem to be unnecessary if we were confident that water trading would result in the correct market price for water. Individual irrigators or groups of irrigators would then find it worthwhile to make much of this investment themselves. Indeed, we would argue that irrigators are likely to make better investment decisions using their own money and based on market criteria than political or administration decision-makers who typically have little local knowledge and spend public money.

There is evidence of much private investment to improve water use efficiency in recent years. Alternatively, irrigators might take advantage of high entitlement charges to sell part of their entitlement and hence reduce their demand on water resources.

It seems likely that, for the foreseeable future, water trading will form one element of a mixed approach to address the problems in the inland rivers. However in this area, as in others, competition and choice are powerful forces that can lead to better outcomes. It is to be hoped that community views will permit the expansion of water trading in the years ahead. This is likely to lead to a more productive use of water, and better environmental outcomes, in the Murray Darling basin.

### **Market Pricing and Cost Based Pricing**

It is important to distinguish between the market price for water which is established by trading and the administered price for making water available which is set by bodies such as IPART. Irrigators now own their share of the water that is available for consumptive use. This means that they benefit from the scarcity value of water.

A key to efficient water use is the market price of bulk water. In the Murray-Darling basin irrigators now face a choice about whether to use their water entitlement on their own farm, or whether they would be better off selling it to someone else who values it more because they can put it to more profitable use. In principle, if a cotton farmer is continuing to use water, it is because that cotton farmer is getting a greater return (net of the costs of production, including the water) than would be possible from any alternative use of the water.

High market prices for water encourage water use efficiency. They encourage irrigators to find ways of reducing the amount of water they use, either on a temporary or permanent basis. If a permanent transfer is made, the farmer must transfer some or all of his or her entitlement to another user.

As noted, the value of water to a farmer depends on the returns he or she achieves from using the water less costs. One of these costs is the charge levied by water authorities for making water available. Other things being equal, a high charge for making water available will reduce rather than increase the market price of water. This suggests that bulk water charges levied by government authorities are unlikely to be effective in achieving demand management objectives. Rather, their role is to recover the costs of making water available.

The cost of supply of bulk water is not an irrelevant or trivial consideration. The difference between the supply cost of water and the market price of water accrues to the holder of a water right on sale. If the cost of making water available is understated there is a transfer payment from taxpayers - who are obliged to meet the shortfall between the cost of supplying water and the price the bulk water provider charges - to the property rights holder - the irrigator who is able to realise the profit on sale.

Not only does under recovery of costs increase the profit that irrigators can gain from trading water, but the under recovery of costs can also induce marginal and inefficient irrigators and irrigating enterprises to stay in the industry and resist engaging in trade when this would be the most logical and rational thing for them to do. Moreover, the under-recovery of costs increases the amount that must be paid if water is transferred to other users, such as the environment.

### **Cost-Reflective Pricing**

The Independent Pricing and Regulatory Tribunal of NSW is responsible for setting the prices that State Water, the NSW bulk water supplier, can charge for making its water available. These prices are based on the costs State Water incurs in harvesting, storing and transporting water. In addition, IPART sets prices for the water resource management activities of the Department of Natural Resources.

As most of you know, the National Water Initiative that COAG agreed to in 2004 included the adoption of cost-reflection pricing for water, the development of water trading systems, separating the title of land from water titles, and the provision of water for environmental purposes.

Since the 1994 COAG Water Reforms, pricing regulators, such as IPART in NSW, have worked diligently, in association with water agencies, to unravel problems and issues relating to water costs that were a century in the making. The stage has now been reached in NSW where consumption charging is now the rule for most rural water. Prices of water and related services now better reflect the costs of these services.

Despite this, the Department of Prime Minister and Cabinet have recently remarked that "in most cases, rural water pricing will barely cover the operational expenses of the supplier and funding for new or upgraded infrastructure is often sought from other sources."

The prices set by IPART for bulk water for NSW irrigators last year are expected to fully recover both the operational and future capital expenditure costs of 95 per cent of the irrigated water sold in NSW by 2009/10, with the price of the remaining water that is not fully cost recovered being even higher. In addition, the structure of irrigated water charges has been altered so that the component that related to the volume of water consumed accounts for 60 per cent of a typical irrigator's bill in a normal year.

Somewhat ironically, the major exception to cost-reflective pricing for irrigated water is, in fact, the Commonwealth itself. The Commonwealth and States jointly funds the Murray-Darling Basin Commission for works that clearly benefit farmers. The NSW Government's share of these MDBC costs is recovered through bulk water charges, where those works benefit farmers. But these costs-reflective pricing rules are not being applied to works funded by the Commonwealth Government, despite its insistence that the States abide by them.

As noted earlier, many of the activities to be undertaken under the National Plan for Water Security will be of direct benefit to irrigators. It is unclear from the statements made to date how much of the costs of these initiatives will be recovered from irrigators.

### **Over Allocation of Entitlements to Water**

As noted in the Prime Minister's recent National Plan for Water Security, the States and territories have in the past issued more entitlements to water than can be delivered by the water systems. However, the NSW government has already taken action to address the problem of over allocation of water entitlements.

In 2000 the NSW Government introduced legislation to revise the water management framework. Under that legislation water management plans have been developed for the major river systems in NSW, which specify each user's access rights as a share of the water available. In effect, an assessment is made each year of how much water will be available and an irrigator has an entitlement to a share of that total. Because the various shares add only to one hundred per cent, the water is no longer able to be over-allocated as it was previously.

This does not always mean that irrigators always enjoy the level of security to water that they would like. No doubt an irrigator would like to have his or her water entitlement met in full 100 per cent of the time. The reality is, climate conditions in Australia being what they are, that guarantees of water security can only be given at great cost in terms of increased storage dams etc. There is a trade off between cost and security. Irrigators can have greater security if they are prepared to pay more for their water, provided there are additional sources of water to store. Where water is at or above its sustainable yield, the cost/security trade off continues to apply but increased security can be bought by irrigators only be acquiring other water licenses through trade.

Because increased security can be purchased by irrigators only at considerable cost, entitlements are unlikely to be met in full for the majority of the time. As a consequence it is irrigators who have to bear the risk of water shortfalls in time of drought.

The National Plan proposed to undertake a thorough assessment off the sustainable yield of the Murray-Darling basin by the end of 2007. This will throw new light on the question of security of supply. The Commonwealth Government's proposal to allocate up to \$3 billion to buy back water entitlements and assist irrigators in the unviable or inefficient parts of the water industry to exit will also improve the security of water entitlements.

## **Interstate Trade in Water**

The introduction of titles to water that are separate from those to land and water sharing plans that allocate to consumptive use only the water available to that use, mean that the preconditions for water trading have been met. As we have seen, a great deal of water trading within states already takes place.

So far, interstate trading has been fairly limited. This is because in reality water – or more exactly a water entitlement – is not a homogenous product. In particular, the relative security of water entitlements differs between the states and between catchments. This is because of different supply characteristics across catchments, such as rainfall, dam capacity and run-off. Consequently, it has taken time to agree on how to take into account the different levels of security of water entitlements in any interstate water trading framework. Similarly, compatible systems that properly account for those water trades have inevitably taken time to be developed. However, NSW and South Australia have recently agreed on a "tagging" system to facilitate trade.

## **Water for Environmental Purposes**

One of the main aims of the National Water Initiative is the provision of adequate water for environmental purposes – to restore, maintain and protect river health.

Some people consider that the present market-based system for managing rural water is flawed on these grounds. Their principal criticism is that the share for the environment was set too low to maintain the health of our river systems, and especially the health of the Murray-Darling system. In particular they argue that in our push to establish a market for water there has been insufficient attention to the sustainability of water supplies, and that there is a need for more bio-physical research.

In fact the water sharing plans for NSW rivers do provide for environmental flows to rank ahead of irrigator's entitlements, so that these flows are much less affected when allocations are low. In addition, safeguards have been included to ensure water trading is environmentally benign, but the critics argue that "given their complexity, it is hard to believe that water trading will really be conducted in this way."

For example, it is not just a matter of defining the sustainable extraction level, but the government also needs to decide how close to approach this level before further intervening, on behalf of the environment. The environmentalists' concern is that "the capacity to implement and enforce the present water management regime is well beyond the current institutional capacity of most catchment bodies and of available hydrological knowledge."

Judgments can differ, however, about the appropriate share of water and who should benefit. And often it is necessary in public policy to make a decision without perfect knowledge. Thus there is inevitably an element of compromise in balancing the claims of the environment and the irrigators.

In future it would be possible to further increase the share of water available for environmental flows, if such action were considered warranted, but it would generally require the government to buy out some of the irrigator's entitlements. Indeed, the NSW Government has already implemented a program to buy back licenses in a number of regions in NSW. The Commonwealth Government's National Plan also provides for buy backs for river health purposes.

Such buy backs simply provide a more secure water supply for the environment and the remaining entitlement holders. However, they do involve a higher price, which reflects the scarcity value of the water, and will therefore cost more than if the environment had received a higher allocation in the original distribution. We suspect that this higher price is what the environmental movement is objecting to most. But we should not forget that persuading the irrigators to forego what they saw as their former higher entitlement to water has not been easy. To date it has only been made possible by turning their previous de facto entitlement into a de jure entitlement, and allowing them to trade at a price that reflects its scarcity value.

### **Concluding Comments**

In my talk today I have sought to consider a number of issues concerned with water pricing, allocation and trading.

Governments have developed and implemented sophisticated, reasoned and considered approaches to water management, regulation and trading. There are however a number of measures that need to be taken to further develop trading both within and across jurisdictional boundaries. These include developing better conversion mechanisms to aid in understanding the differences in security of the different state based licensing regimes.

Where water is traded the trade price will reflect the market price of water including its scarcity value. Prices will increase in times of drought and fall in times of abundance. The market evidence that we have seen indicates that this is occurring.

There is also a need to ensure that the cost reflective prices that water suppliers such as State Water in NSW charge irrigators properly and fully reflect the costs of renewing these systems into the future where the irrigators wish to have these systems maintained.

Where prices do not reflect the full cost of supply not only will irrigators receive a windfall gain but inefficient and unviable irrigators will be encouraged to remain in the industry.

If the Commonwealth Government does decide to invest \$6 billion in upgrading irrigation infrastructure, the cost of this investment should be recovered from users. Such an approach would support a market-based approach to allocating water. Moreover, the willingness of users to pay provides the best available indication that the investment is worthwhile.

At the end of the day trade is something that takes place between willing sellers and willing buyers. Market prices are determined through the interaction of supply and demand. Governments can facilitate and encourage trading but they cannot make it happen. For example, some farmers may choose not to sell their water entitlements even where outside observers think they should because they value for farming lifestyle in itself or lack-of attractive alternative employment opportunities.

Our view is that trading is an important factor leading to improvements in the use of water. We are likely to see further extension and development of trading in water. However, trading is likely to be only one part of a broader suite of policy measures to address the problems of our inland rivers.