

AUSTRALIAN WATER MARKET POLICIES: CURRENT ISSUES AND FUTURE DIRECTIONS

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Introduction

This paper relies on past empirical research to raise a number of current issues and future directions related to Australian water market policies which lay beyond what is included in the latest generation of water legislation presently emerging in most states in response to the National Competition Policy (NCP). We believe it is essential to start discussing these issues now since the need for their solutions are so important and escalating so rapidly and the potential environmental, social and economic consequences of failing to adequately and comprehensively resolve them so severe that there is no room for complacency.

The first part of the paper will put this statement into a contemporary policy perspective while the second part will discuss some current and emerging water market issues. The third part will identify elements of the next generation of water market policies while the fourth and final part will discuss some future directions for water market policies within a wider water management policy framework.

Contemporary policy developments

The last decade saw extensive and radical developments within the area of water policy and water management. The Council of Australian Governments (COAG) took an intense interest in the area in 1994 with the initiation of the COAG Water Reform Agenda (COAG, 1994). This took place at a time where Australian Cooperative Federalism was in a period of reasonable trust between state and federal governments as a manifestation of New Federalism (Fowler, 1994; Bates, 1995). It also followed a period with significant developments within environmental areas resulting in the National Strategy for Ecologically Sustainable Development (NSED, Australian Government, 1992) and the Intergovernmental Agreement on the Environment (IGAE) following international developments resulting in AGENDA21 and the Rio Convention (Sitarz, 1993).

These developments early in the decade therefore had significant components of both environmental and social equity concerns and we are particularly looking at addressing the conflict between these and more traditional economic concerns. The COAG Water Reform Agenda however, ended up under the wider umbrella of the NCP, which was an outcome of economic rationalism gaining momentum around the middle of the decade. Issues related to ecologically and socially sustainable development took the back seat during the NCP debate. They were only included in the final package of documents due to significant pressure from interest groups in the closing stages between the COAG meetings in Darwin in February 1994 and Adelaide in April 1995 (Ranald, 1995). To emphasise the level of trust between the signatories to the NCP package a trivial penalty of \$4.2 billion was imposed on states for non-compliance with a totally unrealistic time schedule.

At the mid point of the decade it is interesting to note that great effort had been put into federal and state legislation, agreements and fiscal measures to ensure compliance with the NCP. In contrast, no similar efforts were made to ensure compliance with the NSED and the IGAE clearly showing the shift in policy focus (Dovers, 1997). This is of particular concern since the NCP documents are very weak on these issues and the water policy reforms imbedded in the NCP were not insignificant and represented a break with a number of old paradigms. Key elements of the reform package were:

- introduction of full cost recovery prices,
- privatisation or semi-privatisation of public utilities,
- devolution of the management of natural resources and its infrastructure,
- use of property rights and market based mechanisms; and
- removal of government subsidies and cross-subsidies or making them transparent.

Such policy reforms are consistent with a wider international development

as expressed by a number of major international organisations such as the UN (Sitarz, 1993), the World Bank (1993), OECD (1989), FAO (1999) and UNESCO (2000). Water pricing and water markets are two key issues in this package. The emergence of this strong interest in pricing, property rights and market based instruments has its origin in the fact that the water economy within many countries such as Australia is well and truly into their mature phase. In this phase additional water supply is limited for both economic and environmental reasons while demand for water is increasing if not escalating. Failing to continue to meet this increasing demand will seriously impede further growth. On the other side of the ledger the legacy of past water policies has vested significant volumes of water in inefficient and low value water users compounding environmental concerns (Bjornlund and McKay, 1998b). To ensure continued economic growth especially within regional and rural areas, where such growth is most needed a reallocation of water resources is of fundamental importance. Full cost recovery prices are seen as a means to encourage/force these inefficient low value water users to stop irrigating while water markets are seen as an instrument facilitating this process while offering some compensation to water sellers.

To compound the problems and further highlight the need for policy changes the legacy of past water policies also includes significant over-allocations of water (within some valleys of NSW up to 1000% (McDonald, 2000)). These over-allocations have in the past not presented a significant problem because many license holders have never used their water (sleeper licenses) or only used them partially (dozer licenses). The introduction of water markets however has changed this picture as such license holders cashed in the value now attached to these assets. During the early stages of water market operations as much as 58% of all water traded in the GMID and 69% along the River Murray in SA were sleeper and

dozer licenses activating unused water (Bjornlund and McKay, 2000a). To counter this development the Murray-Darling Basin Commission in 1997 moved to place a Cap on water extraction within the Basin to avoid a potential environmental disaster (MDBC, 1997). These developments resulted in decreasing annual allocations within NSW and Victoria further increasing the demand for reallocation of water resources and increasing the pressure on water markets. As a result water markets within the GMID saw 57% of all water purchased go to support existing crops (Bjornlund and McKay, 2000a).

The last year of the last century saw a number of important reports written about these issues (Australian Academy of Technological Sciences and Engineering and the Institute of Engineers, 1999, Marsden Jacobs, 1999 and McCuckian *et al.*, 1999). The same year saw jurisdictions scrambling to produce new legislation in fulfillment of their obligations under the NCP to avoid the significant financial penalties. New South Wales introduced their new Water Management Bill (DLWC, 1999), Queensland its Water (Allocation and Management) Bill (DNR, 1999) and Western Australia The Rights in Water and Irrigation Amendment Bill (Banyard and Kwaymullha, 2000). South Australia had already introduced its Water Resources Management Act in 1997.

Water Markets since the 1980s

Water markets emerged during the 1980s and their use became more widespread during the 1990s as water market policies were widened and introduced within more States. As irrigation communities became more familiar with water markets and more confident with their operation and potential benefits water market activities increased significantly during the decade (Bjornlund and McKay 1999a; 2000a). The authors have carried out extensive research into the operation and impacts of permanent water markets in South Australia and Victoria. Early outcome of this research have been reported in this journal (Bjornlund and McKay, 1995, 1996 and 1999a) and in more details elsewhere (Bjornlund and McKay, 1998a,b, 1999b, 2000a,b). In brief water markets seem to have achieved a number of its objectives such as moving water to more efficient and higher value users with potentially good both economic and environmental outcomes. However there are also some both environmental and social reservations (Bjornlund and McKay, 2000a,b). We will

not discuss this further here but refer the interested reader to the above references. Our present project has extended the investigations related to permanent transfers into New South Wales and added the operations and outcomes of temporary markets in Victoria and New South Wales.

Emerging Issues in Water Markets: Cross-sectoral demand

In early market operations almost 100% of water transfers were between agricultural users. This is likely to change during the next decade or so. Under the MDB Cap all water users have a volumetric license including cities and towns. As urban developments continue and existing allocations become inadequate additional urban water supply can only be gained from the water market and in reality will have to come out of irrigation. This development will for the first time generate cross-sectoral demand in water markets. The early success of water markets is accelerating this process. As discussed water has moved to more efficient and higher value producing irrigators increasing the area of production as well as the volume of produce from existing irrigated areas intensifying the need for rural and regional workers both on farms and in associated processing, packaging, transport and service industries. This in turn will increase demand from non-rural uses such as residential, industrial, community and recreational. As an expression of this development at least one township along the River Murray has introduced a developers levy to pay for the purchase of additional water to satisfy increased demand from new subdivisions.

Emerging issues in Water Markets: Temporary v. permanent markets

In both Victoria and New South Wales temporary water trade was introduced before permanent water trade reflecting community concerns and the fact that the predominant water users in both States have the ability to benefit from annual water trade. In South Australia both temporary and permanent trade was introduced from the outset reflecting the fact that almost all irrigators in South Australia are either horticulture or viticulture and can not benefit from annually fluctuating supply.

If policy makers are trying to encourage a permanent re-allocation of water and the associated structural change within irrigation communities, permanent

trade is necessary. Very few irrigators will make investments in more efficient irrigation and drainage or permanent high value crops without the long-term security of water. In that sense the introduction of temporary trade mainly served the purpose of getting irrigators accustomed to the concept, gain confidence in its workings and open their eyes to its potential benefits.

Temporary trade however has its own advantages and place in the process of achieving a more efficient water use. It allows irrigators to react to changes in annual allocations, climatic and market changes and changes in personal circumstances. It allows farmers to sell their water temporarily while recovering from sickness or while the land recovers from environmental degradation while still gaining some income. It also allows farmers to retire while remaining on the land and gaining income from annual sale of the water keeping the integrity of the property as an irrigated enterprise for future generations or later sale.

Comparing activities within the temporary and permanent markets in the GMID in Victoria and the Murray Region in NSW it becomes apparent that activities within the temporary markets are much higher than within permanent markets. In general temporary markets tends to trade 10 times the volume of permanent markets on an annual basis (Bjornlund and McKay, 2000a). A recent report by Marsden Jacob (1999) identified significant impediments to permanent trade within many valleys in NSW and concluded that they as a consequence forgo or postpone significant economic gains.

Some of the reasons for these communities favoring temporary trade were made clear to us during a visit to the GMID in Victoria and the Murray Region of NSW in April 1999. We discussed these issues with irrigators, their advisors and water authorities. Three main themes emerged from these discussions:

- Policy uncertainty. At least three major uncertainties were identified:
 1. the final impact of the MDB Cap;
 2. environmental allocations and in-stream flow definitions; and
 3. how to deal with the significant levels of over-allocation.

As these issues eventually are being resolved annual allocations as proportion of water rights will decrease. As a consequence, when an irrigator purchases 1 ML of permanent water right it is uncertain how much water the irrigator will receive in the future for the price paid.

On the other hand when an irrigator purchases 1 ML of temporary water, 1 ML is exactly what will be delivered for the price paid.

- Changing financial structures of farming enterprises (as well as other business enterprises). Many businesses move from a position where they carry their assets on the balance sheet to a position where they lease major assets. This development is likely to continue and increase, as irrigated farming becomes more capital intensive. Leasing of water fits into this concept and can be designed to follow the timing of leases of major equipment depending on the water resource and contracts for production and sale of commodities. As such the arrangement fulfills the requirements of financial institutions financing such leases. The use of leasing of water is also likely to increase as the right to own the water is separated from the requirement to own the land on which it is used. This has taken place in South Australia and is proposed under the new NSW *Water Management Act*. As a consequence of this separation the first leaseback arrangement has been seen in South Australia. Such long-term leases has much the same qualities as permanent trade since the lessee retains the control over the water resource for a period long enough to justify long-term investments in efficient water use. The leaseback option has the advantage of converting the irrigators water asset into cash, which can be used to finance necessary investments to make the farm long-term financially viable and ecologically sustainable.

- Taxation issues. If an irrigator purchases annual water the purchase price can be written off against annual income and thus paying around 40% of the purchase price. When an irrigator sells annual water the income can be offset against annual expenses, depreciation or carried forward tax losses from previous years. Given the financial position of many sellers this means that they do not have to pay tax on the income. However, if an irrigator purchases permanent water there is no ability to depreciate the purchase cost and for sellers the sales price is formally subject to capital gains tax.

Elements of the next generation of water market policies

To overcome the above impediments to the wider use of permanent water markets and at the same time benefit from the emerging cross-sectoral demand and its inherent wider spectrum of water use patterns and risk positions a number of further changes need to be made to water

market policies. The following main areas need to be addressed:

- The above mentioned three uncertainties must be resolved and its final impact filter through to end users. Once environmental allocations have been defined their ability to be traded must be established as well as the rules for such transfers.

- Tax reforms are needed to encourage the use of permanent water trade and investments in sustainable water use. Potential solutions to this issue will be discussed later.

- More sophisticated market instruments such as futures and option contracts need to be developed to enable users with opposite risk exposure and water use patterns to benefit from such differences;

- Water rights need to be better defined with respect to:

1. Security of supply specified as the probability of receiving the volumetric entitlement;

2. Reliability of delivery specified as the period from ordering to receiving the water;

3. The constraints on trade;

4. Some indication of the expected quality of the water;

5. The duration of the water right either indefinite or for a specified period. In the later case the likelihood of the water right being renewed and the factors determining renewal must be stated;

- A more efficiently operating market. This is probably the most complex and important area and requires a number of improvements within many different aspects of market operations:

1. Transfer processes must be faster and its outcome more predictable.

2. Information on demand, supply and prices in the market must be readily and instantaneously available. The emergence of Water Exchanges within the GMID, MIE and Central Irrigation Trust have provided this for temporary trade within these areas;

3. Annual allocations must be announced early in the season and changes to such allocations made frequently at known intervals. It must further be made transparent which factors impact on the level of allocations such as natural precipitation, evaporation, dam levels etc. For each of these factors trigger levels must be identified causing increases in annual allocations. Continuous readings of these factors related to the trigger levels must be communicated to irrigators. Without such insight irrigators can not make rational buy and sell decisions. It is

important to understand that recent policy changes have transferred most of the risk management from water authorities to irrigators. In the past, annual allocations were made based on water in the storages plus expected inflow during the season and non-use. Today allocations are basically made based on dam levels with very little allowance for inflow during the season. Such actual inflow is now used to justify increases in annual allocations during the season. During the last couple of seasons these increases have come after most irrigators cut-off date for planting commitments. After that date irrigators can not benefit from additional allocations unless they gamble on them coming. As a result irrigators plant less land and end up with excess water.

4. To assist irrigators in making the correct buy and sell decisions more knowledge is required about the factors driving water market activities, that is the factors triggering buyers and sellers to act. This could be factors such as the level of seasonal allocations, precipitation, commodity prices, prices of substitute good such as feed for animals, interest rates, exchange rates and the cut-off dates for growers of different commodities as discussed above. At present this knowledge is very limited and as a consequence uninformed decisions are being made. Once such knowledge is known it must be communicated to decision makers and information about the position of each factor must be made easily and continuously available and readily comprehensible.

A telephone survey of buyers and sellers of temporary water within the GMID during the 1998/99 irrigation season clearly confirmed the first three issues listed above as the most important improvements to existing market operations.

Future direction in water market policies

At this point it is necessary to stop and consider the wider implications of what we have discussed so far. In its ultimate form more sophisticated and efficient water markets will generate a situation where 100% of water allocated for consumptive uses will actually be used every year. There will be very little unused water left in the river to cater for environmental needs. The development outlined in this paper is therefore only ecologically and socially sustainable within a wider regulatory framework protecting environmental and social interests against private interests ruling the operations of efficient markets.

Many economists will argue that market based and regulatory or command and control instruments are irreconcilable. Ecological economists however seems to take a different view and state that markets are excellent servants but poor masters when it comes to protecting biodiversity and ecological sustainability (Young, 1999). However if regulatory instruments set the ecologically sustainable limits market mechanisms can be an excellent servant to move water around within such limits. In a recent paper we outlined such a regulatory framework (Bjornlund and McKay, 2000c).

Until now we have discussed, acknowledged and promoted the need for increasing the water user's position and rights. When discussing the regulatory framework to protect community interests such as social and environmental concerns we will have to turn our attention to acknowledge, discuss and promote the obligations placed on water users. We were pleased to note that both the Federal Minister for the Environment Senator Hill and the South Australian Minister for Water Resources Mark Brindal at two recent conferences in Melbourne and Canberra during March 2000 emphasised this point. Some might argue that promoting both the rights and obligations of water users amount to a contradiction. We will however argue that the two things are complementary and that efficient and progressive irrigators today understand this. This was clearly indicated to us during our recent discussions with irrigators in NSW and Victoria.

The argument for defining such obligations has its roots in the public goods nature of water. Compared to areas such as telecommunication, roads, rails, electricity and mail the water industry employs a significant proportion of the public sector asset base (Industry Commission, 1990). The taxpayers and the wider community therefore have a valid interest in the way this resource is used and a reasonable expectation that the water users use the water in the best interest of the community and not only the individual. Such expectations are environmental, social, cultural and economic in nature. Water should be used efficiently to maximize the economic benefits in form of jobs and export earning, protect ecological systems and the environment to ensure a pleasant living environment and the long term sustainability of rural communities and culture for present and future generations.

In our recent paper (Bjornlund and McKay, 2000c) we argued that a 'Duty

toward Water' should be defined within each region setting out what it could reasonable be expected that the water resource could produce within locally defined environmental, social and cultural limits. Based on such definitions water users should produce Water Management Plans setting out how each water user intends to fulfill the local 'Duty toward Water'. Such Water Management Plans should also be in accordance with Regional Water Management Plans and the State Water Management Plan setting the overall aims and objective for the states water resources. Based on the Water Management Plans each water user should be given a Water Use Right which is the volume of water that is required for the intended purpose while maintaining the 'Duty toward Water'. This right should be separate from the existing Water Right, which will not any longer include any right to use the water but only the right to own or hold it. Due to their nature Water Use Rights will have to be property or use specific and will have to be for a defined period of time while the Water Right now can be totally removed from any relationship with land and can effectively be in perpetuity. The failure to fulfill the Duty toward Water after a suitable grace period upon its introduction will result in forfeiture of the Water User Right but not the Water Right.

The Duty toward Water should be revised regularly to ensure that it keeps reflecting the most efficient water use and water re-use technology say every 10 years. The time horizon for Water Use Rights will have to be much longer like 30 years to ensure the users time enough to justify the necessary investments required to fulfill the Duty toward Water. Water Use Right holders should be under an obligations to fulfill the new Duty toward Water upon renewal of the Water Use Right. Instruments should be in place to encourage water users to adopt the new Duty toward Water when renewed every 10 years by instrument such as those in operations within NSW fisheries (Young, 1995).

The concept of the 'Duty toward Water' will have an inherent requirement of water actually being used. It can not fulfill its duty if it is unused. The owners of Water Rights will therefore be under a duty or obligation to ensure that the water attached to the rights is being used under a Water Use Right. The failure to fulfill this duty could result in the loss of the Water Right or a forced sale. Such a duty will also effectively eliminate the fear that many has that the separation of the right to own from the right to use water

could result in damaging speculation with investors consolidating large volumes of water and forcing prices up by limiting supply.

Such a framework will ensure that owners of Water Rights and Water Use Rights are under an obligation to constantly fulfill the Duty toward Water and thereby ensure the long-term benefits to the wider community. Under such a regime the Federal Government might be encouraged to introduce a number of tax reforms which will facilitate the process. Such reforms could be:

- The introduction of increased or accelerated depreciation on capital investments in accordance with an approved Water Management Plan to ensure fulfillment of the Duty toward Water. Such a system exists for investments under Land Care programs (Young *et al.* 1996);
- Allowing depreciation of the purchase price on permanent water purchases removing one of the present reasons for preferring temporary trade;
- Remove capital gains tax on water sold with the effect that the seller ceases irrigation. This would accelerate the structural adjustment process and ease the social pain associated with the introduction of this framework which inevitably will result in some irrigators not being able to fulfill the new Duty toward Water and thereby lose their Water Use Right.

Such tax changes would encourage more efficient water uses and the desperately needed structural adjustment process in two ways. It would assist existing water users in financing more efficient water use technology needed to fulfill the Duty toward water. It would also enable buyers to pay higher prices for water thus eliminating the present gap between water market prices and the value of water as part of an irrigated property actively supporting capital investments in irrigation infrastructure and plantings (Bjornlund and McKay, 2000b, 1999b).

With the Water Use Rights formally separated from the Water Right trade in Water Rights can take place instantaneously. There will not be any need to evaluate or police such transfers. The issues traditionally considered by the authorities all relates to the Water Use Right and have all been sorted out in the Water Management Plan process and accounted for within the local Duty toward Water. The only thing the authorities need to monitor is water use, which is already done for billing purposes, and then compare this to the Water Use Right. If the holder of a Water Use Right wants to increase water use a revised Water

Management Plan need to be submitted. This process is separate to any purchase of water right.

Conclusions

This paper has tried to raise a number of policy issues related to water trading. From the discussions it become apparent that water trading can not be seen in isolation from other water policy issues. It has to be dealt with in a holistic and integrated way to ensure that the outcome reflects the interests of the wider community. Recent reports have clearly indicated that water needs not be a limitation on sustainable growth of water dependent industries and rural and regional communities. The proviso is that adequate policy measures are put in place to ensure a re-allocation of water resources away from inefficient low value users to the emerging sectors of the economy demanding additional water. This will also require the relocation of some water using activities to areas where water is more readily available. The use of more efficient and sophisticated water markets were pointed out as major instruments in securing this development. A wider debate as to what constitute an adequate policy framework to ensure an ecologically, socially and culturally sustainable outcome of this process, which aim is economic in its foundation, is therefore essential.

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