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The Interstate Water Trading Regime

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Introduction

In November last year, a pilot interstate water trading project was approved by the Murray-Darling Basin Ministerial Council. This project allows private diverters along a region of the River Murray to permanently trade high security water from one State to another – until November 1997 this would have been impossible. Under this project, solutions will be developed to complex interstate water trading issues so that water will be able to move to higher value uses; be applied to soils that are more appropriate to irrigation; and be used more efficiently – irrespective of State borders. This will in turn help the irrigation industry in Australia become more economically and environmentally sustainable.

The Murray-Darling Basin

The Murray-Darling Basin covers one-seventh of Australia's continent and supports almost three-quarters of our irrigated land. The water of the Basin is critical to meeting the needs of the agricultural, urban and manufacturing sectors and is essential for preserving the biodiversity of the region. From an economic perspective, the Basin's agricultural production was worth \$8.56 billion in 1991/92 - more than 41% of the nation's total agricultural production.

Managing the River Murray has historically been difficult due to the absence of interstate river management arrangements from the Constitution. A succession of drought years between 1895 and 1902 increased concerns over water supply and sharing of the resource. As a result, in 1917, the River Murray Commission was established to implement the *River Murray Agreement*, between the Commonwealth, New South Wales, South Australia and Victoria, that specified arrangements concerning water sharing. Over the next 70 years, the River Murray Commission co-ordinated the construction of dams, weirs and locks along the River Murray. These structures provided security of supply for many years but increasingly there were calls to focus more effort on the management of the catchment as a whole, rather than just the water resource.

And so, the Murray-Darling Basin Commission (MDBC) was established in 1988 to co-ordinate the efforts of all governments and communities involved in managing the natural resources of the Basin. The Commission works to the Murray-Darling Basin Ministerial Council, that comprises land, water and environment ministers from the various governments in the Basin. The charter of the Council is to promote and co-ordinate effective planning and management for the equitable, efficient and sustainable use of the water, land and other environmental resources of the Murray-Darling Basin. At the direction of the Council, the Commission has co-ordinated *The Murray-Darling Basin Initiative*, the largest integrated catchment management program in the world.

To date, the *Initiative* has been successful in encouraging interstate co-operation. It has also produced a growing acceptance of the need to move away from an approach that divides government contributions to natural resource management equally between all regions, to a more strategic approach concentrating

resources on the areas of greatest need. This in turn has led to a focus on water reform within the irrigation sector in the Basin.

Water Reform

The irrigation industry is the major user of fresh water in Australia consuming between 70 - 80 per cent of all water used. The irrigation industry provides considerable benefits to the nation. However, there are a number of challenges currently facing the industry:

- infrastructure decline (with insufficient public funds to pay for refurbishment);
- low profitability in the industry generally; and
- natural resource and environmental degradation (such as declining water quality; rising watertables, increased river and groundwater salinity).

Since 1992, a number of inquiries and reforms have been developed in relation to the water industry. The Industry Commission's *Inquiry into Water Resources and Waste Water Disposal* made recommendations regarding the introduction of a trading system in water rights. Also in 1992 an Independent Committee of Inquiry developed a *National Competition Policy* in 1993 that included the water sector as a major component of the implementation program.

And in 1994, the Council of Australian Governments (COAG) (that comprises the Premiers of each State and the Prime Minister) agreed to implement a strategic framework for reform of the water industry. Amongst other things, COAG specifically agreed to introduce trading, including cross-border sales, of water entitlements and a comprehensive system of water entitlements, backed by separation of water property rights from land title and clear specification of entitlements in terms of ownership, volume, reliability, transferability and quality. The COAG reform timetable specified that trading should occur by no later than 1998 and the payment of Commonwealth funds provided under the *National Competition Policy* has been linked to States' progress in meeting this COAG water reform timetable.

Along with these other initiatives, the Murray-Darling Basin Commission developed an *Irrigation Management Strategy* to respond to concerns that irrigation practices were threatening the sustainability of irrigation in the Basin. This *Strategy* has a Regional Development and a Water Market Reform component. The Water Market Reform component of the *Strategy* focuses specifically on:

- standardising property rights;
- developing uniform methods of calculating water charges; and
- introducing systems of trade in water property rights.

The Murray-Darling Basin Cap

The Cap on water diversions within the Murray-Darling Basin was another development related to the introduction of interstate water trade. In 1995, the Murray-Darling Basin Commission conducted an *Audit of Water Use in the Murray-Darling Basin*. The *Audit* reported on:

- the level of diversion of surface water from the Basin;
- the rate at which diversions were increasing, and
- the ultimate level of water use that would result if all current water entitlements were fully developed.

The *Audit* discovered that the frequency of drought-like flows at the lower reaches of the Murray River had increased from 5% of years under natural conditions to over 60% of years and that, if all existing water rights were fully developed, average diversions would grow by a further 14.5%. This increase in diversions would have significant repercussions on the security of existing users and the riverine environment.

So, in 1995, to limit the over-development of the Basin's water resources, the Ministerial Council introduced a 'Cap' that restricted the volume of diversions to those associated with 1993/94 levels of development. This entailed restricting development to the level of infrastructure in place; the water allocation and system operating rules that were in place; the water allocations in place and their level of use; the underlying level of demand; and the system operating efficiency in 1993/94. Each State has since agreed to Cap diversions at these 1993/1994 levels of development.

The imposition of the Cap on the consumptive use of water in the Basin, particularly in its permanent form, was seen as a necessary pre-requisite to trade. The Cap will ensure that demand to purchase water is met from existing sources and therefore establish a starting point for market driven re-allocation. Low value uses will become even more apparent, and a more developed trading environment will facilitate structural adjustment within the irrigation industry.

The Cap will ensure that trade in water entitlements does not result in an increase in water diversions. Implementation of the Cap was therefore a necessary precursor to trade. Accordingly, the pilot interstate water trading project was only permitted to proceed once the States had reached agreement on a basis to limit the total diversions in the Basin.

Benefits of Water Trading

So a combination of these initiatives led to the introduction of transferable water entitlements and the pilot interstate water trading project. What will be the benefits of introducing transferable water entitlement regimes?

Economic Benefits

In the early stages of Australia's water industry, the emphasis was on regional development and the expansion of the irrigation industry. However, as Australia's water economy developed it moved away from this expansionary focus towards a realisation that water had become an increasingly scarce resource. No longer could new irrigators easily obtain water to develop a new enterprise. And no longer did Australia's rivers have the flow regimes that they required to support a biologically diverse riverine environment. This led to considerable effort being focussed on how to increase water use efficiency so that more water could be freed up for other uses.

One of the main impediments, however, to improved efficiency in the irrigation industry were the administrative water allocation systems in place in Australia that provided little incentive for water to move to higher value uses. The allocation systems also made it difficult to customise water supplies to maximise productivity in an individual business. Furthermore, in cases where irrigators received a set allocation every year, there was little incentive to maximise the efficiency of water.

It was recognised therefore that a key step in improving existing efficiency of water use was to reform the current allocation and property rights systems. This would involve moving away from existing systems that emphasised regulatory and administrative control of entitlements, towards market-based property rights systems of clearly specified (in terms of ownership; volume; reliability; and separation from land rights) and tradeable rights.

Only then, once the appropriate property rights were in place, would it be possible to facilitate trade of water property rights. And such trade would then theoretically provide a means of reallocating a scarce resource amongst existing and potential users. It would also increase the economic viability of the irrigation industry by allowing water to be reallocated to higher value uses. A study by Bjornlund and McKay confirms that already this movement of water does occur with 91% of all water purchased (in Victoria and SA) going into horticultural and viticultural industries whereas 71% of water sold leaves properties with pastures or broad acre production such as grain and lucerne. This movement of water to higher value uses will, in turn, increase the ability of the industry to fund infrastructure replacement and maintenance – ensuring a long term future for the industry.

Water trade can therefore achieve the following economic benefits:

- irrigators are able to sell unwanted water to other users and financially benefit from that sale. The funds raised from water sales can be used to support infrastructure maintenance and replacement or to install more efficient on-farm irrigation technology;
- unused allocations, within the context of a cap on total diversions from the river, become more readily available for high-value development. A study¹ conducted by the Australian Bureau of Agriculture and Resource Economics (ABARE) that looked at the southern part of the Murray-Darling Basin, estimated that introducing tradeable water entitlements in that region would generate net financial gains from agricultural production of around \$48 million per year; and
- more efficient water use is promoted by allowing market forces to set a realistic economic value. Water trade would allow a market price to be generated for water that could be used by irrigators to improve their decision making on investment decisions relating to irrigation.

Social Benefits

Clearly, the ability to trade water also has some significant social benefits – from both an individual and community perspective. The ability to purchase water gives individuals the flexibility to be able expand existing ventures that need additional water. Conversely, the sale of unneeded water can provide funds to farmers who are keen to improve their farms. And for those farmers who have decided that they are no longer wish to undertake irrigated agriculture, it gives them an opportunity to sell their water and retire from the industry with some dignity.

It would, however, be disingenuous of me to say that water trade was all good news for rural communities. A number of irrigation districts currently restrict trade as they have concerns that water trade out of their district will result in a diminished resource base and a subsequent inability to financially support the maintenance and operation of district's irrigation infrastructure. If too many

¹ Hall, N., Poulter, D. & Curttoti (1993). *ABARE model of Irrigation Farming in the Southern Murray-Darling Basin*. ABARE Research Paper No. 93.n.

irrigators were to sell their water and retire from irrigation, the costs of maintaining the irrigation infrastructure would fall onto the remaining irrigators – increasing their per capita costs.

But, at the same time, many irrigation districts recognise the potential benefits that trade can offer their region and accordingly are keen to participate in trade. To balance these potential threats and opportunities, some districts have extracted a charge to cover infrastructure costs from those selling water out of the district and some have introduced trade to their region in a limited fashion. One irrigation trust in South Australia, for example, initially limited the amount of trade that could occur out of the district to 1% of the total water allocations per year but has since increased this to 2%. This figure could increase as the trust's community and the region's economy adjusts to the introduction of a trading environment and participants gain more confidence in the benefits of the market.

Nevertheless, there may be some regions and some individuals that will suffer as a result of permanent trade. These will be the towns that are already somewhat depressed and, because of a lack of confidence in the town's future, may face large volumes of water being sold from their region with consequent reductions in property values and investor confidence. These regions will be affected to varying degrees by trade and may need some assistance if trade is to be widely accepted. This is something that the MDBC will be monitoring throughout the project.

Environmental Benefits

Water trade also has the capacity to have environmental benefits - particularly where trade results in increased efficiency of water use, thereby reducing environmental problems relating to rising water tables such as salinity. In addition, there will be environmental benefits where water moves out of degraded areas and into low impact zones that are more suitable for irrigation. There is already some evidence that this is occurring with water moving away from farms with problems such as water table level and soil degradation (study completed in the Goulburn-Murray Irrigation Area in 1995 by Bjornlund and McKay²).

And, water trade has the potential to aid the introduction of improved environmental flow regimes. An ABARE project³ that is investigating the impact of water policy reforms on irrigated mixed broadacre farms in the southern Murray-Darling Basin, has found that introducing water trade can aid the introduction of environmental flow regimes by offsetting the reduced water availability associated with the new flow regimes.

However, we need to keep monitoring trade to ensure that we are aware of any unintended environmental consequences. For example, a recent New South Wales report showed that where water is traded from crops that use water only part of the year, to higher value crops such as rice that use water throughout the year, trade can have a negative impact on environmental flows. This is not an issue for the Pilot Project where water is generally traded between horticultural enterprises with a similar pattern of water usage however it would be an issue for more widespread trade and one which needs to be monitored.

² Bjornlund, H. & McKay, J. (1995). Can Water Trading Achieve Environmental Goals? *Water* 22(5), pp31-34.

³ McClintock, A. Structural Adjustment and irrigated broadacre farming in the southern Murray-Darling Basin. In proc. 1997 Irrigation Forum (Eds. K. Dyer & T. Lawry) pp. 87-88, October 1997, Jindabyne, NSW, Publ. Murray-Darling Basin Commission.

Transferable Water Entitlement Regimes in Australia

This is not to say that water trading is a new thing. Water trading was first introduced on a temporary basis in the Murray-Darling Basin in the early 1980s to provide irrigators with an opportunity to seek additional water to take advantage of favourable crop conditions and prices or to 'drought-proof' their crops. Permanent transfers have been progressively introduced across the Basin since that time allowing irrigators to purchase water to support investment in new enterprises and now significant volumes of water are traded within the Basin. To give an example, in 1994- 95 in Victoria, 15 gigalitres of water was permanently traded, with over 200 gigalitres of water temporarily traded.

However, the majority of water is traded temporarily and occurs within States. The challenge has been to overcome impediments to more widespread permanent trade such as State borders. This is where the MDBC's Pilot Interstate Water Trading Project comes in.

Pilot Interstate Water Trade Project

In 1996, to progress the implementation of the COAG reforms and the *Irrigation Management Strategy*, the Murray-Darling Basin Ministerial Council agreed to establish a restricted pilot project to trial permanent interstate water trade. The overriding objective of the project was to assist the irrigation industry become more environmentally and economically sustainable by facilitating the movement of water from current irrigation activities to higher value irrigation developments that are subject to rigorous environmental clearances. The Ministerial Council's intention was that the project be used to develop solutions to water trade issues and test them in a trial area.

Application of Pilot Project

To minimise the complexity of the issues dealt with, the Pilot Project has initially been restricted to private individuals who pump directly from the River Murray in the Mallee border regions of New South Wales, Victoria and South Australia. The Mallee region was chosen because of the prevalence of high value horticultural and viticultural industries in the region and its likely high future demand for water.

The pilot project is also restricted to the trade of high security water entitlements. This means that sales or off-allocation water dependent on seasonal conditions of storages and rivers cannot be traded. This avoids the complications that would arise from trading water with significantly different levels of security.

The restriction of the pilot project to private diverters means that other entitlements to a bulk supply of water for the purpose of on-supply through reticulated systems to other users, such as irrigation districts or urban schemes, are not currently able to be permanently traded water interstate. This restriction was partly introduced because individual property rights have not yet been established in many irrigation districts.

There were also concerns that any differences in pricing policies between State irrigation districts may distort the water trade market. However, a recent report prepared for the MDBC showed that the price/megalitre for water (delivery charge as opposed to capital cost) is a minor factor in investment decisions. In the future it may be possible to extend permanent interstate trade to these irrigation districts, however, there are other issues that will need to be resolved first.

Trial Rules and Procedures

Considerable thought was given to the development of the project's rules and procedures to ensure that no inequities would result from the pilot project. Over 100 organisations and individuals were also consulted during the development of these rules.

Following this consultation, rules and procedures were developed for the project and compiled into a *Schedule* to the *Murray-Darling Basin Agreement* to provide a legal basis for permanent interstate trade under the pilot project. These rules and procedures give consideration to the rights of other users; the avoidance of salinity, drainage and environmental effects; and the physical limitations of the supply system. Some of these rules and procedures are outlined in more detail below.

Exchange Rates

Whenever an entitlement is transferred interstate and water is diverted from a different location, losses or gains can occur through transmission of the water in the river channel to the new site, or through changes in the level of security for the supply of the water.

For the purposes of the pilot project, the Murray-Darling Basin Commission looked at the impact water movements might have on transmission losses of the water in the river. The Commission identified that no measurable losses or gains would occur within the relatively small distances that water could be transferred under the pilot project.

However, the Commission did identify that the security of entitlements would change if water was supplied from different sources. The further upstream entitlements were moved, the fewer storage options became available to source supplies (reduced security), and conversely, the further downstream entitlements were moved, the more storage options became available (increased security). Exchange rates on transfers have therefore been developed to compensate for any security losses that may occur through interstate water transfers and to ensure that the overall security of the system isn't compromised (i.e. that other users are not adversely affected by the trade).

Salinity and Drainage

Any permanent interstate transfer of water entitlements within the pilot project will be subject to assessment under the Murray-Darling Basin's *Salinity and Drainage Strategy*. The *Salinity and Drainage Strategy* provides the framework for co-ordinated management of River Murray salinity, land salinisation and waterlogging in the Basin. The *Strategy* is based on a balance between salt interception works and land and water management measures that tackle both river salinity and land salinisation. Under the *Strategy*, States balance salinity credits (gained from salt interception works) with debits that occur due to irrigation drainage. Any impact (either positive or negative) that results from trade under the Pilot Project will be debited or credited to the State concerned.

The Cap

Under the pilot project, each State's entitlement under the Cap will be adjusted by the Commission to reflect any individual entitlements transferred between the States under the pilot project. This will ensure that the total level of off-stream diversions remains within the aggregate of the Caps of the

participating States. Where unused water or sleeper water can potentially be mobilised (which has implications for that State's water cap or other water users in that State) it will be a matter for that State to consider if any modifications are needed to the entitlement before it is transferred.

Environmental Clearances/Development Standards

A fundamental principle of the pilot project is that the interstate transfer of water is accountable and does not result in increased levels of salinity, reductions in environmental flows or degradation of the natural environment. To ensure that this is the case, State environmental protection procedures and clearances for new irrigation developments within the Mallee region have been included as part of the pilot project's rules and procedures. These clearances variously cover issues relating to:

- groundwater;
- salinity and drainage;
- on-farm irrigation design and management;
- soil surveys;
- high and low impact zones;
- vegetation clearing;
- wetlands; and
- environmental flows.

In South Australia, an Irrigation and Drainage Management Plan (IDMP) is required for the buyer's entire irrigation operation as part of the transfer process to ensure that each transfer is at least salinity neutral to the river. The IDMP demonstrates that the land is suitable for irrigation; that the water to be transferred is actually required for irrigation; and that irrigation techniques will not result in unacceptable external impacts on the environment or neighbouring land use. In larger developments, buyers are required to make a commitment (establishment of a trust fund) to be accountable for all deep drainage groundwater accessions that result from the development. Similar processes occur in both Victoria and New South Wales.

These environmental clearances should ensure that water moves only to suitable sites and to irrigation enterprises that are suitably managed. This in turn should ensure that no environmental degradation occurs as a result of interstate water transfers in the trial zone. Given the existence of these clearances, trade may, in fact, result in an overall improvement in the environment and natural resource base in those instances where the water sold has come from a site where irrigation is not sustainable.

Environmental groups have expressed concerns about the effects of water trade on environmental flows. This is an important issue for the project which is required to cause no increase in environmental degradation. As such licensing authorities, when assessing any proposed transfer of a water allocation within the project, must ensure that the transfer is not inconsistent with the Ministerial Council's policies on environmental flow management. The Murray-Darling Basin Commission currently has an expert panel investigating the flow requirements of rivers in the Basin. The findings of this group will form an essential part of the Commission's policies in relation to environmental flows.

The Commission is also in the process of developing a monitoring system to ensure that we are able to determine the impact of trade on environmentally-beneficial flows. This is a theoretical measure that takes into account the flow requirements of four key environmental components (birds, fish, vegetation and water

quality) and determines whether the flow regime that results from water trade is moving closer to or further away from the natural flow regime.

A measure of environmental protection is also provided within the pilot project by allowing any State that believes that an interstate transfer under the project has led to an increase or acceleration of environmental degradation to seek to suspend or limit the trial in their jurisdiction.

The Future

On 28 November, the Murray-Darling Basin Ministerial Council approved the pilot project with a commencement date of 1 January 1998. Within a restricted area and with restricted participants, it is now possible for permanent interstate water trade to occur. To date, eight trades have taken place between New South Wales and South Australia; New South and Victoria; and Victoria and South Australia - a total of more than 1.3 ggalitres. The challenge is to facilitate the uptake of the pilot project and to implement monitoring and reporting mechanisms to ensure that we are achieving the intended economic and environmental outcomes.

At the same time, we will also be looking at developing options for the introduction of more widespread trade. This will allow a decision to be made, when the project is reviewed in the year 2000, as to whether more widespread permanent interstate trade should be introduced. There are currently a number of areas into which trade could be expanded:

- inclusion of irrigation districts;
- inclusion of different water property rights; and
- inclusion of additional geographical areas.

However, before any decision can be made regarding the expansion of interstate trade into, for example, irrigation districts or different water property rights, a greater understanding of the existing impediments and options to overcoming these impediments needs to be developed. This is where much of the MDBC's work will be concentrated in the year ahead.

Conclusion

The introduction of water trade has provided Australia with an opportunity to address many of the economic and environmental problems that have been, and still are, associated with the water industry. Permanent interstate water trade has the potential to enhance this opportunity by expanding the possibilities for water to move to the most productive and efficient uses – irrespective of State borders. The Murray-Darling Basin Pilot Interstate Water Trade Project is a chance to trial such trade and to ensure that many of the complex issues associated with interstate water trade are thoroughly addressed so that consideration can be given to expanding the pilot project to other regions.