

## **Social, economic, and community impacts of water markets in Australia's Murray-Darling Basin region**

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### **Introduction**

The Murray Darling Basin (MDB) is Australia's major river system and makes a significant contribution to the Australian economy (Bjornlund 2004a). It is an extensive system—covering almost a seventh of the continental landmass—and supports a large number of rural communities. The water extracted from the system is crucial to agricultural production (accounting for about 40% of the nation's agricultural income and supports approximately 75% of irrigated land in Australia). There is now a consensus that the MDB is in crisis. The amount of water extracted from it, in tandem with a severe and prolonged drought, has seriously depleted the amount of water in the system, with serious implications for the basin's long-term ecology. The ecological threat poses, in turn, a challenge to the sustainability of the agriculture it supports and, therefore, to the rural communities in its ambit (Tisdell and Ward 2003; Bjornlund 2004a). Many agricultural enterprises are receiving only a fraction of the water they were once allocated, with significant implications for output and the generation of locally based wealth.

In an attempt to redress the declining health of the MDB, CoAG (Council of Australian Governments) expanded the operation of water markets as a primary strategy to reallocate water. Water markets had been in operation in parts of Australia since the 1980s; indeed, Australia has been one of the countries that have adopted water markets most fully (Bjornlund 2004a). By 2003, trading between the States had been introduced (CoAG 2003). This policy initiative was premised on the assumption that by rendering water a commodity with a market value would see it redirected from inefficient users to those who used it judiciously and from areas that had less than optimal environmental conditions (poor quality soils, for example) to those that had greatest productive potential. In addition, it was hoped water markets would facilitate the re-direction of water away from inefficient low value users to more efficient and higher value users. Agricultural restructuring was thus part of the policy objective.

Markets are an economic instrument whose effects are the consequence of the way they influence individual decisions. Individuals make decisions about their sale or purchase of water, based on their individual interests. However, because of their impact on individual agricultural producers, water markets will unavoidably exercise an influence of rural communities. However, it is clear that the interests of residents of rural communities are not necessarily coincidental with those of individual buyers and sellers of water. Residents of rural communities have distinct interests related to water markets. While the available data are relatively scarce, they do suggest that rural community members fear the effects of water markets on their communities. There is evidence that they disagree with water markets being the primary method of allocating water (Bjornlund 2004a; Tisdell and Ward 2003). Disquiet about water

markets among residents of rural communities is centered on an apprehension that the sustainability of rural communities will be diminished and that 'water barons' emerge and manipulate the market for individual or corporate benefit (Bjornlund 2004b; Tisdell and Ward 2003).

Fenton found that while 50% of respondents believed that individuals had the right to sell their water allocation, approximately 65% were nonetheless opposed to water trading. Hence people living in rural communities appear to distinguish between the right of individual farmers to sell their water and an evaluation of whether this is desirable; there is a disjuncture between people's perceptions about what is good for individuals as opposed to what is good for their community. As Tisdell and Ward (2003) argue, markets distribute resources such as water primarily on the basis of individual costs and benefits. As such, markets do not readily recognize the social and economic costs and benefits of water to rural communities (2003: 70). Bjornlund (2003) also notes that policy frameworks, in addition to allowing the effective operation of markets, must reflect the social and other non-economic aspirations of communities. A recent survey of irrigators trading in water during 2003/04 within the Goulburn Murray Irrigation District shows that also the irrigators agree with this disparity between private and community interest. Ninety percent of irrigators buying water allocations during that season agree or strongly agree that 'export of water out of districts has significant flow-on effect within the district, with loss of business development, jobs and population'. Similarly 89% agree or strongly agree that such trade imposes additional cost on remaining irrigators. It is interesting to note that sellers of water allocations agree significantly less with these two concerns than allocation buyers (Bjornlund 2006).

Bjornlund (2004a) suggests that water markets have had some positive outcomes: the promotion of environmentally friendly farming practices, the development of new fields of employment, allowing farmers to operate more flexibly and allowing the demise of unviable properties, while allowing the farmers to remain in the district (2004a). Notwithstanding these benefits, many residents of irrigation communities remained alarmed about the loss of water from their district, occasioned by the sale of relatively large volumes of water. They fear that it will reduce the viability of their community. Their reasoning is that less water will entail reduced productivity on the part of local farmers. This will, in turn, lead to diminishing population levels, reduced avenues for locally based employment, contraction of the local economy, reduced rates available to local councils, higher costs for remaining irrigators and increased environmental degradation. The longer term social impacts of the effects of water markets are unclear and the distribution of them may not make a significant contribution to sustainable communities or to equitable regional development (McKay and Bjornlund 2001).

It should also be noted that rural communities in Australia have been subject to sustained economic and social change during the past thirty years. Tariff barriers have virtually disappeared and Australian agriculture operates within a globalized market. A profound consequence of this has been structural adjustment in the agricultural sector, in turn influencing rural communities. A notable trend effect has been population decline. At the same time, services have been pruned or withdrawn from communities by economically rationalist policies. Many state-owned enterprises have been privatized and this has shrunk employment opportunities (Beer et al 2003; Cheers 1998). By the mid 1990s, there was considerable concern about the disparity between the social and economic well-being of people living in rural and metropolitan settings (Beer et al 2003; Cheers 1998). In light of a recent history of traumatic social changes, the introduction of water markets may intensify rural residents' concerns over the long-term sustainability of their communities. These

attitudes may in turn influence the operation of water markets. As Tisdell and Ward (2003) and Bjornlund (2003; 2004a,b) observe, if water markets are to operate effectively, they must be accepted. If farmers and rural communities do not accept the legitimacy of water trading, the market may not operate effectively.

### **Case-study description and methods**

The beliefs, opinions and perceptions of the residents of one irrigation community about the impact of water trading on their long-term future are the focus of this paper. Specifically it documents the perceptions of the residents of one area that has traded away about 11% of their water in the past decade. The case study community—a town of about 4,000 people— is in Victoria, a state in the south-eastern part of Australia. Dairy farming is its economic mainstay, but it also has mixed farms and a range of horticultural, viticultural and other business enterprises. It has a degree of economic diversity many other farming communities lack. However, it has experienced a prolonged drought for the past several years. In addition, dairy farmers have experienced increasing pressure on their profit margins in recent decades (Barr 2005: 77). It is in the context of declining water availability and tighter profit margins that our interviewees considered the impetus for, and implications of, water trading sit.

Interviews were conducted with twenty key informants (in one organization, two members of staff were interviewed simultaneously). They were semi-structured, audio-taped and transcribed verbatim. Respondents were drawn from community domains that could be reasonably expected to offer expert advice on the community impact of water trading; these included local business people, health and human service workers, staff from the local council, participants in service and social groups, local Indigenous people and farmers, as well as members of local irrigation and environmental groups. To protect the anonymity of the interviewees, they have been assigned pseudonyms. Transcripts were entered into NVIVO 7, a widely used software package for the analysis of qualitative data, and were analysed for emergent themes. Once emergent themes were identified, the research team clarified their definition and they were refined. The refined themes were then used as codes and were applied to the transcripts. All members of the research team read several coded manuscripts to establish the validity of the codes and to ensure they were being reliably applied to the interview manuscripts.

In addition to the interview data, secondary data related to the case-study site was collected. Data related to past, present and future demography, changing employment profiles and unemployment levels, local economic activity and population health, and social indicators were also analysed to assess the community impact of water trading.

### **Results**

#### *Farm loss, population decline and economic contraction*

Given the financial hardship facing many farmers, selling their water has become an attractive option, either as a way of retiring debt or as a way of leaving agriculture with an adequate nest-egg. Farmers are leaving, according to our respondents, fulfilling some of the intended aims of water trading. Michael tells how “... *that one particular area...[has] gone from say forty dairy farmers to eight ...and that gives you an idea of how many farmers have gone*”. While declining farm numbers is not a new phenomenon, some believe that water trading is accelerating this trend. Lindsay observes:

Over the years, we've had a drift of families away from their farming activities as they've aged, that has not been a significant factor because the farm has

gone on...you see generations grow up. But for the first time, we were actually seeing families pick themselves up, get rid of the water and move, so there's a de-population of the community.

Accurate secondary data on the trends related to farm numbers in the case-study area was not available to us. However, available evidence points to decreasing numbers of dairy farms generally throughout the state. Within Victoria dairy farm numbers dropped from 3,200 in the mid 1960s to 2000 by 2001 (Barr 2005). It would be surprising if the case-study setting were exempt from this wider trend. The Statistical Local Area in which the case study community is set has experienced a population decline of 8.6% between 1996 and 2001 and further population loss is projected in the decades to come (Department of Sustainability and Environment 2001). However, recent data suggests that within the case-study township itself (rather than the SLA within which it sits), there has been a 1% increase in population between 2001 and 2006 (RP Data 2008). Such an increase is small and might signify immigration from retiring farms. However, it does not suggest that the town's population is continuing to decline.

In the opinion of our interviewees, loss of water means loss of farms and this means reduction in local wealth. Farms represent both a local family and a business; a reduction in their number has an impact on the economy and the community. One impact of declining farm numbers is diminished avenues for employment. Trevor told us that '*... it does take some people out of the farming industry, so therefore we lose jobs in the farming sector, but we also lose jobs ...in some of the supplier sectors*'. The loss of a farm is also the loss spending power, as Michael points out: '*...you take one family out, there's well you know the average income of \$35,000 to \$40,000 and well, there's, you know, \$200 or \$250 worth of food a week*'. Fenton (2007) also found that 75% of his respondents believed that water markets had reduced income for local businesses. It has other flow-on effects for local businesses and services. Katherine points to the flow on effects declining population was believed to have for local communities:

That has an impact on the community that goes through all levels from the local store through to the school...all of the agencies that used to support that farm and that family are no longer required. ...you are impacting on the stock agents ...Also the need for that farm to purchase things drops off dramatically....

Water trading, in the view of our study participants, fosters inequities in regional development, and in prosperity. The displacement of water through trading from traditional agricultural activity, such as dairying or mixed farming, to high-value enterprises, typically horticulture and viticulture, concerns our interviewees. They frequently commented on the economies of down-stream communities that they consider are expanding economically because they had been able to purchase water from the case-study site. In their opinion, water markets would inevitably favour some localities over others. Given this perception, it is not surprising that Fenton found that resistance to water markets was greater among dairy farmers than it was among those engaged in horticulture or viticulture (2007). Our respondents expressed a fear that some communities based on 'traditional' agriculture and based on the family farm would be diminished by the operation of water markets. In Brent's words:

...a lot of water has gone down the river, so people see that as being taken away from their community and the ability for their community to survive; its been transferred somewhere else. I mean you saw from some of those farmers how passionate people were about their business and their community. I think they feel it's under threat from permanent [water] trade, then it's not

healthy for them....if they're seeing families with young kids sell water, sell up and move into town, with no one replacing them, then they do feel like their community is threatened...

**Table 1: Employment percentages by sector 1981-2001**

Industry (%)	1981	1986	1991	1996	2001
Agriculture, forestry & fishing	6.8	6.0	5.6	6.1	7.7
Mining	0.2	0.2	0.2	0.0	0.7
Manufacturing	6.9	3.8	4.9	6.5	9.1
Electricity, gas & water supply	6.5	6.6	6.1	3.0	3.4
Construction	6.2	7.3	6.7	7.5	7.6
Wholesale trade	7.4	5.9	5.8	5.7	6.2
Retail trade	23.3	21.9	21.2	22.0	22.8
Accommodation, cafes and restaurants	3.2	3.5	4.1	3.6	3.4
Transport and storage	4.3	6.9	4.6	3.5	2.3
Communication	2.5	2.4	2.3	2.0	1.1
Finance and insurance	3.5	3.5	3.9	2.6	2.2
Property and business services	3.6	3.4	4.3	8.4	5.8
Government administration and defence	6.4	6.1	7.1	6.9	3.0
Education	8.5	9.7	10.0	8.5	8.6
Health & community services	8.1	9.7	10.0	10.4	12.3
Cultural and recreational services	0.2	0.6	0.3	0.4	0.4
Personal and other services	2.3	2.4	3.0	3.0	3.3

(Source: Department of Sustainability and Environment 2001)

Table one demonstrates employment growth in all sectors apart from education. The growth of employment in manufacturing, construction, property and business does not offer strong support for our respondents' accounts of a declining local economy with diminishing employment prospects. The rate of unemployment has halved in the ten years from 1991-2001. Admittedly, however, these data end in 2001 before much of the water was traded out. More recent data, however, also do not reveal a consistent picture of economic growth or decline. While unemployment has risen from 3.1% in 2002 to 4.3% in 2004, it compares favourably with an unemployment rate of 5.7% for Victoria as a whole in 2004 (Australian Bureau of Statistics 2005). More recent data that could be expected to reveal the impact of both water trading and the drought suggests that unemployment remains low and is lower than the rate in some nearby LGAs; including one that is perceived to have bought much of the case study site's water, as table two demonstrates (table 2).

**Table 2: Unemployment rates in selected Victorian LGAs, December 2006-December 2007**

	Dec 2006	March 2007	June 2007	Sept 2007	Dec2007
Campaspe	3.8	3.5	3.4	2.9	2.8
Gannawarra	3.7	3.3	3.3	3.6	3.8
Loddon	5.3	4.7	4.6	4.7	4.7
Mildura	5.7	5.1	5.0	5.2	5.4
Swan Hill	6.2	5.4	5.0	5.1	5.2
Country Victoria	5.8	5.5	5.3	5.2	5.1
Victoria	5.0	4.9	4.8	4.7	4.7

(adapted from DEWR Small Area Labour Markets)

Housing prices and property values rose significantly in the last decade up to 2004 and building approvals continue to increase for the case-study's local government area during this time. However, housing approvals for the case-study locality (<4.0/1,000 population) still lag behind those for the region believed to have gained much of the case-study site's water (6.0/1,000 population) and for Melbourne, the state capital (10.0/1,000 population) (Department of Sustainability and Environment 2002: 35). Moreover, while the value of land and housing has increased in the case-study site, the increase is less than that which has occurred in the 'down-stream' communities that have bought 'their' water (Department of Sustainability and Environment 2004). More recently housing values in the case-study community have dropped. Between 2006 and 2007 median house prices in the case-study community fell by 11.4% (RP Data 2008).

The revenue available to the local council has remained stable between 2002 and 2004. However, the council predicts that when land and water are rated separately in mid-2008, they will lose a significant amount of revenue in rates; approximately \$745,000 (Gannawarra Shire Council 2008). This is likely to have a discernible impact on the council's provision of services. While the number of small businesses operating in the SLA in which the case-study community is located had decreased by approximately 3.7% between 1995 and 2001 the income they generated in the same period had increased by 21.3% (ACIL 2004). These data suggest a degree of economic buoyancy in the case-study community. However, other data suggests that this economic vibrancy may not have translated into increased wealth across the board. The average weekly income for the case-study site is \$500-599, which compares unfavourably with the rate for Australia as a whole, which is \$700-799 per week. It must be conceded, however, that many rural areas have lower average wages than the Australian average. However, the percentage of people in the lowest income quintile in the case-study community has increased in the last twenty years, while the percentage of those in the highest income quintile has almost halved in the same period, as table two demonstrates; this may suggest an overall decline in local wealth.

**Table Three: Case-study household income (%) in quintiles 1981-2001**

Household income	1981	1986	1991	1996	2001
1 <sup>st</sup> quintile (lowest)	35.9	37.2	37.7	38.8	40.5
2 <sup>nd</sup> quintile	28.0	29.2	29.2	30.9	30.2
3 <sup>rd</sup> quintile	20.6	20.9	21.6	20.0	21.5
4 <sup>th</sup> quintile	15.5	12.7	11.4	10.3	7.8

(Source: Department of Sustainability and Environment 2001)

These data therefore present a mixed picture. The very small population increase in the case-study community may simply represent migration into the township by farmers who have left their properties. The decline in housing prices suggests some down-turn in the local economy; but this is likely to reflect factors that have their origin beyond the case-study setting. The predicted downturn in council revenue is a consequence of the Victorian Government's policy on the rating of land and water, rather than economic performance. However, intuitively it could be expected that reduced council revenue will have a negative impact on service provision in the local community, which may, in turn, influence the local economy. Recent unemployment data however do not suggest that water markets and the drought have caused a contraction in the local economy.

### *Community participation and sustainability*

Overwhelmingly, our respondents reported that the ability to sell water was a great financial benefit for farmers. However, they were virtually unanimous in the opinion that water trading has negative consequences for their community, as table three indicates. Not a single person considered it improved the prospects for community viability.

**Table Four : Has water trading made the case-study site more or less viable?**

Response	Less viable	No difference	More viable
Number	18	2	0

Farming families are central to a culture that underpins and sustains rural communities; Simon points to the erosion of local culture and community cohesion occasioned by their reducing numbers:

... what were viable farms—they might have been milking 150 cows—but it was still part of the culture; there was a family there, there were kids on the school bus and kids in the community.

Farming families have a deep affiliation with the area and are the mainstay of local sporting, service, recreational and other interest groups. Their loss thus represents a loss of cultural, human and social capital not adequately conveyed by measures of population. Michael comments on the unique contribution made by long-standing farming families:

‘...you then develop a culture of society, you ...get your established community of your second, third, fourth generation families who’ve established service groups and sporting groups and those sort of things’.

Population loss may undermine the community’s capacity to maintain sporting clubs. A local minister of religion testifies to this: “... *because the farms have got bigger and the families less; they can’t provide a cricket club, or a cricket team or a footy team...*” Lindsay suggests that this can have adverse psycho-social consequences for the community as a whole and young people in particular:

...that’s where the impact is felt very often, because its almost tribal...sporting clubs play a critical role in the community...if we can’t field the team...there is a sense of grieving and a sense of loss ...and when you get to the point where there are a number of kids who suddenly can’t get a game ...that starts to create problems because they’re left out.

Michael, who belongs to a local service club, says membership has declined markedly in the last five years; eroding the club’s effectiveness. He also points to the familiar tale of overload for club participants:

...we’ve probably lost 30% [of our service club members]...[it] reduces your ability to raise money, your ability to offer services to the community. I mean there is more and more pressure being put on fewer and fewer and I can guarantee there wouldn’t be a person in our club that’s not directly involved in another committee or two or three...

There are much fewer data on community functioning than on demographic trends and economic performance. Community functioning data are not routinely collected in the way other data are and it is less easy to develop quantifiable indicators on community function. Evidence does, however, indicate declining club numbers of

clubs and reduced participation. It was estimated that by 2002 the case study community had lost one football club and that another seven located in nearby communities had disappeared or amalgamated (Department of Sustainability and Environment 2002: 13). The Victorian Country Football League noted that the declining number of football clubs was particularly strong in the part of the State in which the case-study community is located (Victorian Country Football League 2003: 59). The League attributed this to:

- School closures
- Closure of other community-based services (such as hospitals, banks etc)
- The closure or relocation of farms and related businesses
- The search for greater educational opportunities by young people
- The change in farm ownership, farming methods and farm amalgamation
- The rural economy and drought (Victorian Country Football League 2003: 59).

Data on volunteer participation also indicate that community participation has decreased, with negative implications for community functioning. Voluntary participation in local emergency services by 18 to 45 year olds declined between 1999 and 2004. In the 45-65 age group, participation is at the same level in 2004 as it was in 1999 (Department of Human Services 2003). Given the continued out-migration of young people this can only indicate an overall drop in participation.

### **Discussion**

Like all markets, water markets achieve outcomes by influencing individuals' buying and selling behaviour. However, it should not be presumed that benefits for individuals automatically entail benefits for communities. Jones and Tonts (1995: 136-7) argue that the sustainability of rural communities implicates the capacity of communities to retain population and to maintain their socio-economic functions. It thus implicates economic and environmental concerns along with social dimensions, such as community functioning (Jones and Tonts 1995: 136-7). Our respondents clearly assess that water markets threaten the long-term sustainability of their community. Water markets, they say, threaten the viability of their community by contributing to:

- Population loss as a result of declining numbers of family farms
- Contracting local economic opportunities
- Impaired community functioning

For our respondents, water is the foundation of their community's wealth and buoyancy; it should, in their view, be tied to place. Fenton likewise found that 80% of people surveyed believed water markets had made land unproductive by depriving it of water (2007). While acknowledging the right of individual farmers to buy and sell water, Fenton's respondents nevertheless indicated that water should be tied to place; community well-being depended on it (Fenton 2007). Tisdell and Ward similarly report that while almost two-thirds (61.8%) of farmers they surveyed accepted that water entitlements should be separated from land, only about half (50.8%) of community members shared this view (2003: 66). Perhaps not surprisingly therefore, more community members than farmers supported intervention by water authorities if the economic viability of communities is threatened (Tisdell and Ward 2003: 68). People living in rural areas have the viability and sustainability of their communities as their primary focus; policy makers, on the other hand, are focused on agricultural restructuring as a primary element of water policy (Bjornlund 2004b).

Secondary data do not suggest that the loss of water has precipitated a contraction of the local economy, with reduced opportunities for employment. They do, however,



suggest a continuing decrease in population. While declining population cannot be attributed solely to water trading, it is likely that it does play a part in intensifying this trend. While existing secondary data does not suggest a short-term contraction of the local economy, the effect of declining population on the long-term status of local rural economies remains to be seen. Population loss is also likely to have a significant impact on the capacity of rural communities to sustain many of their basic social functions; the maintenance of local sporting, recreational and service clubs, for example. Given the widespread concerns of people living in rural communities and the plausibility of their disquiet, long-term research into the community impacts is essential if the social sustainability of rural Australia is to be ensured.

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