

Water markets and the sustainability of rural communities: community members' views

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Abstract

The Murray Darling Basin (MDB) is central to Australian agricultural production and therefore to the sustainability of the rural communities in its catchments. Excessive water extraction from the MDB is threatening its ecology, however. Water markets are a policy instrument designed to protect the river system. The premise is that water markets will facilitate structural adjustment in the agricultural sector by directing water away from inefficient users who produce low-value commodities to those who use water parsimoniously and who produce commodities with high commercial returns. Little is known, however, about how communities regard the operation of water markets. This paper reports the concerns of residents of one community that has seen a significant volume of its water traded away. While residents concede water trading has economic benefits for individuals, they fear that it erodes the long-term sustainability of their community. Water trading, they believe, will see declining numbers of family farms and will thus accentuate population loss. This, in turn, they argue lead to a contraction of the local economy, leading to diminishing employment opportunities. These factors in turn lead to a weakening of the social fabric of the community. Population loss, according to our respondents, makes it harder for local clubs and organizations to function effectively, making the community less viable in the long-term. The secondary data available do not offer unequivocal support for these views. However, more recent census data is required to adequately assess the accuracy of community members' viewpoints.

1. INTRODUCTION

The Murray Darling Basin (MDB) is Australia's major river system and has significance for many facets of life, not least economically (Bjornlund 2004a). It covers about one-seventh of the Australian landmass and supports a population of 2 million; another million people outside the region are directly dependent on its resources. It is a crucial supplier of water for domestic consumption, agricultural production and industry. Approximately 40% of the national income generated by agriculture is derived from the Murray Darling Basin. It supports about 75% of the irrigated land in Australia (Murray-Darling Basin Commission). However, the ecology of the MDB is threatened because of the amount of water extracted from it for consumptive use; this, in turn, threatens the sustainability of the agricultural enterprises it supports (Tisdell and Ward 2003; Bjornlund 2004a).

In 1994, the Council of Australian Governments adopted a framework to arrest the declining health of the MDB (CoAG 1994). One key strategy was the extension of water markets. They emerged in the late 1980s and were operational by the early 1990s to facilitate the reallocation of water in contexts where no new supplies are forthcoming. Australia has been among the most active countries in the world in the establishment and operation of water markets (Bjornlund 2004a). Building on earlier reforms, the Council of Australian Governments decided in 2003 to extend the operation of water markets by removing impediments trade of water across districts and states (COAG 2003). The premise is that by allowing market value to attach to water, people (primarily agricultural users) will use it more efficiently (Tisdell and Ward 2003; Bjornlund 2004a). It is assumed that trading of water will

direct it toward areas with suitable soils and other favourable environmental conditions and away from areas with unsuitable characteristics and thereby lessen the environmental impact of irrigation. Further, it is assumed that trading will see water move away from inefficient users, who produce low-value commodities, to users who make efficient use of water and who produce high-value commodities. Such reallocation will increase the economic output from scarce resources and thereby lessen the community impact of reducing extraction of water for consumptive use.

Markets achieve their effects by influencing the decisions of individual water users. However, if water markets realise their intended effects—and available evidence suggests they are doing so—they are likely to reshape the profile of agriculture in Australia and this, in turn, will have significant impacts on rural communities. It cannot be assumed that the needs, interests and wishes of individual water users coincide with those of rural communities themselves. Residents have their own interests related to water markets and some evidence suggests that many are fearful of, and resistant to, the market being the primary mechanism for allocating water (Bjornlund 2004a; Tisdell and Ward 2003). Apprehension by rural dwelling people regarding water markets has been expressed in diverse settings during the past few decades (see Bjornlund 2004a for a review of this literature). Some fears centre on the perception that they will harm the sustainability of rural communities and facilitate the rise of ‘water barons’ (Bjornlund 2004b; Tisdell and Ward 2003).

In a recent Australian survey of attitudes to water trading among residents of rural communities, 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 the irrigators also 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).

Despite evidence about the fears of some rural residents that water trading will harm the sustainability of their community, Bjornlund outlines some ways in which water markets may help their cause by:

- Promoting environmentally sustainable farming practices
- Facilitating the development of greater on and off farm employment by encouraging the development of high-value enterprises
- Making farmers less vulnerable to fluctuating commodity prices and climatic conditions by allowing them to operate more flexibly.
- Allowing unviable farmers to leave the agricultural sector but remain in their communities (Bjornlund 2004a).

Bjornlund’s data (2004a) suggest that many of these effects have been realized. The operation of water markets has seen water move from less efficient to more efficient users, maximizing the value of the output produced and increasing opportunities for on farm and off

farm work (Bjornlund 2003). This has generated some more jobs and incomes in some of the affected communities. It is also improving irrigation practices, with positive environmental benefits. Nevertheless, people within irrigation communities express concern that the export of permanent water will make their communities less viable in the long term. Less water will mean less productivity from local farmers, resulting in fewer jobs, income losses for smaller businesses, declining rates available to council, declining population and further environmental degradation, and increased costs for remaining irrigators. However, 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 reform in the past three decades. Tariff barriers have all but been dismantled, exposing agriculture to the globalized economy; this has helped facilitate significant structural adjustment in the agricultural sector. This, in turn, has had significant impacts on rural communities, particularly in relation to accelerated population decline. In tandem with these changes, economic rationalism has seen the withdrawal or paring back of many services. Privatization of many previously state-owned enterprises, such as transport and utilities, has changed the employment landscape of many rural communities (Beer et al 2003; Cheers 1998). By the mid 1990s, the growing disparity between the social and economic well-being of people living in rural and metropolitan settings was widely commented on (Beer et al 2003; Cheers 1998). Hence, the introduction of water markets may intensify the concerns of rural residents over the long-term sustainability of their communities. The attitudes of residents may have an influence on the operation of water markets. As Tisdell and Ward (2003) and Bjornlund (2003; 2004a,b) observe, the effective operation of a market for water depends on their social acceptance; if farmers and rural communities do not accept the legitimacy of water trading, the market will not operate effectively.

2. COMMUNITY CONCERNS

This paper reports on the beliefs, opinions and perceptions of the residents of one irrigation community about the impact of water trading on their long-term future; in particular they comment on what they perceive as the effects of the trading away of about 11% of their water in the past decade. The case study community is a town of about 4,000 people in Victoria, a state in the south-eastern part of Australia. While dairy farming is its economic mainstay, it houses mixed farms and a range of horticultural, viticultural and other business enterprises. Thus, it has a degree of economic diversity many other farming communities lack. However, it has experienced a prolonged drought that has plagued much of Australia 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 these contexts that our interviewees considered the impetus for, and implications of, water trading sits.

Nineteen interviews were conducted with twenty key informants (in one organization, two members of staff were interviewed simultaneously). The interviews 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 (identified in the text by italics). Transcripts were entered into NVIVO, 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. However, it must be noted that most of the secondary data referred to in this paper does not date beyond 2001. Since most of the trading out of the case-study site's water has occurred since this date, these data do not reflect the time period in which water trading would have begun to have a marked impact on the case-study community. A definitive assessment of the impact awaits the release of the 2006 census data; only then can the concerns of community members be accurately evaluated.

2.1. 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.

It was not possible for us to gain accurate secondary data on the trends related to farm numbers in the case-study area. However, there is evidence of decreasing numbers of dairy farms generally. Victoria has seen the number declined from 3,200 in the mid 1960s to 2000 by 2001 (Barr 2005). 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). No data exists that documents the demographic profile of those who move away, nor is there any information about where departing families move to.

The loss of water means the loss of farms and this, in the eyes of our respondents, means the loss of local wealth. Farms represent both a local family and a business, so a reduction in their number has a range of implications for the local economy. 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* comments on them:

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....

In addition, our respondents believed that water trading was fostering inequities in regional development and prosperity. Water is being traded away from traditional agricultural activity, such as dairying or mixed farming, to enterprises devoted to high-value horticultural and viticultural produce. Interviewees commented on what they consider are the booming economies and communities of downstream locations; this had happened, they believed, because enterprises in these communities have been able to buy so much water from the case-study site. There was thus a perception that water trading would favour some areas more than others. In light of this, it is not surprising that Fenton found greater resistance to water markets among dairy farmers than among those engaged in horticulture or viticulture (2007). It was feared that the areas that would suffer most would be those with traditional forms of agriculture which are underpinned by the family farm. As *Brent* expresses it:

...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...

Data related to local economic activity do not reveal a consistent picture of economic growth or decline. The rate of unemployment has halved in the ten years from 1991-2001. 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). Employment participation rates have also increased during this period. 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, due to water trading; admittedly, however, the data ends in 2001 before much of the water was traded out.

Table one: 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)

Housing prices and property values have risen significantly in the last decade and building approvals continue to increase for the case-study's local government area. 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).

The revenue available to the local council has remained stable between 2002 and 2004. While the number of small businesses operating in the Statistical Local Area 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 two: Case-study household income (%) in quintiles 1981-2001

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

(Source: Department of Sustainability and Environment 2001)

While the economic data suggest that, despite population loss, the local economy has not contracted, it does not confirm an average increase in wealth across the board in the community. Moreover, these data need to be treated with considerable caution in gauging the effect of water markets on the social and economic fabric of the community. They do not reflect the ongoing impact of the 2003 drought. Nor do they reflect the years in which export of water from the case-study location has been greatest. While these data do not confirm our respondents' accounts, they are not recent enough to definitively refute them. More recent data are needed to fairly adjudicate the accuracy of our respondents' perceptions about the long-term economic impact of water trading on their community.

2.2. 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 three: 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’.

The loss of population can undermine the capacity of communities 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* comments on the effects for the community:

...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.

Katherine talks of the effects of declining participation in many community sectors:

So, the numbers of people prepared to be in the Lions club, huge reduction. Apex, Rotary, I think the Lodges, I’m not sure whether they have come or gone, the primary schools, the secondary schools, all of these are number declines...if a significant part of your community either goes or doesn’t participate, it has a big impact.

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...

Data on community functioning are more elusive than demographic trends and economic performance. They are not routinely collected in the way other data are and it is less easy to develop quantifiable indicators on community function. Nevertheless, some evidence suggests declining numbers of clubs and participation. For instance, in 2002 it was calculated that 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 suggest declining community participation, which, in turn, may imply diminished community functioning. Voluntary participation in local emergency services has declined between 1999 and 2004 among people aged 18 to 45 years. 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.

3. CONCLUSION

Water markets, like all markets, achieve outcomes by shaping individual actions related to buying and selling. However, it cannot be assumed that what benefits individuals also benefits communities. Rural social sustainability has been defined as the capacity of communities to retain population and to maintain their socio-economic functions. It implicates economic and environmental concerns along with social dimensions, such as community functioning (Jones and Tonts 1995: 136-7). It is clear that our respondents consider that water markets threaten the long term sustainability of their community. Water markets, according to them, threaten the viability of their community by contributing to:

- Declining numbers of family farms and wider population loss
- A downturn in local economic opportunities
- Diminished community functioning

Community members regard water and its tie to their locality as the foundation of their wealth and vibrancy; people in rural settings tie water to a sense of community. Approximately 80% of Fenton's respondents considered that water markets had made land unproductive by depriving it of water (2007). While they recognize water as the property of individual farmers, they regard water as something that should be tied to place to guarantee the well-being, if not existence, of community. Tisdell and Ward found that while 61.8% of the farmers they surveyed accepted that water entitlements should be separated from land, only 50.8% of community members supported this notion (2003: 66). Further, more community members than farmers supported intervention by water authorities if the economic viability of communities is threatened (Tisdell and Ward 2003: 68). While policy makers had agricultural restructuring as a primary element of water policy, people living in rural areas were principally concerned with ensuring the viability and sustainability of their communities (Bjornlund 2004b). Tisdell and Ward (2003) report, not surprisingly, that there was strong support for intervention in the market by water authorities if the economic sustainability of communities is threatened.

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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