

Vision for a Sustainable Murray-Darling Basin

by

**Kevin Goss, Deputy Chief Executive
Murray-Darling Basin Commission**

Introduction

Judging by the media headlines over the past three years, the dominant issues for sustained use of the Murray-Darling Basin's natural resources are salinity and security of water supply under the Cap on diversions. The average reader could be excused for thinking that there is a simple trade-off between environment and industry - we can't have a healthy river system unless we get rid of cotton or rice production, or we can't continue the remarkable growth in the regional economy unless access to surface and groundwater is maintained or continues to grow. Growers and natural resource management agencies are apparently on a collision path and the resolution is compensation.

However, the Ministerial Council that presides over the planning and management of the Murray-Darling Basin, on behalf of six governments, has a vision for long term sustainability of natural resource use and a set of public policies to achieve it. This is laid out in statute law, called the *Murray-Darling Basin Agreement*, and is implemented by the Murray-Darling Basin Commission within the terms of that agreement.

This paper will:

1. Outline the current vision for ecologically sustainable management and use of resources in the Basin;
2. Explain why new policies and changes in resource allocation and management are required;
3. Describe the likely actions required with particular implications for the cotton industry; and
4. Invite the industry to look beyond its immediate self-interest and work on its vision for a sustainable future in the Murray-Darling Basin.

A Vision for a Sustainable Murray-Darling Basin. What is possible?

The Murray-Darling Basin Ministerial Council, with its Community Advisory Committee, released publicly in June 2001 the Integrated Catchment Management (ICM) Policy (MDBMC, 2001a). It is a powerful philosophical statement that binds the community and governments to a partnership for natural resources management over 10 years. It sets a vision and goals for ecologically sustainable management and use of resources, and specifies how the "business of ICM" will be done.

In the words of the ICM Policy:

"We the community and governments of the Murray-Darling Basin commit ourselves to do all that needs to be done to manage and use the resources of the Basin in a way that is ecologically sustainable"

"We seek to achieve:

- *healthy rivers;*
- *healthy ecosystems and catchments;*
- *innovative, competitive and ecologically sustainable industries; and*
- *healthy regional communities"*

The policy goes on to describe the agreed values and principles for the community-government partnership, the use of natural resource targets to focus their effort and management arrangements to get the job done. But it's the various strategies under the ICM Policy that make this vision real, in terms of social, economic and environmental outcomes.

The Basin strategies already agreed or under development, will achieve the ICM Policy goals in the following ways:

Healthy rivers

- Restoration of the Murray-Darling River system to a "healthy, working" condition;
- Continued access to water resources, with salinity levels kept below benchmarks for consumptive use;
- Recovery of native fish populations to 60% of their former levels; and
- Containment of algal blooms.

Healthy ecosystems and catchments

- Healthy rivers as a "report card" on catchment management;
- Changes in land use and farming practices to improve sustainability; and
- Protection and management of important environmental values in floodplain wetlands, native vegetation and terrestrial biodiversity.

Sustainable industries

- Protection and sustainable use of natural resources;
- Continued development opportunities from scarce resources; and
- Adjustment to social and economic impacts.

Healthy regional communities

- Economic benefits from industries' sustainability and adjustment; and
- Empowerment from best practice community engagement.

While these goals may, on the face of it, seem quite general and aspirational, they have (or will have) considerable science and community input behind them. The path to this vision is laid out in the:

1. Cap on diversions Schedule to the *Murray-Darling Basin Agreement*;
2. Interstate water trading Schedule to the *Agreement*;
3. Basin Salinity Management Strategy (MDBMC, 2001b);
4. Proposed River Murray Environmental Flows and Water Quality plan;

5. Draft Native Fish Strategy (MDBC, 2002b);
6. Algal Management Strategy (MDBMC, 1993); and
7. Floodplain Wetlands Management Strategy (MDBMC, 1998).

For instance, based upon the best ecological and economic advice available, a restoration of 1500 GL of water in the River Murray and Lower Darling under environmental management:

- could achieve a 'healthy, working' river system;
- will provide dilution flow for salinity and algal management;
- will contribute about half the potential recovery in native fish populations; and
- could be achieved with continued economic growth in irrigated agriculture, if a more 'interventionist' public policy is adopted.

This will be a matter for community discussion, debate and negotiation from now until October 2003 when the Ministerial Council is due to take its first decisions on environmental flows.

The Environmental Agenda - What is the justification?

There is overwhelming evidence that the Basin's resources are degraded, will continue to degrade and that current resource use is unsustainable, with the exception of some local situations. The Murray-Darling Basin Commission received a 'snapshot' on river health in 2001 that concluded that nearly the entire length (97%) of Basin rivers are degraded in some way, with 29% of river reaches substantially or severely modified (Norris *et al*, 2001). Much of the degradation is due to catchment disturbance, where land use changes, loss of riparian vegetation and run-off of sediments and nutrients have caused poor water quality and increased bed-loads. The River Murray suffers degradation for its full length, increasing towards the mouth, and its flow characteristics are highly modified due to river regulation for irrigation development. Native fish populations are at very low levels, with floodplain wetlands, riparian vegetation and the river habitat is in poor condition.

The Basin salinity audit of 1999 estimated that river salinity levels will exceed a "desirable drinking water quality" standard in the Lower Murray, and that salinities within some tributary rivers will be lost to irrigation use, both within 100 years (MDBMC, 1999). Expert advice on native fish predicted that current population levels would halve to 5% of pre-European levels in 40 years (MDBC, 2002b). A groundwater report about to be released by the Commission identifies 35 out of 88 groundwater management units that are over allocated and exceed the sustainable yield by an amount equivalent to about 10% of the Cap on diversions (Davies, 2001).

The National Land and Water Resources Audit has reported on the condition of water, land and vegetation resources, largely confirming these Basin figures and updating them (NLWRA, 2002).

Of course, these predictions and trends are based on a "business as usual" assumption; that industries, communities and governments don't do anything different in the future. The Basin strategies listed above, if fully implemented, will avoid this happening but there is uncertainty about the outcomes, whether communities can agree on the impost necessary, whether governments are prepared to invest and regulate hard enough, and whether landholders will adopt new practices. These are major issues and none so acute as water sharing with the environment.

Environmental flows for the River Murray

The Ministerial Council has directed the Commission to consult with the community on three environmental flow 'reference points' - 350 GL, 750 GL or 1500 GL provided to the River Murray and on changes to river structures and operating rules, to better manage the river for environmental outcomes. Work has already been done on the likely ecological benefits of these actions. Provision of an extra 350 GL to the River Murray environment over 10 years has a low likelihood of achieving a healthy but modified river, but will give local benefits (eg. agreed priority wetlands). Increasing the provision to 1500 GL per year gives a moderate likelihood of the length of the River Murray returning to a 'healthy, working' condition. Varying the flows to better resemble natural river flows, through river operations will enhance local benefits (MDBC, 2002a).

However, these options are reference points for community engagement and enormous questions remain. How will the water be acquired and from where? What are the social and economic impacts? Who will pay? Already representatives of irrigation and farm organisations have made it very clear that a reduction in their entitlements must be accompanied by clarity in water access rights and appropriate compensation. The Ministerial Council has requested the Commission to accelerate its work on water trading arrangements, which also requires clarity in water access rights.

Preliminary economic analysis indicates that the provision of an extra 1500 GL/year for the River Murray environment has a net benefit in societal terms, but clearly more work has to be done to estimate the distribution of costs and benefits. An 'irrigation futures' study done for the Commission concludes that under a 'transformed policy scenario' with effective trading arrangements in place, up to 30% of water available to irrigation agriculture under the Cap, could be 'clawed back' to environmental management, and still provide for growth in industry output and regional employment, albeit with less farms and a very different mix of enterprises (Fargher, 2002).

As a rough indication 750 GL and 1500 GL/year returned to the Murray approximates 10% and 20% of the Cap for the whole Basin, but the impact on cotton and other irrigators very much depends on how the water is resourced. Realistically, the lion's share of these volumes must come from the Murray, Goulburn and Murrumbidgee rivers, with a smaller but significant amount coming from the Darling system (MDBC, 2002a).

While the work on ecological benefits, and economic and social impacts is sufficient for the Commission to proceed with developing options with the community, it has not preordained the outcome. Now is the time for the cotton industry to enter into a dialogue on "a sustainable future for the Murray-Darling Basin".

Water resources and river health in the Basin.

A review of the operations of the Cap on diversions conducted in 2000, concluded that while the Cap was important to protecting security of supply to existing irrigation development and to limiting further environmental degradation, its current level did not necessarily provide for sustainable river health (MDBMC, 2000). The 'Snapshot' and the National Land and Water Resources Audit, mentioned above, confirmed this. Prior to the River Murray environmental flows initiative, the States were proceeding with their own water sharing policies - bulk entitlements in Victoria, water sharing plans in NSW, and water resource (or allocation and management) plans in Queensland. The importance of this is that under the water sharing targets of the ICM Policy, there is the opportunity to take a Basin-wide perspective in sourcing water for the riverine environment and to the distribution of the benefits. For instance, environmental allocations

within tributary rivers, that reach the River Murray, can be credited under the River Murray environmental flows initiative and accounted for under its environmental management arrangements.

The Basin Salinity Management Strategy, agreed by Ministerial Council, is now binding on the partner governments to implement it, although legal details are still to be finalised (MDBMC, 2001b). It implements the water quality part of the ICM Policy, again with a Basin-wide perspective. While the Strategy is to protect land and water resources, biodiversity and regional infrastructure from salinity damage, it sets a precedent for how governments commit to policies. Each State is to offset the river salinity impacts of actions within its statutory control by investing in salt interception schemes. The salinity credits from the schemes must stay ahead of the salinity debits from the other actions that increase river salinity, such as new irrigation development, water trading and drainage works. The governments together share a responsibility to invest sufficiently in land management and other actions to offset the salt loads reaching the Basin rivers from dryland salinity, due to historic clearing of vegetation and the hydrological impact of farming practices under the government policies of the day. Again, they 'bank' the credits and have to keep the overall 'bank account' in balance.

Or put another way, for the 15-year life of the Strategy, River Murray salinity measured at Morgan, South Australia must be maintained at its current improved condition. For each tributary river there is a target salinity level that must be met, which is higher than today but worked out with catchment communities to be achievable and offering net benefits within the catchment. This is, in effect, a pollution entitlement. Under the principles of the Strategy, the additional but 'capped' salt leaving the tributary catchments is more than offset by the joint salt interception works program downstream, to keep the Morgan target intact.

By adopting water quality targets in this way, and resourcing the catchment management plans at the appropriate level, a balance can be achieved between 'within catchment actions' to achieve local benefits and providing downstream benefits to the River Murray system. This balance of effort required under Basin strategies is an important consideration to the cotton industry. While it is true that actions taken on the larger flow rivers more directly connected to the River Murray are of much greater impact (eg. Murrumbidgee and Goulburn Rivers), this should not be taken to mean that actions on Queensland and northern NSW rivers are totally disconnected; they are not. Under the Basin Salinity Management Strategy, the salinity contribution of each tributary to the Morgan target has been estimated. While small for Queensland rivers and larger for NSW rivers - the Namoi in particular - regular audits will estimate the impacts and the Council will require the States to have sufficient credits to offset them.

The draft Native Fish Strategy (MDBC, 2002b) is relevant to the river ecosystem health targets under the ICM Policy. While it doesn't have comparable science and monitoring data behind it yet to determine targets on the basis of population size and distribution, the same principle of balancing the effort in tributary catchments and in the River Murray will apply. It will require the States to invest in environmental flow management and river rehabilitation under regional catchment plans while the Commission takes actions on the River Murray. Just like salinity, an early commitment to engineering works - in this case fish passage and cold water mitigation - should bring modest benefits while the long term measures of flow management and habitat restoration are taking effect.

Community-government partnerships and regional delivery

The ICM Policy is a business plan for natural resources management in the Basin. It covers objectives, investment and evaluation, and describes the necessary management arrangements (MDBMC, 2001a). Integrated catchment management has been practiced in the Basin since 1985 and the *Murray-Darling Basin*

Initiative is seen as international best practice. The ICM Policy principles have been influential in the new Commonwealth-State funding programs under the National Action Plan for Salinity and Water Quality and the National Heritage Trust.

At the core of the policy, and incorporated into Basin strategies, is a community-government partnership with management arrangements at the regional level. For each tributary river catchment and other Basin regions, there is a catchment management body with the capacity and resources to interpret Basin and State strategies into their own planning, and to implement plans to meet the dual objectives of their catchment and the Basin as a whole. While this paper does not go into these arrangements in any detail, it is important that the cotton industry is aware of its land and water use 'footprint' on a catchment scale, and engages the catchment management bodies in how water sharing, water quality protection and river ecosystem health use are to be handled.

Implications for Industry. How might it respond?

When faced with a trade-off between agriculture dependent on scarce water resources and a societal view that more water needs to be returned to the river environment, the economic and political power of each side of the argument becomes significant. It is a fact that the Murray-Darling Basin is a highly significant region for agriculture (about 40% National gross value of production), for irrigated agriculture (about 75% National irrigation GVP) and for cotton production in particular (about 90% National cotton GVP). Yet in terms of National gross domestic production (estimated about \$621 billion), agriculture is far less significant (3% GDP) and irrigated agriculture and cotton production are 26% and 5% of agricultural GVP respectively. A recent survey of the River Murray community found strong support from 95% of stakeholders for the principle of environmental flows (Syme and Nancarrow, 2001). On the other hand, there is no doubting the strong regional development and employment growth in larger towns on the back of irrigation development. The major challenge is finding the balance in this decision on natural and created wealth.

Among the risks that irrigation industries, and the cotton industry in particular, have faced (markets, pests and seasons), there are now two new ones - salinisation of water supplies and security of water access. The salinity threat will take 20-100 years to occur. The water sharing decisions under consideration now may be implemented within 20 years. Sustainability of industries and regional communities is a very important issue.

The Murray-Darling Basin Commission funded a study to look at the very future of irrigated agriculture at 20 years and beyond, given the economic and environmental pressures facing them (Fargher, 2002). Seventeen national and international experts were consulted in developing future scenarios and in predicting industry performance under those scenarios. Their general conclusions will grab the attention of irrigation industry interests: that irrigation areas in semi-arid environments world-wide face the same problems and threats; that salinity and water-logging have caused the demise of civilisations dependent on irrigated food production; that decisions on re-allocation of water for sustainable use and the environment are necessary; that incremental change will fail; and that irrigation competes with other economic interests such as tourism in these resource allocation decisions.

Four scenarios were considered, but it was the "transformed world" only that gave any prospect of long term sustainability in environmental, social and economic terms. In this scenario there is a clear vision of the values society holds for all water values and an aggressive water policy with fully functioning water markets and a strong regulatory regime. Thirty percent of the Cap allocation is clawed back from irrigation use using exchange-rate mechanisms. It is only by going to these lengths that environmental values are improved; and

while gross value of production increases over the next 20 years under all scenarios, it is in the transformed world that regional employment grows, although with fewer farmers.

Consequently, industry development and environmental water allocation, for irrigated agriculture in the Murray-Darling Basin at least, is not a straight trade-off. It is possible to provide enough water for a 'healthy, working' River Murray while industry and employment growth continues. However, this requires an effective program of water acquisition, removal of impediments to water trade, and a strongly interventionist government policy. There are no guarantees that these will happen at this stage, but they will feature prominently in the debate on River Murray environmental flows.

Meanwhile, no such analysis or prediction exists for the cotton industry. Yet it is being subject to policies on water sharing and water quality protection in a catchment context. Up to now, the industry has a good track record in improved on-farm water use efficiency and in adoption of best practices to eliminate off-farm pesticide impacts. However, for the industry to take care of future interests it needs to deal with the water issues off-farm, where it enters into dialogue and planning for water sharing agreements, catchment-by-catchment, and for surface water and groundwater. In the southern Basin, irrigation communities have prepared and agreed with governments, land and water management plans for the purpose of sustainable land and water resource use. In a recent review of 20 such plans (SMEC, 2001), several key points came out:

1. They drew investment of about \$880 million over three years;
2. They were the basis of a 'contract' with governments on infrastructure development and managing environmental impacts;
3. Their success was very much dependent on having a community-owned and driven process in place; and
4. The strong drivers for effective plans were clarity and agreement on a vision, motivation (clearly perceived threat or benefit), capacity (leadership, skills and information) and support (resources).

It would seem there are some lessons in this for the cotton industry. In the face of a justifiable environmental agenda and in the knowledge that the industry could continue to develop with a lesser share of water resources, what is an industry vision for a sustainable future? And, what is the policy position the industry should take?

A vision for a Sustainable Cotton Industry in the Murray-Darling Basin. What Now?

It is not for the Deputy Chief Executive of the Murray-Darling Basin Commission to offer a vision for the cotton industry in the context of these natural resource issues, and it is not for me to tell you what to do.

My task in this paper is to lay out a vision for a sustainable Murray-Darling Basin that has the following characteristics:

- It is agreed by the Basin community and its governments;
- It is built on the foundations of sustainability - for rivers, for catchments, for industries and for regional communities;
- It is justified by adequate scientific and economic analysis; and
- There is an ICM Policy and business plan to deliver.

The *Murray-Darling Basin Initiative*, by national and international standards, is well placed to deliver it.

The cotton industry is a legitimate stakeholder in this process and could take a much more pro-active role in policy discussion on water sharing, water quality and river health management. The characteristics of an industry response might be:

- Awareness and information of the 'footprint' of industry at a catchment and Basin scale;
- Engagement with catchment management planning and natural resource policies;
- Addressing the public and market perceptions of the industry's impacts with up-to-date facts and audit/accreditation arrangements;
- Demanding that the private and public investment in R&D is applied to these issues; and
- Investing in the leadership and knowledge necessary to participate.

The bottom line is can the cotton industry be part of the vision for a sustainable Murray-Darling Basin on its own terms?

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