

Trading water

Clarification of water rights is essential to restoring damaged rivers, protecting healthy ones and improving water-use efficiency Australia-wide.

Nine years ago, the Council of Australian Governments (CoAG) established a National Framework for Water, which separated interests in land from interests in water, and aimed to improve water-pricing arrangements. The issue of how to define 'water property rights' once separated from land titles, however, was left unresolved.

A variety of water 'allocation' and pricing arrangements subsequently have arisen within and between Australian states. Inconsistencies in terminology, user expectations, usage conditions, security of supply and trading mechanisms have led to inefficient resource use, over-allocation of rivers and environmental degradation.

'The plethora of systems complicates trading, management and communication, and opens up opportunities for arbitrage and confusion,' Wentworth Group member and CSIRO economist, Professor Mike Young, says.

'The finite nature of the resource is unclear. Every time one person takes more, someone else downstream, or the environment, gets less.'

In their report, *Robust Separation: A search for a generic framework to simplify*



Professor Mike Young says water management is complicated by the variety of allocation and pricing arrangements.

registration and trading of interests in natural resources, Young and his colleague, CSIRO research fellow Jim McColl, outline a national approach to the issue.

The framework is a 'robust system': a generic system that builds on globally accepted ideas and concepts, is efficient and fair in a changing world, and will stand the test of time.

'We propose a water rights system based on banking, share trading and Torrens Title registration procedures,' Young says. 'This system has three components that can be managed independently.'

Water shares

Using the limited liability share company concept, Young and McColl propose that water rights or 'entitlements' be formally described as a share, and managed in a system that mimics the share registry. The entitlement holder would have a long-term share in a common pool of water, the size of which might vary seasonally.

'Entitlements are granted by government and define the degree of access to the resource that can be expected over time,' Young says.

'They must also specify precisely what can and what cannot be compensated through the courts. Share systems make it clear that risk is involved and that circumstances may change.'

For example, a change in mean annual rainfall, which necessitates a change in the amount of water an entitlement holder receives (allocation), is a risk the holder must bear. But compensation may be sought if, for example, an administrative error is made.

Entitlements would also be registered under a Torrens Title system. This system revolutionised the means by which land ownership was defined by drawing on a

share-registration system developed in Germany in the 19th century. Instead of producing a deed or contract to define ownership, landholders had to go to a register.

'The vision underpinning the Torrens Title system is that interests in property should be defined on a register, not by distributed pieces of paper,' Young says. 'This dramatically reduces the opportunity for fraud and misrepresentation of the true nature of an interest. In any dispute, the register is deemed to be correct.'

Water allocations

The second part of the robust system defines water allocations as a 'unit of opportunity' (usually a volume), distributed periodically.

'An allocation is like a dividend,' McColl says. 'The entitlement expresses your share of a common pool available in a catchment, dam or river, and the periodic allocation is what you can extract annually on the basis of your share.'

McColl says allocations need to be managed separately as a common pool resource. Much like the management of money in the banking system, allocations would be credited to a formal account.

Trades and extractions from the common pool for irrigation, for example, would then be debited from these accounts. And people could write water cheques and/or trade on the Internet at low cost.

Water-use licences

The final component of the robust system is the use licence: the right to apply water to land. This is where impacts on the environment, neighbours and downstream water users are managed.



Under the proposed new system, irrigators would need a long-term share in a common pool of water, periodic water allocations and a licence to apply the water to land. Shares and allocations could be traded, enabling more efficient water use overall.

The licence would specify the degree of use permitted, similar to the way approval is given to construct a house. For example, a use licence may grant permission to flood irrigate a maximum of 350 hectares on a specified area of land. It would also define such things as pumping limits, drainage disposal requirements, or obligations under the district or regional salinity management strategy.

As with interests in mineral resources, Young and McColl suggest that use licences should begin by ‘reserving pollution rights to the Crown’. If this is done, then it is possible to manage salinity and other water quality issues separately from quantity issues. They point to the fact that many salinity interception schemes, while reducing river salinity, also reduce environmental flows.

‘A robust system enables river managers to manage both quality and flow issues, as they vary across space and through time,’ Young says.

Electronic trading

By separating water entitlements, allocations and usage, the trading of water could operate entirely separately from the management of water use. Entitlement

trading would be possible using licensed brokers and clear trading rules, while allocation trading would be possible using electronic transfers and accounts, just like those used to manage a bank account.

‘People could trade entitlements or allocations and not have a use licence,’ McColl says. ‘Or, they could buy a use licence and then buy an entitlement from the market which would entitle them to a share of the common pool. Or, rather than holding an entitlement, they could buy periodic allocations on the market.’

This situation would allow farmers to control how best to use their allocation.

For example, in a drought year, a farmer irrigating low-value crops might achieve a better return by selling part of his allocation. This would allow another user, who might have high-value crops such as grapes, to buy the extra water for a better harvest.

‘This scenario is happening to a limited extent now,’ McColl says. ‘But it could be made more efficient given proper specifications of the entitlement, allocation and use licence.’

Return flows and land-use change

Implementing this system will require a number of contentious issues to be

True blue beginnings

THE Wentworth Group is named after the Wentworth Hotel, where its members held their first meeting.

William Charles Wentworth (c. 1790–1872) was one of Australia’s prominent politicians, explorers and landowners.

Born in New South Wales, he trained as a lawyer in England. He participated in the first (white) crossing of the Blue Mountains, co-founded *The Australian* newspaper; became a member of the NSW Legislative Council, helped establish the first state primary education system in NSW, and founded the University of Sydney.

His main political rival, Henry Parkes, described Wentworth as ‘beyond doubt the ablest man in the community’.



Professor Tim Flannery

Members of the Wentworth Group

Professor Peter Cullen freshwater ecologist and Australian Environmentalist of the Year (2001)

Professor Tim Flannery palaeontologist and director South Australian Museum

Associate Professor Ronnie Harding zoologist and chair WWF Australia Scientific Advisory Committee

Dr Steve Morton ecologist and former chief CSIRO Sustainable Ecosystems

Professor Hugh Possingham mathematical ecologist and chair Commonwealth Biological Diversity Advisory Committee

Dr Denis Saunders CSIRO ecologist

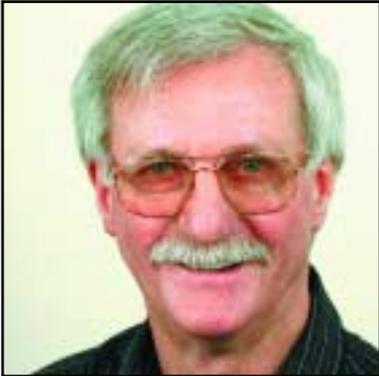
Professor Bruce Thom geomorphologist and chair 2001 Australia State of the Environment Committee

Dr John Williams chief CSIRO Land and Water

Professor Mike Young director CSIRO Policy and Economic Research Unit

Peter Cosier WWF Australia Environmental Policy Specialist

Leith Bouilly farmer and chair Murray Darling Basin Community Advisory Committee



Jim McColl says a system of trading in water rights would need the flexibility to cope with changes to land use, such as the planting of trees for forestry or revegetation, which would reduce water availability.

resolved: principally, the issues of return flows to rivers and changing land use.

For example, if a farmer switched from flood irrigation to drip irrigation, water-use efficiency would increase significantly. Where flood irrigation would return say 40–50% of the water pumped onto the land, through surface runoff or groundwater, drip irrigation would return perhaps 15%. If the farmer then expanded his irrigation area to use this extra water, there would be less water for downstream users and/or the environment.

‘It’s important to limit trading opportunities to the amount of water consumed,’ Young says. ‘Trading pumping rights without regard to the amount of water available to others and the environment is eroding existing systems.’

‘If we keep trading in gross rather than net terms, the extent of over-allocation will increase. So we’ve got to decide if we’re going to trade on net use only, or monitor the gross use and make regular entitlement and allocation adjustments.’

Land use changes would also require such adjustments. In many areas, particularly high rainfall areas (more than 1000 mm a year), pasture puts more water back into the rivers than forested land. So if a catchment is replanted with trees less water will be available downstream. According to Young, a 100 mm a year reduction in recharge and run-off equates to a loss of one megalitre of water per hectare.

‘If aspiring foresters are not required to buy an entitlement, or governments reduce allocations as the area under forest increases, significant over-allocation of the resource may result,’ McColl says.

‘Our water-consumption system accounts for irrigators and urban domestic and industrial users, but not for forestry. This needs to be recognised and adjustments made.’

Consultation phase

A national public consultation on water allocation, river flows, water trading, environmental degradation, and compensation is under way.

A paper on water property rights, prepared by the Natural Resource Management Ministerial Council’s Chief Executive Officers Group on Water, forms the basis of this public consultation, and covers many of the principles raised by Young and McColl.

The pair has made a submission to the consultation, outlining their robust system and their proposal to phase in such a system, with transitional assistance payments made available on a declining

scale over time. The results of this public consultation will go before the next COAG meeting this year.

Young says clarification of water rights and obligations is essential if other reforms proposed by the Wentworth Group are to be implemented rationally and successfully.

A suitable framework could then form the core of a National Water Policy, focusing on improving the health of our damaged rivers, protecting our remaining healthy rivers, and improving water-use efficiency Australia-wide.

More about water rights

Achieving Sustainable Water Management.

A Commonwealth Position Paper.

www.affa.gov.au/

Water Property Rights. Report to CoAG from the Water CEOs Group. www.affa.gov.au/ Young MD and McColl JC (2002) *Robust*

Separation: A search for a generic framework to simplify registration and trading of interests in natural resources.

CSIRO Land and Water. www.clw.csiro.au/publications/consultancy/2002/Robust_Separation.pdf



CSIRO Land and Water

The trading of pumping rights without regard to the amount of water available to others and the environment is eroding existing water management systems.