

# Australia's Markets for Water Resources and Pricing for Water Services

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## Introduction

This paper draws on the Australian experience over the last two decades of discussing the potential for markets for water resources and improved pricing of water services to help respond to a range of issues and challenges.

In Australia, issues include increasing demand for water from competing users, coupled with increasingly variable and degraded water supply, and the consequent challenges of ensuring the most efficient allocation and use of water resources, and efficient investment in and use of water services (infrastructure, delivery and management).

The need to allocate water more efficiently, improve agricultural productivity, and improve investment in and use of water services, led to the introduction of water market and pricing reforms. Because of these reforms, Australia's water sector has been able to make a major contribution to national economic growth: markets for water resources have enabled effective responses to drought and climate change, commodity conditions and consumer preferences; while efficient pricing of water services has enabled more appropriate and better targeted investments, helped prepare for climate change, improved customer service and choice, and managed demand.

As many Asian countries are grappling with similar challenges, further consideration of the potential for market-based reforms is warranted by water policy makers and international development agencies.

## Issues and Challenges

Climate variability, water scarcity, environmental degradation, inefficient investment in and delivery of water services, and growing water and food demand are major issues which have driven Australian water policy and management.

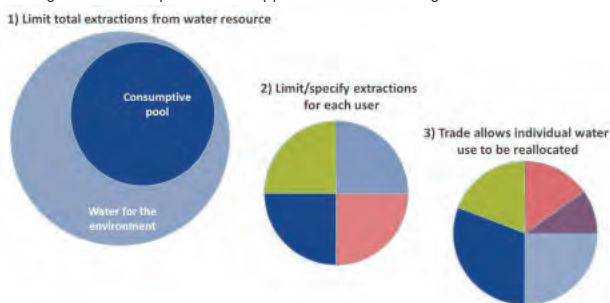
Similar to other parts of the world, Australia's main irrigation areas face issues of scarce and variable water supplies, increasing competition for water and environmental degradation due to climate variability, historical over-allocation of water licenses, and, prior to the introduction of water market and pricing reforms, water extraction and use without regard to cost of supply.

Global trends driving water scarcity such as drought, climate change and population growth are to some extent unavoidable. If water policy and management is to help address these issues, then it must be designed to help optimise economic, social and environmental returns from scarce resources. The emphasis of water policy and management must be on more flexible allocation of water to those users, regions and industries of highest value, and more strategic and sustainable investment in and use of water infrastructure.

With this in mind, Australia has pursued a water reform agenda for the last two decades, focused primarily on resource efficiency and environmental sustainability, and on moving away from central control of water allocation and use, to increasing individual participation in these decisions. Water market and pricing reforms have been central to this agenda, and are recognised by Australian governments as being important for national productivity, sustainable growth and international competitiveness.

Necessary reforms to enable markets for water resources included capping surface water use for agricultural users in the Murray–Darling Basin and other areas (i.e. placing a limit on total extraction from water resources), and the ‘unbundling’ of water rights from land rights which enables water to be traded independently of land (see Figures 1 and 2). This meant water users could only obtain additional water by purchasing existing water rights, which provided a market based signal for the value of water.

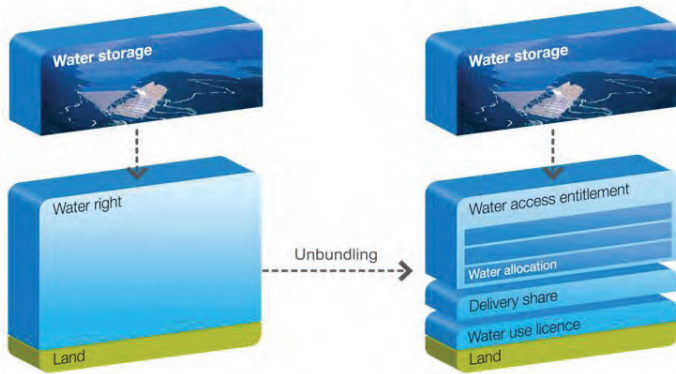
Figure 1: The ‘cap and trade’ approach to establishing water markets



Source: NWC 2011a

Water rights became defined as a share of the total available resources rather than a specified volume, helping to manage variation in availability between wet and dry seasons. Called water entitlements these are perpetual and statutory rights, which are granted an allocation of water each year.

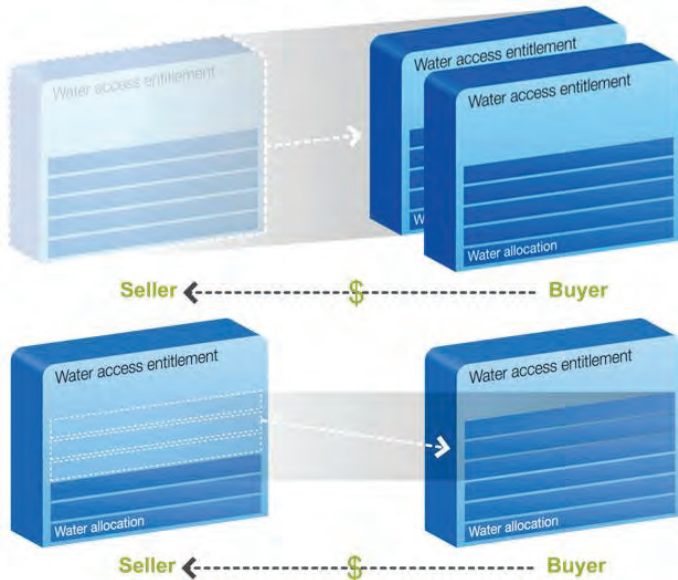
Figure 2: Simplified example of an unbundled entitlement system  
**PRE-WATER REFORM** **NWI REFORMS**



Source: NWC 2011b

As shown in Figure 3, both water entitlements (the perpetual or ongoing entitlement to access a share of water from a specified consumptive pool) and water allocations (the specific volume of water allocated to water entitlements in a given season) can be traded in Australian water markets under this system.

Figure 3: Simplified example of trading in an unbundled entitlement system



Source: NWC 2011b

Necessary reforms to pricing for water services included altering the level of prices to recover full costs of service provision (including operational, maintenance and administrative costs, provision for the cost of asset depreciation and cost

of capital) and changing tariffs to signal efficient water use through consumption based charges. Fixed service charges were defined to recover remaining revenue requirements, and independent economic regulation was implemented to protect customers by ensuring costs were efficient and aligned with appropriate levels of service.

Both sets of reforms have taken decades to implement, at significant cost, and require ongoing monitoring and refinement. However, water markets have been successfully introduced in the Murray-Darling Basin, Australia's largest irrigated agriculture area; and pricing reforms have been fully implemented in most major cities and to varying degrees in rural water supply systems across Australia.

## **Opportunities**

### **Markets for water resources**

- allow water users to determine the optimum balance of water use between different consumptive uses, in response to variable water supply conditions and demand;
- allow water to move between water users, regions and industries - this facilitates structural change and provides water users with greater flexibility to respond to external factors impacting their businesses;
- help to provide confidence to water users to undertake private investment (on-farm) and provide a signal to water utilities as to where to invest in delivery infrastructure; and
- allow water to be purchased for the environment, avoiding compulsory acquisitions or erosion of rights.

In Australia, the successful introduction of markets for water resources has resulted in more efficient responses to drought and climate change, fluctuating global commodity conditions and changing consumer preferences. Water markets allow water users, rather than governments, to make complex decisions about who should use water, where, and for what (NWC 2010, 2011c).

Water market prices are providing a signal for users to consider the opportunity cost of their water-use and make decisions in their own best interests. Markets for water resources are now an essential business management tool and they will continue to be used by agriculture in response to current and future challenges.

The return on investment in implementing these reforms has been significant, with net benefits of trade estimated to be worth billions of dollars in the last decade (NWC 2010). Over 90 per cent of irrigators surveyed in the Murray-Darling Basin feel the ability to trade water has helped their farm businesses. Water trading has been vital for rice, cotton, dairy and horticulture, and has helped maintain productive output and capacity in agriculture in the face of extreme droughts (NWC 2011a).

## **Pricing for water services**

Efficient pricing for water services enables sustainable investment and delivery of services, including recovering the costs of water planning and management (including environmental works and measures). Efficient pricing encourages water utilities to consider the costs and benefits of different services they provide, the location in which they provide them, and the willingness of the consumer to pay for different services (NWC 2011d).

Efficient pricing for water services means that water utilities can make provision for infrastructure renewals or replacement, confident of being able to recover efficient costs from consumers.

In Australia, efficient pricing for water services has reduced consumption in urban areas, helped reduce operating costs and provide cost savings to customers, provided transparency and accountability, helped fund new investments, reduced the risk of stranded assets, and facilitated necessary structural adjustment (NWC 2011d).

In Australia, the cost of water planning and management is recovered from water users through pricing, and water businesses earn a commercial rate of return on capital investments thereby improving the financial viability and independence of the business.

Efficient pricing for water services has enabled more appropriate investment, helped prepare for climate change, improved customer service and choice, and managed demand. Population growth and development have continued while water availability has varied significantly or declined.

Independent economic regulation of pricing for water services ensures prices are sustainable for utilities and customers over the long term.

## **Recommendations**

Expanding water demand of growing populations and economies, combined with the impacts of climate change, are already making water scarcity a reality in many parts of the world. Business as usual is not an option and changes in water policy and management present an opportunity to address some of these challenges.

There is no “one size fits all” solution, and the selection of the right range of options will depend on local conditions and each will have its own risks and tradeoffs for governments, planners, water managers, users in agriculture, industry and cities, and the environment.

However, given they are a proven effective and efficient means of allocating and ensuring efficient use of water resources and delivery services, managers of scarce water resources should consider opportunities for introducing markets for water resources and improved pricing for water services.

This includes both private and public managers and regulators, such as national or provincial governments, as well as water service providers. Water markets and pricing solutions can help to meet current and future challenges such as water scarcity, climate change, food security, public and environmental health.

**Recommendation 1:** Managers of water resources and water services should consider the opportunities for introducing markets for water resources and improved pricing for water services.

In Australia, markets for water resources began at a local scale and were expanded over time. The commitment of all stakeholders is required to trial different approaches and to pursue incremental improvement, and farmer participation and satisfaction has been required throughout. Political will, pragmatism, cooperation, and user involvement are all important in scaling up markets for water resources from a local to regional or national level.

Similarly, efficient pricing for water services has required political commitment to transparency and accountability, and a willingness to implement sometimes significant policy, administrative, legal and institutional reforms. In many cases pricing reforms were implemented in certain utilities or certain states and territories, before others followed. This has allowed proof of concept to emerge and greater acceptance over time. Again, change has occurred incrementally.

**Recommendation 2:** Managers of scarce water resources should recognise the challenges and costs of introducing markets for water resources and pricing for water services, and consider areas or projects suitable for early adoption, prior to scaling up.

There is a need for water managers, investors and policy makers to learn from the experiences of countries that have already implemented reforms as they consider these solutions in their own areas. Experience from Australia suggests that clearly defined property rights and robust institutional and governance arrangements are required to facilitate well-functioning water markets and efficient pricing.

**Recommendation 3:** Managers of scarce water resources and water services should invest in the fundamentals of improved water policy and management identified as being critical to success for the implementation of markets for water resources and pricing for water services. While costly, these are the same fundamentals required for good water management.

Australia's experience shows that water markets must be underpinned by sound institutional arrangements and effective metering, monitoring, compliance, water accounting, data management, knowledge and procedures for river and system operations. While being essential for introducing water markets, improvements in these areas have benefits in their own right (NWC 2011a).

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