Market Based Instruments (MBIs) in Australia: What are they, important issues to consider and some applications to date.♣

Anthea Coggan and Stuart M Whitten

June 2005

Primary author contact details: **CSIRO Sustainable Ecosystems**
PO Box 284, Canberra, ACT, 2601
Ph: 02 6242 1669, Fax: 02 6242 1705
Email: anthea.coggan@csiro.au

♣ Background paper presented at the Desert Knowledge CRC Workshop Alice Springs, 8-10 June 2005.

1. Introduction

Starting with European settlement and continuing today, Australia has been undergoing a long period of land use change motivated by the significant private values received from grazing, agriculture and mining. This land use change has degraded many of our environmental and cultural assets. Despite their obvious importance to our ongoing wellbeing, these goods have largely been ignored in both domestic and international markets, law and policy.

Existing markets have rewarded agriculturalists and miners but 'failed' to conserve environmental and cultural goods because they do not send signals that encourage participants to use and manage natural resources sustainably. That is, the full costs of production decisions are not reflected in the market price paid for most products. A simple example is producing a ton of wheat, the price paid for the wheat does not include any costs of using environmental resources or causing environmental degradation.

In theory, the supply problems for goods arising from market failure can be remedied through some level of government intervention (Murtough *et al.* 2002). Intervention can be divided into three distinct categories:

- **Facilitative:** where measures are designed to improve the flow of information and corresponding signals and incentives without providing any direct incentive payments to landowners. For example, extension programs providing information about how to manage land to improve biodiversity conservation.
- **Incentive:** where measures are designed to directly alter the structure of pay-offs to land managers and are usually specifically intended to substitute for missing monetary signals that are generated within markets for other goods and services.
- **Coercive:** where non-voluntary measures are designed to compel management change using the coercive powers of government. Regulations designed to protect native vegetation are an example of coercive policies.

Market based instruments (MBIs), falling into the "incentive" category of intervention, are just one way for government to bring about an increased level of supply of environmental and cultural goods. MBIs are receiving increasing attention in Australia as they have the potential to deliver environmental outcomes at lower cost to government and market participants than many alternative instruments.

That said, MBIs are not the panacea for all environmental problems. Any policy approach aimed to achieve a better supply of environmental and cultural goods needs to be carefully designed according to the outcomes sought, the nature of the market failure faced and the nature of the natural and human environment in which the policy will operate. Furthermore, all policy interventions are costly, in terms of design, delivery and any incentives provided. These costs should always be compared against the alternative of doing nothing. That is, in many cases the costs of acting to remedy environmental degradation may be greater than the costs of the degradation to the community.

2. Market Based Instruments (MBIs)

MBIs are policy tools that encourage certain behaviours through market signals rather than through explicit directives such as regulation. MBIs operate primarily by addressing the cause of market failure for a good. For environmental goods this is primarily the lack of fully defined and enforceable property rights for these goods. MBIs, by defining and allocating property rights and using a monetary measure for the rights to be voluntarily exchanged, alter the payoffs faced by land managers for various land management actions. In the same way regular markets tend to influence people's behaviour, MBIs use trading mechanisms, auctions and price signals, to influence behaviour that will ultimately lead to environmental benefits. These benefits include reductions in salinity, the conservation of biodiversity, or improvements in stream and river quality (National Action Plan for Salinity and Water Quality (NAPSWQ) 2002).

MBI's applied in a NRM context have received increasing attention recently. This is because when designed correctly, they have the potential to deliver outcomes at lower cost to government and with improved flexibility and lower compliance costs to landholders than many alternative instruments. MBI's achieve these cost reductions in three ways:

1. Allowing flexibility in the way participants choose to respond to the instrument and thus encouraging innovation.
2. Encouraging change amongst those who can achieve change most cheaply, as opposed to broadly levelling change requirements on all.
3. Placing positive incentives on better NRM, as compared to the negative incentives evident in regulatory approaches.

Whilst MBIs have the potential to provide environmental outcomes more efficiently, MBIs work best in certain circumstances, some questions to ask to gauge circumstances are provided in Table 1.

Table 1: Is an MBI an appropriate policy response?

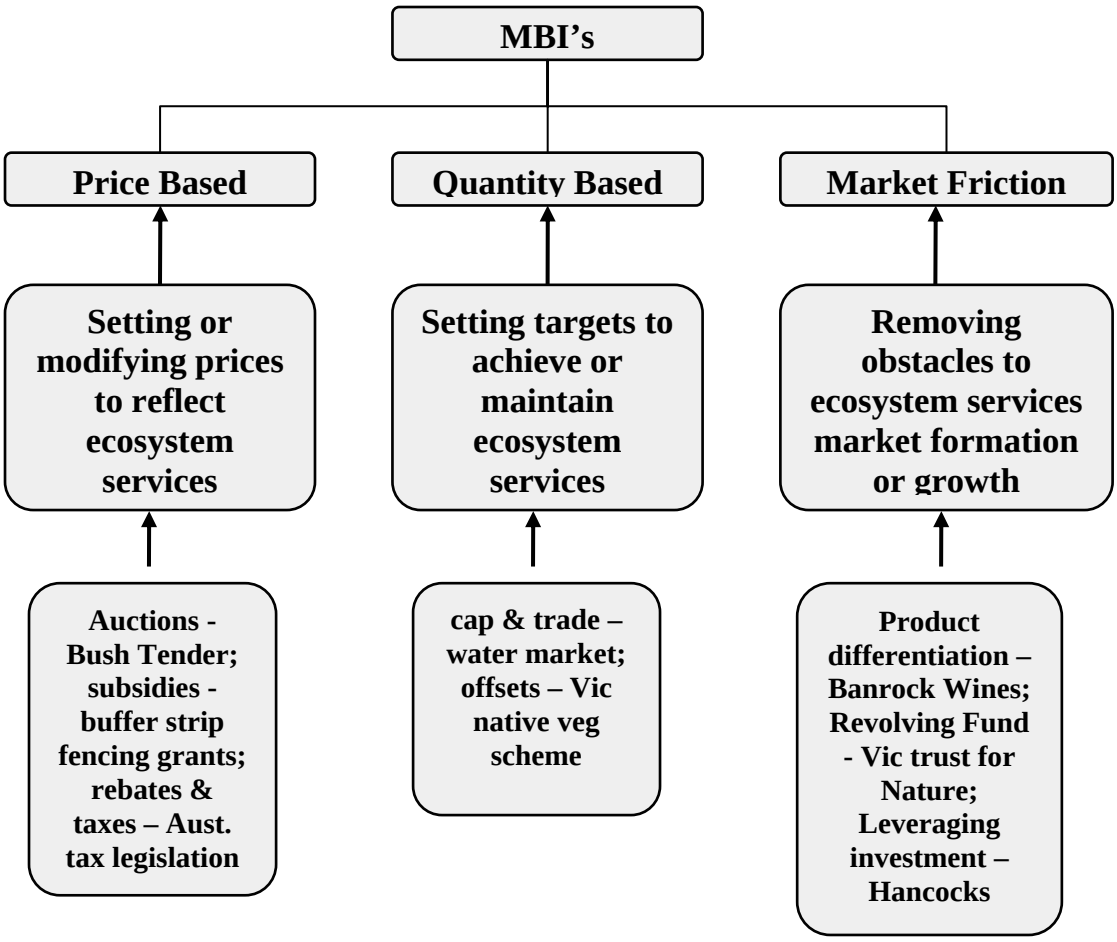
Community values and potential gains from trade	A market mechanism can only function where there are potential "gains from trade" –where participants to the trade all end up "better off" after the trade. In simple terms, if there is no potential value to the community, then no trades will take place and an MBI will not work. Gains from trade are primarily realised because of heterogeneity. Heterogeneity exists within the landscape (environmental goods may be located across the landscape or located in particular areas 'hotspots'), between different management actions (different landowners can undertake different actions to address a NRM issue, for example planting trees or lucerne to manage salinity), and where social and economic variation exists between landholders (landholders experience different cost structures and have different preferences). Heterogeneity will lead to trade.
Transaction costs and potential gains from trade	Trades will only occur where the value of the relevant environmental good outweighs the sum of production and transaction costs[1] incurred in the market process. Thus MBIs are only a practical option where the good generates sufficient value to encourage trade and where transaction costs can be sufficiently minimised to facilitate market exchange.
Existing policies and schemes	No policy instrument or reform is truly 'new' since it must be superimposed over existing rules, regulations and customs. Thus in crafting policy instruments, it is helpful to think of them as complementing the *status quo*. One must consider not only the proposed policy instrument but the current institutions and operating frameworks and whether they need to or can change.
Community capacity	Policy is not only generated within existing rules, regulations and customs but also within constraints and opportunities provided through existing political structures, biophysical constraints and physical, human, financial and social capitals. One must consider these contextual attributes in assessing whether the policy opportunity and the policy instrument can be adapted to achieve the desired outcome.

3. Types of MBIs

MBIs in Australia are commonly categorised as either a price or quantity based instrument, although instruments aimed at improving the operation of existing markets, termed 'market-friction' instruments, are sometimes included as market instruments. Each manifestation of the instrument is illustrated (Figure 1) and discussed below.

[1] The costs associated with buying and selling, such as those associated with collecting information and processing trades.

Figure 1: Types of MBIs



Price Based MBIs

Price based MBIs assign a price to environmental impacts within existing markets through the imposition of charges, taxes or subsidies[2]. Firms then respond to the modified market signals and adopt the resource use or management practice that offers them the greatest benefit and, if the policy is effective, leads to a better resource management outcome. While these instruments cannot guarantee the *extent* of changes, they act to cap the *costs* incurred under the instrument. Price based instruments therefore rely primarily on price signals rather than scarcity to create incentives to potential participants.

For example: Bush Tender
Goal: increase provision of biodiversity through conservation of valuable habitat on private land.
Mechanism: Reverse Auction – price based mechanism.
Participants: Individual landholders within a region of interest.
Market failure addressed: Information Failure and Public Good

Bush Tender is an auction mechanism designed to overcome information asymmetries in identifying the most cost-effective options for Government investment. The bidding process is designed to reveal the costs of changing land use to improve biodiversity outcomes. These costs are known to land owners but not to government; conversely, government knows the benefits of changing management, but not the farmer. A Biodiversity Benefits Index is used to measure the relative biodiversity benefits of these changes. Individual management contracts are used to specify payments and monitoring arrangements.

Quantity Based MBIs

Quantity based or 'tradeable rights' instruments create a market in the rights to engage in an activity associated with specified resource uses or environmental damage. They do this by restricting the total level of activity and allocating rights to participants. An efficient allocation of rights is then determined through market exchanges. Tradeable rights instruments tend to be used when it is important to get a certain environmental outcome (for example, when pollution of a waterway is close to a level that may cause irreversible or unacceptable degradation). Government or a designated authority must determine the total quantity of the good to be expressed in the rights, who can own the various rights, the initial allocation of rights, the conditions under which trade can take place, how rights will be monitored and enforced, etc (Murtough *et al* 2002).

[2] It is important to be aware that many price based MBIs can also be called "market like" instruments. This argument is presented for two main reasons. First, many price based MBIs do not present with normal market characteristics such as many buyers and sellers. Instead there are more often than not one buyer and a few sellers (most auction MBIs are one buyer). Regardless, applications of a one buyer auction so far has tended to be more cost effective at purchasing environmental goods compared to a fixed price grant (BushTender reports cost effectiveness of auctioning as 7 times greater than alternative fixed grant approaches). Second, some schemes that are categorised as price based MBIs, such as subsidies and taxes do not take advantage of market characteristics such as heterogeneity in landscapes and management actions in their operation. These schemes, although providing a monetary incentive for the environmental good, provide the same monetary incentive or tax on all landholders once they get past a qualifying threshold (eg set $/km of fencing) – this is not really a market, but still changes the price incentives faced.

Whilst quantity based MBIs tend to result in significant institutional change over time (unlike price based MBIs which often can only run for as long as the funding is available), quantity based MBIs need greater legislative backing. Therefore they are usually not a feasible tool for change by agents such as catchment management authorities.

For example: Hunter River Salinity Trading Scheme
Goal: Manage and reduce salt loads in the Hunter River.
Mechanism: Cap & Trade Market – quantity based mechanism.
Participants: Point source polluters within the Hunter catchment, e.g. power stations and mines.
Market failure addressed: Externality and Public Good

The aim of the Hunter River Salinity Trading Scheme in NSW (HRSTS) is to manage the total quantity of salt in the Hunter River and the negative biodiversity impacts caused, particularly during periods of low flows.

The HRSTS is a 'cap and trade' mechanism. The cap is 1000 credits, each of which is the right to discharge X amount of salt into the River during a high flow event. Individual polluters (e.g. mines & power stations) access a component of the cap via a 'licence' to a specified number of credits. The credit allows the holder to discharge 0.1% of the daily total allowable discharge to the river during high flows - monitored at point of discharge. The allowable discharge is dependent on the salinity of river waters. Improved performance is rewarded when a participant needs to purchase fewer credits to operate and can sell the excess.

Market Friction MBIs
Market friction mechanisms work to improve the way a current market functions. Market friction MBIs achieve this by providing more information to the market or reducing the transaction costs of the market. An example of a market friction MBI would be providing a designated broker or water exchange facility to improve water market outcomes.

For example: Eco Labelling and Banrock Station Wines[3]
Goal: BRL Hardy's vision for Banrock Station is an environmentally sustainable co-existence of vineyards, wetlands and native vegetation.
Mechanism: product differentiation - Market friction mechanism
Participants: BRL Hardy's and wine consumers.
Market failure addressed: Information failure

Marketing of Banrock Station wines is based in part on management of Banrock Station wetlands and donations to wetland conservation projects worldwide. 'Eco labelling' and 'Green Marketing' are tools that differentiate between products by drawing attention to positive environmental performance. They have been applied to single products (Banrock Station Wines), commodities (timber) and regions (King Island products), usually in the form of product labels. Eco-labelling for environmentally friendly management is designed to benefit producers through increased market share or gaining premium prices for their products.

4. Other MBIs in Australia

A number of MBIs to achieve environmental and NRM outcomes are being trialled and implemented in many forms and by many authorities across Australia. Because there is still so much to learn in relation to the design and implementation of MBIs, many applications are pilots. This is particularly the case for more novel applications of the technique or where significant institutional change would be required for wider application, such as the case with quantity based MBIs. CSIRO Sustainable Ecosystems have a number of MBI pilot projects currently underway (Table 2). The NAPSWQ have also funded 11 MBI pilots to assess the design and implementation characteristics of MBIs as they apply to gaining NRM outcomes (Table 3). Some other MBI or MBI type applications known to the authors are also listed in Table 3.

[3] The Sonoran Institute (see reference under Alexander, B) in the United States have done some research into market friction type initiatives for its Ranch lands. Initiatives include niche marketing for goods that are produced in an environmentally sustainable way and enterprise diversification through activities such as guest ranching and additional small business activities.

Table 2: CSIRO Sustainable Ecosystems Current MBI pilots and research

Location and target	Possible mechanism	Important considerations / research questions
Goulburn-Broken Catchment		
Murrindindi Shire Council – targeting ecosystem services impaired by development on rural lands.	Qty Based MBI: Offsets applying to specified impacts of rural development such as water quality and biodiversity impacts.	• Allowing offsets could increase flexibility in meeting goal of retaining services – especially if specialised 3rd parties involved. • Offset targets will be explicitly linked to regional targets thus integrating a local government managed MBI into a regional process. • Offsets will induce increased transaction costs in the development application process could delay or reduce other benefits of development to the community – especially in competition with neighbouring shires. • Difficult to define appropriate currencies and exchanges between locations.
Mid-regions of Goulburn-Broken catchment – targeting external salinity impacts of on-farm water management.	Still being considered: • Must facilitate private sector contributions and likely government co-payment. • Incorporate construction of a robust, flexible solution that maintains sustainable outcomes is desirable • Likely to involve a combination of property right frameworks and efficient investment tools.	• Complicated by lack of obvious property right vehicle for creating appropriate rights to salt and water movement in landscapes. • A high level of uncertainty remains about salt and water movement in landscapes. This is complicated by the differing nature of the external impacts from different sites and management actions. • Only near viable, long-term option is use of deep-rooted perennial vegetation with uncertain long-term market outcomes. • MBI will need to deal with significant information asymmetries relating to costs of abatement and outcomes from change.
Murrumbidgee Catchment		
Coleambally Irrigation Area – targeting common property problem from irrigation induced salinity	Qty Based MBI: Cap and trade applying to net recharge of groundwater aquifers from irrigation.	• Uses scientific information to apply a point-source solution. • Transaction costs of implementing and managing system may be high due to measurement and monitoring costs. • Water market familiarity means lower transaction costs are likely in trading mechanism. • Coupling with an offset framework would increase flexibility and may encourage innovation in net recharge management.
Mid-regions of catchment – targeting external in-stream salinity impacts of on-farm water management.	Still being considered – likely to involve an efficient payments mechanism such as an auction.	• Known sub-catchment salt sources but increased complexity and costs to identify specific sites. • MBI will need to deal with significant information asymmetries relating to costs of management change and outcomes from change. • Cost effectiveness of bundling outcome payments needs to be considered to determine marginal costs and benefits of including additional ecosystem services within a single scheme. • Spatial heterogeneity of salt sources may mean relatively few participants. • Opportunity costs may be high due to highly profitable enterprises in region.

Location and target	Possible mechanism	Important considerations / research questions
Blackwood Basin		
Road infrastructure - targeting protection of road segments from salinity impacts.	Price based MBI: Baseline and credit via individual negotiated payments for desired management change.	• Can future salinity impacts be identified with sufficient certainty to facilitate protection measures being taken? • What is the certainty associated with the protection measures? • What is the cost of obtaining sufficiently detailed information? • Mechanism design will need to take into account the costs of bilateral negotiations.
Beyond fencing – landscape reconstruction in the WA wheat belt	Creative combinations of existing property right tools such as conservation covenants in conjunction with innovative financing arrangements for interrelated actions.	• How do MBI transaction costs compare with current allocation methods? • Is sufficient biophysical information available to facilitate an MBI over an input subsidy or flat side-payment? • Is the market sufficiently large enough to facilitate a MBI solution? • How should interrelated actions and associated asymmetric information be treated within an MBI solution? • How to account for high levels of uncertainty regarding management action effectiveness?
Wimmera Mallee Catchment		
Provision of ecosystem services	Price based MBI: Reverse auction or competitive tender	• Addressing ecosystem services such as wetlands and streams, riparian health, conservation of remnant vegetation, salinity control and biodiversity on steep hill country • Market failure as they relate to each ecosystem service goal and desired land management action have been identified
Other potential opportunities – indicative information provided only		
Desert Uplands (Central Qld) – corridor retention following clearing	Qty based MBI: Multi-stage auction process likely to be combined with bilateral negotiations.	• Facilitated by the Desert Uplands Build-up and Development Committee in collaboration with QLD EPA, Central Queensland University and CSIRO. • Critical issue is how to best manage bids whose values are in part dependent on neighbouring bid characteristics. • Difficulty defining appropriate measures of biodiversity impact given information constraints.
Fitzroy Basin Qld – Regulation/MBI tradeoffs in nutrient management	Not an MBI as such but will provide information on how best to structure MBIs.	• Facilitated by The Central Queensland University in partnership with several regional organisations and CSIRO. • What information is required to design an appropriate policy framework? • At what combinations of regulation and participant heterogeneity do MBIs become the most efficient means of achieving specific outcomes?

Table 3: MBI trials, pilots and applications underway in Australia

Project name	MBI type	Instrument	Location/region	NRM issue targeted	Issue/importance/significance	Agency managing pilot
BushTender	Price	Auction	Victoria	Biodiversity	Differentiated payments for biodiversity outcomes. Research has shown that differentiated payments have resulted in a cost saving of up to 7 times when compared with a fixed grant payment (Stoneham *et al* 2004).	Victorian Department of Primary Industries
Land Management Tenders	Price	Auction	Liverpool Plains, NSW	Water, salinity and biodiversity	Committee is the purchaser of NRM actions by farmers. Bids and differentiated payments were assessed based on environmental benefits indices.	Liverpool plains land management committee
Establishing Landscape Corridors (a)	Price	Auction	Burdekin – Fitzroy, Southern Desert Uplands	Biodiversity	Differentiated payments based on landscape outcomes and the bid in relation to other land for the formation of corridors – lab experiments	Desert Uplands Build up and Diversity committee
Multiple outcome auction of land use change (a)	Price	Auction	Goulburn Broken Catchment, Victoria	Water, salinity and biodiversity	Extends BushTender to auction for multiple outcomes rather than just biodiversity. The metric for exchange and tradeoffs between outcomes is important here.	Victorian Department of Primary Industries
TARGET (tools to achieve landscape redesign giving environmental/economic targets)	Price	Auction	Central West NSW	Water, salinity and biodiversity		NSW Department of Infrastructure, Planning and Natural Resources
Catchment Care (a)	Price	Auction	Mt Lofty Ranges, SA	Water and biodiversity	Differentiated payments. Also looking at cross boundary outcomes	Onkaparinga Catchment Management Board

Project name	MBI type	Instrument	Location/region	NRM issue targeted	Issue/importance/significance	Agency managing pilot
Auction for landscape recovery (a)	Price	Auction	Avon catchment, WA	Salinity and biodiversity	Differentiated payments. Payments also determined based on uniqueness and scarcity of the landscape outcomes to the catchment	World Wide Fund for Nature
CarbonTender	Price	Auction	Gippsland, Victoria	Salinity and biodiversity		World Wide Fund for Nature
Environmental Services Scheme	Price	Auction	NSW	Water, salinity and biodiversity	Competitive tender for differentiated payments for land management changes	NSW Department of Infrastructure, Planning and Natural Resources
West 2000 Plus	Price	Differentiated payments	NSW	Biodiversity and cultural heritage	Differentiated payments ? following a competitive assessment of EOI. Payments provided as a $ for $ grant for on ground works and an annual conservation payment	NSW Department of Infrastructure, Planning and Natural Resources
Envirofund	Price	Subsidies	Australia wide	Water, salinity and biodiversity	Grant based on application	Australian Government Departments of Agriculture, Fisheries and Forestry and the Environment and Heritage
NHT Indigenous protected areas program	Price	Grant	Australia Wide	Biodiversity and cultural heritage	Funding allocated after an agreed voluntary conservation agreement (negotiated payment)	Australian Government Departments of Agriculture, Fisheries and Forestry and the Environment and Heritage
Landcare and water facilities deductions	Price	Tax	Australia wide	Water, salinity and biodiversity	Tax deduction based on application	Australian Government Departments of Agriculture, Fisheries and Forestry and the Environment and Heritage
Conservation Covenants	Price	Tax/rebate	Australia wide	Salinity and biodiversity	Tax deduction for land donation to environmental organisation, income tax deduction for reduced land value because of conservation covenant.	Australian Government Departments of Agriculture, Fisheries and Forestry and the Environment and Heritage

Project name	MBI type	Instrument	Location/region	NRM issue targeted	Issue/importance/significance	Agency managing pilot
Water Trading	Price	Cap and trade	Most regulated rivers	Water and in some cases salinity		Australian Government Departments of Agriculture, Fisheries and Forestry
Hunter salinity trading scheme	Quantity	Cap and trade	Hunter Valley, NSW	Water and salinity	Described previously	NSW Department of Environment and Conservation
Tradeable net recharge contracts (a)	Quantity	Cap and trade	Coleambally Irrigation area, NSW	Water and salinity	Allocate property rights to recharge which is also capped. Agents can trade credits created by land management changes	CSIRO Sustainable Ecosystems
Cap and Trade for Salinity (a)	Quantity	Cap and trade	Lower Murray	Water and salinity	Experimental economics	Victorian Department of Primary Industries
Creating the potential for offset trading (a)	Quantity	Offsets and cap and trade	Emerald irrigation area/lower Fitzroy River, Qld	Water and salinity	Cap pollution permits and allow trading of credits achieved through offset initiatives	Central Qld University
Green Offsets (a)	Quantity	Offsets	NSW	Water and salinity	Exploring the cost effectiveness of allowing an expanding point source polluter to offset impacts	NSW Department of Environment and Conservation
Biodiversity Offsets	Quantity	Offsets	Sth Australia	Biodiversity		South Australian Department of Water, Land and Biodiversity Conservation
Native vegetation offsets	Quantity	Offsets	Victoria	Native vegetation	Impacts on native vegetation must be offset. Metric is 100:1 to encourage avoid and mitigate impacts before offsetting used.	Victorian Department of Sustainability and Environment
BushBroker	Quantity	Trade/offset	Victoria	Native vegetation	Provide the ability for any private landholder to make native vegetation available for offset function	Victorian Department of Sustainability and Environment
Commercial and environmental forestry	Market friction	Leveraging private investment	Goulburn Broken Catchment	Water, salinity, biodiversity and other		Australian Government Department of Agriculture, Fisheries and Forestry

Project name	MBI type	Instrument	Location/region	NRM issue targeted	Issue/importance/significance	Agency managing pilot
Conservation insurance (a)	Market friction	Risk Management	Lower Murray, SA	Water salinity and other	Researching if NRM insurance can reduce risk enough to encourage investment in better landscape management	South Australian Department of Water, Land and Biodiversity Conservation
Greenbank (a)	Market friction	Leveraging private investment	Australia	Water, salinity, biodiversity and other	Discussed in table above.	Greening Australia
Pastoral ecolabelling	Market friction	Product differentiation	Qld	Water, salinity and biodiversity	Product differentiation based on sustainable land management practices.	Queensland Department of Primary Industries and Fisheries

Source: adopted from Natural Heritage Trust (2005) and RIRDC and JVAP 2004.
(a) funded by NAPSWQ under the National Market Based Instrument Pilots Program

5. Conclusions

Whilst environmental and cultural goods are important to our very well being, our demand for these goods is not reflected in the current market framework. As a result consumers of these goods are not able to signal their demand to producers and producers are not rewarded for the supply of such goods. An undersupply of these goods often results. The most prominent reason why markets rarely exist for environmental and cultural goods is the inability to define and enforce ownership of these goods, a result of a lack of fully defined and enforceable rights to these goods.

MBI's are one way for government to bring about an increased level of supply of environmental goods. MBIs encourage certain behaviours such as the provision of an environmental good through market signals rather than through explicit directives such as regulation. MBIs operate primarily by allocating property rights and allowing rights to be voluntarily exchanged. MBIs effectively alter the payoffs faced by land managers for various land management actions. MBIs in Australia are commonly categorised as price based, quantity based or occurring as market friction. MBIs are receiving increasing attention in Australia as they have the potential to deliver NRM outcomes at lower cost to government and market participants than many alternative instruments.

That said, MBIs are not the panacea for all environmental problems. Some learnings from pilots and trials of MBIs for environmental outcomes are revealing that for an MBI to be effective there needs to be heterogeneity in the biophysical and land management landscape to enable gains from trade, the costs of engaging in the MBI must be less than the benefits and the community must have the capacity to run and participate in the MBI.

6. References and further reading

Alexnder, B. 2000. *The new frontiers of ranching: Business diversification and land stewardship*, The Sonoran Institute.

Coggan, A., Whitten, S.M., Langston., A. 2005. Nesting MBIs in current institutions and structures – can it be done and what are the implications? Paper presented at the 49th Annual Conference of the Australian Agricultural and Resource Economics Society, Coffs Harbour 8-11 February 2005.

Murtough, G., Arentino, B. and Matysek, A., 2002. *Creating Markets for Ecosystem Services*, Productivity Commission Staff Research Paper, Ausinfo, Canberra.

National Action Plan for Salinity and Water Quality: http://www.nrm.gov.au/publications/nrm-mbi/pubs/nrm-mbi.pdf

Rural Industries Research and Development Corporation (RIRDC) and Joint Venture Agroforestry Program (JVAP) 2004. *Market based tools for environmental management, proceedings of the 6th annual AARES national symposium, 2003*. Edited by Whitten, S, M., Carter, M and Stoneham, G.

Shelton, D., Whitten, S, M., Langston, A. 2004. *Market Based Instruments: A rapid assessment technique fir identifying the potential for MBI application,* Working Paper of CSRIO Sustainable Ecosystems, Canberra.

Stoneham, G., Chaudhri, V., Ha, A., Strappazzon, L., 2004. "Auctioning conservation contracts: evaluating Victoria's BushTender Trial" in in *Market based tools for environmental management, Proceedings of the 6th annual Australian Agricultural and Resource Economics Symposium, Canberra.*

Salzman, J., Whitten, S., Proctor, W. and Shelton, D., 2003. *Investing in Natural Capital: an ecosystem services approach,* Working Paper of CSRIO Sustainable Ecosystems, Canberra.

Van Bueren, M., 2001. *Emerging Markets for Environmental Services: implications and opportunities for resource management in Australia,* RIRDC publication No 01/162, Canberra.

Whitten, S, M., Salzman, J., Shelton, D. and Proctor, W., 2003. Markets for ecosystem services: Applying the concepts, Paper presented at the 47th Annual Conference of the Australian Agricultural and Resource Economics Society, Fremantle.

Whitten, S, M., van Bueren, M. and Collins, D., 2003. "An Overview of Market Based Instruments and Environmental Policy in Australia", in *Market based tools for environmental management, Proceedings of the 6th annual Australian Agricultural and Resource Economics Symposium, Canberra.*

Whitten, S, M., Salzman, J., Proctor, W. and Shelton, D., 2003. *Markets for ecosystem services: Applying the concepts,* Working Paper of CSRIO Sustainable Ecosystems, Canberra.