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Acknowledgement

Funding for this publication was provided by the the National Action Plan for Salinity and Water Quality under the National Market Based Instruments Pilot Program.

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National Action Plan for Salinity & Water Quality

Report for Round 2 of the
National Market Based
Instruments Pilot Program
Economics Evaluation Report

March 2009

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Abbreviations and Acronyms

AT	Assessment Team
MBI	Market Based Instruments
NMBIPP	National Market Based Instruments Pilot Program
SAP	Selection Advisory Panel

Executive Summary

Policy implications

From the research undertaken in Round 2, the following key messages can be delivered to policy makers:

- § MBIs are feasible;
- § MBIs need to be tailored;
- § MBI design is context-specific;
- § There is no 'right' or one size fits all metric;
- § There are institutional constraints to many rights based MBIs and these were not considered under Round 2 as the focus of proposals received was mainly on the implementation of price based MBIs; and
- § There are wider policy lessons that can be inferred from Round 2 pilots, but these were generally not explored thoroughly in the research.

If government wants to use rights based MBIs (that is, move current MBI practice beyond tenders), a greater focus needs to be placed on identifying the institutional arrangements required to support the effective use of these tools. This issue was not comprehensively covered by the projects in Round 2.

It is essential for policy makers to understand the issues that they are trying to address before assessing the potential application and role of any MBI in achieving a policy outcome.

Knowledge gaps

The Round 2 pilot projects did not quantify the efficiency gains of MBIs compared to other policy instruments. This is still a major information gap. This should be a key component of the evaluation of MBIs.

The cost-benefit of implementing an MBI for a particular natural resource management issue was not raised within the Round 2 projects. This was not an explicit requirement of the Round 2 projects. However, good policy development requires an assessment of the goal or objective. MBIs are one way of potentially achieving a goal. An appropriately designed MBI may have the effect of lowering costs the community and this saving should be articulated in evaluation. Examples of approaches that have been used to demonstrate the benefits of an MBI over alternative policies are not widely available.

Future Directions

The Round 2 MBI pilot projects, in most cases, did not address the current status and institutional frameworks as many of the price based MBIs do not require significant underlying change to the regulatory environment. Round 2 MBI pilot projects that were based on rights (eg offsets) worked within an existing regulatory framework. Specific research into the institutional reforms required for rights based instruments warrants consideration at a national level.

Some MBIs pilot projects have indicated that MBIs have the potential to be more cost effective in delivering NRM outcomes than current approaches. This issue still requires testing across a range of contexts and circumstances.

Round 2 has assisted in advancing the capacity of regional natural resource management bodies to implement tender based MBIs. Any future work in this area should involve determining scope, scale, and the resource requirements of any co-ordinated approach to implementing tender MBIs.

The future ability to implement rights based MBIs, such as cap and trade mechanisms, requires investigation in partnership with the jurisdictional agencies that are responsible for the relevant regulatory policies as these are likely to involve alterations to institutional arrangements and issues.

The approach used for Rounds 2 of the NMBIPP was highly reliant on the pilot proponents proposing particular projects to address identified national information gaps in designing and applying MBIs. This created a risk that key policy issues would not be addressed. In future, it may be prudent to define specific projects and have researchers address them, i.e. a commissioning approach. This would ensure that projects address the required breadth of policy issues.

A scoping of the role of quantity based MBIs (including identification of underpinning causes of NRM problems, issues, essential elements of design and locations that may be most suitable) would enable a more comprehensive testing of MBIs beyond the Round 2 emphasis on price based MBIs.

A strategy should be implemented to ensure the lessons from Round 2 Pilot Program are communicated to relevant organisations that are responsible for price based MBI design and implementation.

1. Introduction

1.1 Background

GHD Hassall, as managers of Round 2 of the Natural Resource Management Ministerial Council's National Market Based Instruments Pilot Program (NMBIPP or 'the MBI Program'), under the National Action Plan for Salinity and Water Quality, has prepared a summary report for the MBI Working Group that communicates:

- § A description of the Round 2 projects;
- § Projects' findings; and
- § Policy implications (as reported by projects).

It was agreed by the MBI Working Group that an evaluation of the pilot projects focusing on the extent to which each pilot project addressed the priorities for Round 2 of the Program, should be reported separately to the summary that has already been provided.

1.2 Purpose of this report

The purpose of this report is to provide an independent evaluation of the project findings of each of the projects involved in Round 2 of the MBI Program, against the objectives of Round 2. GHD Hassall was asked to establish an independent review panel to assist in outline important learnings from NMBIPP. The report is **confidential and is for the use of the MBI Working Group**.

1.3 Methodology

GHD Hassall held a technical review workshop on the 9th January 2009. Several consultant economists, who have a sound knowledge of MBIs and the Program, were invited to attend the workshop. These consultants were independent from the MBI projects and agencies involved. GHD Hassall's role was to host the workshop, and present the workshop findings in a report to the MBI Working Group. A list of workshop participants is provided in Table 1.

Table 1 Technical review workshop attendees

Attendee name	Organisation
Drew Collins [#]	BDA Group
Rob Gillespie	Gillespie Economics
Jim Binney [^]	Marsden Jacob Associates
Darryl Harvey [*]	MBI Working Group
John Madden	Arche Consulting
Warren Musgrave	GHD Hassall
Emily Ray	GHD Hassall

^{*} Darryl Harvey attended the workshop on behalf of the MBI Working Group, to observe the proceedings. [^] Jim Binney was involved in the MBI Capacity Building project. [#] Drew Collins was on the Selection Advisory Panel for Round 2.

Table 2 lists the projects funded under Round 2 of the MBI Program.

Table 2 List of Round 2 MBI projects

Project	Abbreviation
R2-12 Auctions and beyond: enhancing the cost effectiveness of the Catchment Care program (CSIRO through its Division of Land and Water)	Catchment Care
R2-14 Targeting Environmental Flow Sourcing for Salinity Benefits (CSIRO through its Division of Land and Water)	Environmental Flow Sourcing
R2-15 Designing auctions with outcome bonuses: An application to ground nesting birds in the Murray Catchment, NSW (Murray Catchment Management Authority)	Auctions with Outcome Bonuses
R2-20 Multiple Environmental Instruments: Offsets with Auctions (Department of Sustainability & Environment, Victoria)	Offsets with Auctions
R2-23 Auction for Landscape Recovery Under Uncertainty (University of Western Australia)	Auctions Under Uncertainty
R2-38 Incentives for water quality improvements across pastoral and farming activities (Central Queensland University)	Conservation Tenders in the Burdekin
R2-46 Improving Water Quality Discharge from the Lockyer Creek (Griffith University)	Water Quality Discharge from Lockyer Creek
R2-48 Issues of enforcement and regulation in the application of market based instruments (Griffith University)	Enforcement and Regulation
GA Farming Finance: Creating Positive Landuse Change with an NRM Leverage Fund (Greening Australia)	NRM Leveraging

2. Evaluation Criteria

2.1 The National MBI Pilot Program

The National MBI Pilot Program sought to increase Australia's capacity to use MBIs in managing natural resource issues, in particular to address the problems of salinity and water quality. The overall aims of the Program are to:

- § design and test new policy mechanisms relevant to a broad range of NRM and environmental issues;
- § evaluate these options; and
- § communicate with both Government and the broader community the future potential for MBIs.

2.2 Round 1 of the NMBIPP

The following findings from Round 1 which were considered to be prerequisites for successful application of MBIs:

- § Sound economic theory must be the starting point for MBI design;
- § MBIs should be supported by good science that is transparent, replicable and evidence-based;
- § Strong links between skilled economists, scientists and field officers are required for MBI design and implementation; and
- § MBIs should engage all of the relevant parties in a way that achieves outcomes at minimum cost.

2.2.1 Round 2 NMBIPP Research Priorities

Priorities for Round 2 were inferred from two sources: Evaluation of Round 1 of the Market Based Instrument Pilot Program (Grafton 2005) and The National Market Based Instrument Pilot Program Round One: An Interim Report (NMBIPP Working Group 2005).

The priorities from Grafton (2005) were:

- § Pilots that assist the move of MBIs from trial to implementation, such as through capacity building, the development of guidance materials or providing insights into means of overcoming common implementation barriers;
- § Pilots that assist in developing trading instruments (such as offsets and cap and trade schemes), particularly between point and diffuse sources and / or through the use of intermediaries such as offset banks;
- § Testing the relative merits of price versus quantity based instruments, particularly in the face of uncertainty associated with environmental outcomes;
- § Testing whether a mix of MBIs offers a more cost-effective approach to conservation than a single MBI approach;
- § A comparison of the merits of input/output/outcome-based metrics;

- § Testing the robustness of MBIs in alternative contexts, such as scale, landscapes, industries, agency capacities, institutional settings, etc;
- § The development of MBIs applicable to:
 - multiple goods;
 - interdependent goods;
- § The linking of offset instruments with auctions or cap and trade instruments; and
- § Improving auction contract design to support monitoring and enforcement.

These were used to provide a set of selection criteria to the Selection Advisory Panel (SAP).

2.2.2 Selection Advisory Panel - Selection Criteria

The following criteria were used for the selection of Round 2 Projects:

- § Does the project address relevant issues and focus on National Action Plan regions?
- § Does the project address priority knowledge gaps, as identified in the Independent Evaluation Report and the Overview Report of the Market Based Instrument Working Group?
- § Is the project conceptually robust and well grounded in economic and scientific principles, and supported by appropriate data?
- § Does the project engage relevant agents (e.g. Catchment Management Associations)?
- § Does the project team have the necessary skills, experience and knowledge?
- § Does the project include appropriate strategies for evaluation?
- § Will knowledge from the project be relevant to other Australian jurisdictions?

It is interesting to note that the SAP identified three future issues that they considered would not be answered by the project based approach to Round 1 and 2 Pilots:

- § How do MBI's best fit into a broader environmental strategy?
- § Where MBI's are appropriate, what instruments work where? and
- § Transaction costs.

Criteria used in Round 1 to assess the broad class of MBI mechanisms funded under the Round 1 Pilot Program are also relevant to Round 2. These criteria outlined questions such as cost-effectiveness relative to alternatives, ease of adoption and participation, current implementation status, and implications for regulatory and institutional frameworks.

3. Round 2 Evaluation Comments

3.1 Program Evaluation – comments from technical review workshop

This section provides an overview of the comments provided by the economists at the technical review panel. The comments attempt to identify and summarise key lessons of the programme and provide commentary on context.

Approach

Round 1 of the MBI Pilot Program had a strong emphasis on research. The aim of Round 2 of the Program was to work towards implementing this research in the ‘real world’. Some progress has been made towards achieving this aim through partnerships (e.g. Central Queensland University’s pilot assisting the Burdekin Dry Tropics Board to allocate funds via their auction). However, Round 2 remained research-focussed. CSIRO and universities provided the vast majority of researchers (and therefore the program built design capacity in these institutions).

Focus

The recommendations included in Quentin Grafton’s evaluation of Round 1 of the Program were focussed on tenders. This had an influence on the SAP’s selection of projects for Round 2, as many auction-based proposals were submitted. This can be partly explained by the timeframes, as implementation of a quantity based MBI would be expected to have a significant lead time. Additionally, policies that involve changes to rights may be harder to ‘trial’.

The focus of the pilot projects was often the feasibility of the specific approach or instrument that was under consideration within each project.

Experimental economics was also prevalent when the Program began.

Institutional arrangements constrained the scope of Round 2

The focus on implementation with partners at the CMA level meant that Round 2 pilot projects generally worked within current institutional settings, thereby constraining the issues that could be investigated (i.e. the current institutional arrangements allow for tender-based mechanisms, but often make it difficult / impossible for other instruments, eg cap and trade).

Note that offsets could be investigated in Victoria because the current Victorian legislation allows these.

A key question identified by the workshop attendees that policy makers should ask when considering MBIs is - what institutional arrangements / reforms are required for the effective implementation of a MBI? In many cases the wider context of policy reform is not addressed. This was recognised in parallel to Round 2, and the Capacity Building project did address these issues to some extent.

Metrics

Many of the Round 2 pilot projects had a focus on metrics / indices / other technical detail, rather than writing up the evaluation component of their research with the current policy context in mind.

The focus on technical aspects is often driven by the emphasis on partnerships and the associated need to address a specific issue that is relevant to the partner who is

responsible for natural resource management. In many cases the focus on indices may have been driven by the need to provide a comprehensive basis for a ‘new approach’, where many other environmental management interventions are based on less robust information. It is noted that implementation of MBIs often attracts a greater focus on metrics and ‘good process’ that is at a standard above that used for alternative policies such as regulation, works or simple grants.

Lack of resource condition data can mean some indices provide a false precision to management of resources. This lack of data may be seen as a reason not to use a market based approach; however, as mentioned previously, the lack of data does not serve as a barrier for other policy interventions. A focus on metrics when designing an MBI may be counterproductive as continuing current policies may also suffer from lack of data, though this is often not explicit.

Efficiency of MBIs

MBIs offer a theoretical promise of efficiency gains. However, no project comprehensively compared the relative efficiency of different options, including the status quo.

The lack of a base case for the quantification of efficiency benefits was often not established within the project proposals. This has been one of the areas of limited progress from Round 2 and will limit the usefulness of the results in policy discussions

Table 3 General comments of the workshop panel against selected policy criteria

Criteria	Comments on contribution of Round 2 projects
Cost-effectiveness relative to alternatives	The Round 2 projects provided little direct evidence as to the cost effectiveness of alternatives. In many cases this was due to a lack of a base case or alternative being specified. There was a focus on ‘good’ design of an MBI to address a natural resource issue, rather than a comparison to alternative approaches.
Ease of adoption and participation	The Round 2 projects provided significant information on the ease of adoption of approaches within CMAs and also the affect on landholder participation of various approaches to tenders.
Implementation status	The implementation of tenders remains limited to the project-level.
Implications for regulatory and institutional frameworks	The implications for regulatory and institutional frameworks of Round 2 were not significant as they worked within current legislative boundaries. In the case of tenders, the current frameworks did not require modification to allow their implementation. Similarly, the offsets policy in Victoria currently exists. Institutional issues have only been a very minor focus of the NMBIPP.

In future research funding focussing on MBIs, it would be advisable to ensure there is a person versed, or responsible for, policy development associated with each project teams. This person should represent the interests of users of the research to ensure the pilots are 'grounded' in the wider policy context.

It was a strong feeling of the technical review team was that issues that are targeted by MBIs still require an assessment of the goals of natural resource management. This cost benefit framework would facilitate discussion and consideration of achieving a target, and enable a better assessment of potential roles of MBIs. In many cases, the lack of articulation of a base case is associated with little effort dedicated to a description of the natural resource issues targeted and of the relevance of the project to it.

There was little articulation of further research needs across the projects. This, in part, may be driven by the realisation that MBIs are very location and issue specific, thus making the drawing of general conclusions of this nature difficult.

*Project by
project
comments*

The next section outlines comments and observations made by the workshop panel for each project.

4. Project Specific Comments

4.1.1 R2-12 – Catchment Care

Project Name	Project Purpose
Auctions and beyond: Enhancing the cost effectiveness of the Catchment Care program	The project aimed to improve the cost-effectiveness of the round one pilot through: a) enhanced measurement of environmental benefits and b) the use of an improved bid selection algorithm that incorporates biophysical synergies and landholder bids. The pilot considered a number of auction design alternatives such as one price versus price discriminating formats and participation incentives.
Location	South Australia

Summary of relevant findings to policy

- § Well-designed tender processes can be more cost-effective than bi-lateral negotiated programs. However, there are significant challenges in implementing tenders which should be taken into account by regional bodies if considering the adoption of a tender approach.
- § Managing the human resources involved in data collection is a major consideration in tender design.
- § Tenders may be a less popular option in some landholder communities. Participation rates may be lower for a tender than bi-lateral negotiation schemes.
- § The experimental economics sessions identified a uniform-second-price tender as the optimal market architecture to achieve cost-effectiveness; however the Adelaide Mount Lofty Ranges Board felt it was too complex an architecture to explain and rationalise to landholders.

Assessment team comments

- § Many of the conclusions are not robustly supported by the research.
- § Limited resources in the regions, therefore the approach taken is open to being influenced by the skill set in the regional body.
- § Tried to address the implementation question but does not necessarily achieve a comprehensive assessment.
- § Illustrates the importance of tailoring auction design to resources, community capacity and data availability.

4.1.2 R2-14 – Environmental Flow Sourcing

Project Name	Project Purpose
Targeting Environmental Flow Sourcing for Salinity Benefits	The pilot aims to develop a mechanism that will source water to improve river salinity and infrastructure reconfiguration. It tested alternative auction structures that might be used to integrate the different demands placed on irrigators. The project also tested alternatives to encourage high rates of participation.
Location	Victoria

Summary of relevant findings to policy

- § The study estimated that twice the regional economic activity is possible with 40% less water in an optimally reconfigured regional economy.
- § Realising the full potential multiple benefit outcome from a targeted buy back of water entitlements (that is feasible in the region) would require a broadly coordinated set of policy measures to be implemented at Local, State and Commonwealth levels where water entitlement purchases are being sought and further salinity mitigation investments are planned.
- § Expressions of interest should be sought from private or public / private investment organisations / syndicates for pilot projects to ascertain the degree to which multiple outcomes can be delivered in irrigation areas undertaking reconfiguration plans.
- § The findings in this pilot study can provide strategic insight in developing policies that lead to additional salinity, environmental and system reconfiguration benefits.

Assessment team comments

- § All predicated on an institutional structure being in place to stop water being traded back into the region it came from, but this policy structure is not in place (to protect the investment).
- § A market based instrument has not been developed which limits the lessons for NMBIPP. The outcomes are based on a strategic planning and multi-criteria analysis.
- § The project involved examining multiple benefits, but, there is no comparison with a strategy targeting each benefit individually.
- § It is assumed the other environmental benefits were not already internalised in other markets, e.g. salinity and water.
- § Do not know how the benefits have been weighted –there are concerns that approaches rely on a small group of practitioners developing the social weights that change the outcomes of the analysis.

- § There was no discussion of structural adjustment policies that are planned under current water policy.
- § Relied on the idea that because it is a water market, they were investigating a MBI- this is not the case.

Summary

This project suffered the most from the lack of a legislative foundation for the possible MBI that was articulated in the project proposal.

The changes in institutional responsibilities, and lack of an automatic protection mechanism to enable the capture of benefits of targeting multiple benefits by purchasing water, highlights the need to understand the constraints of MBIs as a functioning market rather than a step in a strategic planning process.

4.1.3 R2-15 – Auctions with Outcome Bonuses

Project Name	Project Purpose
Designing auctions with outcome bonuses: An application to ground nesting birds in the Murray Catchment NSW	The pilot aimed to improve the design of conservation contracts auctioned to private landholders. In particular, it proposed to test alternative input-based and outcome based contracts.
Location	New South Wales

Summary of relevant findings to policy

- § For the Nest Egg tender, the use of outcome based contracts is estimated to have saved at least one third of total expenditure compared with input based contracts.
- § Monitoring outcomes reduces the costs of modelling the predicted outcomes from management actions. These wider benefits and costs of the monitoring strategy need to be considered in deciding on the implications of monitoring costs for policy design.
- § Landholders are willing to enter into conservation contracts that include outcome based payments.
- § Outcome based tenders provide landholders with incentives to reveal privately held information about the biodiversity assets on their land. This incentive appears to have resulted in landholders providing new and valuable information on bird populations.
- § Two potential impediments of outcome based contracts may limit their application:
 - the practicality and cost of defining and monitoring outcomes; and
 - the willingness of landholders to bear the risk of outcome based payments.

§ The practical implications of this research for the design of conservation tenders are that contract design matters and that outcome-based payments should be incorporated into tender contracts. There are limits the development of general principles about how contracts should be constructed. Ultimately contracts need to be designed on a case by case basis and require a mix of contract design expertise and expert knowledge of the natural system.

Assessment team comments

- § This project achieved its objectives. It is rigorous, the report was well written, and assessed whether outcome based contracts are suitable across a range of criteria. It addressed directly and clearly an objective of the program.
- § There are significant lessons in contract design and structure.
- § Investigated the concept of revealing hidden actions (i.e. by managers to achieve outcomes that may not be recognised by input based contracts).
- § This project has found that an outcomes focus is not incompatible with the use of tender based MBIs.

Summary

The project effectively demonstrated the advantages of an outcomes based approach to MBIs.

The outcome bonuses are meant to address moral hazard and adverse selection problems. The existence of these issues and extent of possible hidden actions could be scoped before adopting a similar outcome based approach for auctions.

The project successfully implemented an auction MBI that targeted a specific biodiversity issue using local catchment management staff.

4.1.4 R2-20 – Offsets with Auctions

Project Name	Project Purpose
Multiple Environmental Instruments: Offsets with Auctions	The pilot aimed to develop a process to design and refine offset markets. The pilot proposed to use experimental economics to test and refine various elements needed to operate a successful offset market. It examined the use of auctions to organise landholders on the supply side of the offset market and to explore how developers (buyers of offsets) interact in a formal offset market.
Location	Victoria

Summary of relevant findings to policy

- § Subtle differences in the institutional rules of different markets may result in large differences in efficiency and the extent to which institutions can overcome economic and policy complexities.
- § Environmental markets are, however, different from ordinary commodity markets.

Government intervention may be required to determine the metrics, define trading rules, and design contracts and a market mechanism that facilitates beneficial transactions. Intervention can result in reduced time to:

- find approved assessors of native vegetation;
- study and understand the 'like-for-like' rules;
- find a matching buyer/seller;
- negotiate a price;
- administer and monitor contracts due to their standardised nature; and
- sell/buy residual assets.

Assessment team comments

- § The report is not written for a policy audience.
- § Contract design and outcome based metrics were examined. These were particularly meritorious features of the project.
- § Need efficient sharing of risk (between the landholder and the agency involved).
- § Need an 'out' clause (in the case of events that are beyond the landholders' control), so that the risk is not elevating bid prices.
- § Comparison of bilateral versus multilateral exchange mechanisms was valuable as an offset scheme could become a significant barrier to development if the transaction costs of bilateral exchanges were prohibitive or unworkable.

Summary

The project was well conducted and highlighted the issues associated with an MBI that has been evolving over a long period in Victoria (bio-diversity offsets) within a legislative framework that allows its implementation.

It should be noted that the project team have had a long involvement in developing aspects of this policy.

4.1.5 R2-23 – Auctions Under Uncertainty

Project Name	Project Purpose
Auction for Landscape Recovery Under Uncertainty	The pilot aimed to build on the results of the Round 1 pilot (Auction for Landscape Recovery) by: a) exploring improvements that might be made to auction and contract design particularly in the light of uncertain outcomes; b) exploring alternative ways of ranking contracts received in an auction to better reflect uncertainty and incomplete information available about species persistence; and c) improving the way contracts are monitored in situations where the actions of landholders are difficult to observe.
Location	Western Australia

<i>Summary of relevant findings to policy</i>	<ul style="list-style-type: none"> § Landscape scale conservation policy should assess the likelihood that actions are successful, possibly by using historical data such as the Landsat image archive. § Outcome-based contracts should be considered in the design of conservation auctions as they have desirable incentive properties and overcome the moral-hazard problem associated with input-based contracts. The participation problem may be addressed, if necessary, by offering an initial certain payment as well as an outcome-based payment. § In terms of market based instruments, there is significant potential in outcome-based contracts to increase cost-effectiveness, from the evidence of the experiments and the landholder survey. § The timing and frequency of monitoring to determine the status of a conservation scheme should depend upon monitoring costs, the expected rate of change in biodiversity condition and the value of the bush fragment.
<i>Assessment team comments</i>	<ul style="list-style-type: none"> § The project showed that an outcomes-based approach is possible. § These outcomes are based on experimental evidence. § The study reiterated that landscape scale conservation policy should assess the likelihood that actions will be successful. That is, an MBI should be placed in its policy context.
<i>Summary</i>	<p>The project provided some support for the contention that outcomes based contracts should be considered when designing tenders.</p> <p>There was a lack of quantification of alternatives and a strong focus on metrics which could have served as a foundation for this comparison.</p>

4.1.6 R2-38 – Conservation Tenders in the Burdekin

Project Name	Project Purpose
Optimising the efficiency of conservation tenders under varying degrees of heterogeneity	The pilot aims to explore alternative ways of improving participation rates in an auction. The pilot examined the tradeoffs associated with: a) broadening the scope of an NRM program (thereby attracting more participation) and b) sharpening the NRM focus (reduced participation). The pilot also aimed to develop a diverse set of MBIs for implementation in the Burdekin dry tropics area.
Location	Queensland

Summary of relevant findings to policy

- § The key implication of this study in the policy context is that larger scale tenders may generate major efficiency gains if there is a broad scope of activities across different contexts, and if care is taken to maintain landholder participation and avoid excessive bid levels.
- § There are large efficiency gains from ensuring the funding scale is tailored to achieve adequate levels of competition.
- § Increasing the scope may be counterproductive if there is not a specific effort to ensure participation and provide appropriate monitoring.
- § The results of this study suggest that the largest efficiency gains are to be found in increasing scope across the type of environmental services required and the industries involved, rather than across broad geographic regions.
- § Focusing the scope of tenders too narrowly, or misjudging the scale of funding relative to scope, can generate substantial inefficiencies. Policy makers have to also consider the design costs, transaction costs and indirect impacts that may counterbalance efficiency gains in moving to larger scale and scoped tenders.

Assessment team comments

- § Very relevant to the real world, applicable to the current context.
- § The on-ground approach, with regional body involvement, was valuable.
- § A lot of value judgments are underpinning the environmental scores. Such a practice may result in undesirable subjectivity. This was not, however, the primary focus of the project.
- § The project recognised, importantly, that big is not necessarily better, and that there are trade-offs.
- § The outcomes of the project were illustrative of the need to consider design of MBIs. What seems to be a simple auction process may lose potential efficiency gains by being too big or too broad.
- § The project should have explored the scope for generalisations arising from the results to other context where auctions may be implemented.

Summary

The project successfully implemented an MBI in conjunction with a catchment management authority.

The project also provides an appropriate set of questions to ask when considering the scale and scope of a tender-based MBI.

The project provides a significant contribution to testing the applicability of MBIs in complex, real world situations.

There are significant and immediate policy lessons from this project for the Reef Rescue Program.

4.1.7 R2-46 – Water Quality Discharge from Lockyer Creek

Project Name	Project Purpose
Improving Water Quality Discharge from the Lockyer Creek	The pilot aimed to develop a market based instrument to manage nutrient pollution in the Lockyer Creek caused by land use practices.
Location	Queensland

<i>Summary of relevant findings to policy</i>	§ Targeting management practice yields higher levels of abatement outcomes than targeting outcomes.
	§ For the scenarios evaluated, landholders are likely to be better off financially under a market-based instrument than the command and control equivalent.
	§ Market-based instruments could be used to deliver water quality improvements at substantially lower costs than an equivalent command and control regulatory approach in the Lockyer Creek catchment.
	§ Targeting management practices (riparian vegetation) rather than abatement will result in superior outcomes.
<i>Assessment team comments</i>	§ Outcomes contracts are not necessarily the best option for many diffuse pollutants. Some of the conclusions are not wholly aligned with the statements within the report. In some cases there is no statistical difference according to results.
	§ It is noted that impacts on water quality from diffuse sources is a difficult parameter to assess successfully.
	§ The project would have been improved if the reasons behind landholders accepting scenarios had been investigated or documented.
	§ Claims that the project has made a comparison to command and control, but no evidence of this.
	§ Results are not as powerful as many of the conclusions suggest.
<i>Summary</i>	The project is based on experimental economics and modelling, and translating lessons to policy may be difficult.

4.1.8 R2-48 – Enforcement and Regulation

Project Name	Project Purpose
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Issues of Enforcement and Regulation in the Application of Market Based Instruments	The aim of this project was to explore enforcement and regulation strategies that agencies can employ to improve compliance in water quality point and diffuse trading schemes. For point sources, evidence to date suggests that the price of permits in the market, rather than the characteristics of the firm, determine its compliance choices, which has important implications for how these programs should be enforced. The focus of this project was to evaluate enforcement and regulation strategies in point-source trading programs.
Location	Queensland

Summary of relevant findings to policy

- § Trade has the potential to increase compliance with environmental targets. Compliance becomes financially viable for some emitters with trade than would have been possible without trade.
- § It is important to consider who is liable for variations in realised emissions. Fewer credits are produced when non-point sources are liable for stochastic variation in realised emission levels compared to situations where point sources are liable, or there is high variation between nominal and actual emission levels.
- § Community awareness of non-compliance may inhibit trade and lead to strategic pricing in retaliation to a lack of contribution by others to solving a common pool resource problem.
- § Auditing and regulating is central to the success of every MBI. A zero or low probability of audit is likely to result in ineffective schemes and no incentive to trade. It is critical that enforcement and regulation issues be considered explicitly for any MBI.
- § Without well-crafted enforcement and regulation schemes, MBIs are likely to fail.
- § Further research is required to develop and test enforcement and regulation schemes across the variety of natural resource markets that exist and could evolve as MBI schemes in Australia mature.

Assessment team comments

- § The type of study that needs to be done, but many of the arguments or propositions are not substantiated.
- § How do you craft policies for enforcement? The research paper does not provide answers to this.

Summary

A key policy issue could have been investigated by this project, but the implementation fell short of the objective and promise.

4.1.9 Greening Australia - NRM Leveraging

Project Name	Project Purpose
NRM Leveraging	This project focused on testing and the dissemination of learnings from a leverage based approach to securing natural resource management outcomes provided through sandalwood production and biodiversity plantings within south-east Western Australia.
Location	Western Australia

<i>Summary of relevant findings to policy</i>	<p>§ Leverage approaches have advantages over alternative instruments in identifying, refining and testing innovative resource management options providing environmental benefits.</p> <p>§ Leverage approaches are likely to be more cost effective than grant based approaches where innovation and implementation risks are significant, or where financial returns to public investors is close to or above the long term bond rate.</p> <p>§ The real world testing of the leverage approach through the biodiverse sandalwood project has highlighted that leverage investment can overcome the 'incentive gap' through providing financial support for innovative projects aimed at delivering commercial and environmental outcomes.</p>
<i>Raises issues of MBI definition</i>	<p>§ It is questionable whether a leverage fund is a MBI – it is a subsidy with little evidence of competition or market based elements in the funding decision or project selection. This is a lesson in itself.</p> <p>§ The project report did not provide evidence as to whether the role of government funds actually has an effect on leveraging more funds than what would have been contributed anyway.</p> <p>§ Very costly to establish institutional arrangements, therefore would not do this again unless it was on a much larger scale. Questionable as to why a new institution was established - Greening Australia may have done this type of project themselves (under their own banner)?</p>
<i>Summary</i>	<p>This project has little foundation in economic theory and the focus of this research was on the distribution of funds to establish a plantation. Many of the statements of benefits are not adequately supported with evidence. In effect, the leveraged fund is a subsidy. There are many forms that a subsidy can take and the transaction costs and risk involved with selecting and managing individual projects and associated funds would likely outweigh any benefits of alternative approaches to government involvement.</p>

5. Summary & Policy Implications

5.1 Summary

5.1.1 MBIs

MBIs in Australia

The Australian Government recognised that while the use of MBIs in natural resource management in Australia is in its infancy, but that they have the potential to provide a substitute or complementary approach to current policy tools.

Many of the MBIs are based on current institutional settings. That is, there are very few examples of rights-based MBIs which are embedded in legislative or program design. Additionally, many are project based, i.e. they have a specific start and end date.

Context of Round 2

Round 2 projects were selected on a set of recommendations based on the results of Round 1. As such, the terms of reference and the selection panel criteria weighted projects that were based on partnership with regional bodies and also focussed on implementation. In the vast majority of circumstances across Australia, regional NRM bodies do not play an active role in formulating legislation and policy that would enable design of an MBI beyond tenders.

Round 2, therefore, was constrained by Round 1 recommendations and the current institutional setting, and in most cases examined specific design elements of MBIs, rather than testings the boundaries of implementing MBIs in the Australian context.

5.1.2 Overview of Round 2

Implementation

The Round 2 projects showed that price based MBIs can be implemented in Australia using the existing natural resource management structures. Half of the new Round 2 projects involved close collaborations with regional NRM staff (4 of 8).

There was a substantial effort in using experimental economics to assess aspects of MBIs, with 4 of the 8 Round 2 projects adopting this approach.

There were three projects that examined design issues without field testing.

Only one project examined quantity based MBIs. This project examined a specific aspect of an existing vegetation offset scheme. No project explored or tried to implement a quantity based MBI at any scale.

The majority of findings from Round 2 have been of a technical nature. In many cases where there were useful policy findings, these were often not investigated thoroughly.

5.1.3 Findings that can be generalised from Round 2

Tenders and Auctions Can MBIs be used for NRM? Yes, if considering auctions / tender schemes - they can be operationalised, however there are design issues that require considered assessment.

MBI design MBIs cannot be 'picked off the shelf'. It is important to tailor any MBI to the specific context. However, the body of research and evaluations of other applications of MBIs can expedite the process of MBI design.

Regards design, in general:

- § Trade-offs exist for a number of MBI design elements.
- § Scope versus scale (big is not necessarily better).
- § There are some good reasons to push for outcome-based metrics; they may be very efficient in some cases (eg where there is significant risk or presence of hidden actions).
- § Monitoring design should not be routine and needs to be strategic.

It should be noted the diversity of MBIs make it difficult to generalise even within the sub-set of the pilot program.

Many and evidence-based findings; project final reports contain too many assertions based on theory without empirical testing. There was no attempt made to define the optimal point (trade-off between complexity and transaction costs).

5.2 Policy implications

From the research undertaken in Round 2, the MBI Working Group should convey the following key messages to policy makers:

- § MBIs are feasible policy tools that can be applied to resolve NRM problems;
- § MBIs need to be tailored;
- § MBI design is context-specific;
- § There is no 'right' or one size fits all metric;
- § There are institutional constraints to many rights based MBIs, these were not considered under Round 2 as there was a focus was on implementation; and
- § There are policy lessons that can be inferred from Round 2 pilots, but these were generally not thoroughly articulated in the research.

If government wants to consider rights based MBIs, that is, move current MBI practice beyond tenders, major institutional change is required. This issue was not comprehensively explored by the projects in Round 2.

It is essential for policy makers to understand the underlying issues that are contributing to an NRM problem before assessing the potential role of any MBI in achieving a policy outcome.

5.3 Knowledge gaps

The Round 2 projects did not adequately explore the quantification of the potential efficiency gains of MBIs. This is still a major information gap.

The cost-benefit of implementing an MBI for a particular natural resource management issue was not sufficiently addressed within Round 2 projects. Good policy development requires an assessment of the goal or objective. MBIs are one way of potentially achieving a goal. An appropriately designed MBI may have the effect of lowering costs to society. Appropriate evaluation of MBIs requires this context.

5.4 Future Directions

The Round 2 MBIs in most cases did not test the current status and institutional frameworks as many of the price based MBIs considered do not require significant underlying change to the regulatory environment. Round 2 MBIs that were based on rights (eg offsets) worked within an existing regulatory framework. Specific research into the institutional reforms required for rights based instruments warrants consideration.

MBIs have the potential to be cost effective but this issue still requires evidence across a range of contexts and circumstances.

Round 2 has played a role in advancing the capacity of regional bodies to implement tender based MBIs. Future work in this area will involve questions of determining scope and the resource requirements of any co-ordinated approach to implementing tender MBIs in funding.

The future ability to implement rights-based MBIs requires investigation in partnership with the agencies that are responsible for the relevant regulatory policies.

The approach used for Rounds 2 of the NMBIPP was highly reliant on the pilot proponents taking the initiative in proposing particular projects. This created a significant risk that key policy issues would not be addressed. It may be more prudent in future to establish specific projects and have researchers address them, i.e., a commissioning approach.

There is an opportunity to focus future projects on relevant policy issues determined by policy makers.

Additionally, a scoping of the role of quantity base MBIs that would include an identification of NRM issues and locations that may be most suitable would enable a more comprehensive testing of MBIs beyond the Round 2 focus on price based MBIs.

A strategy should be adopted to ensure the lessons from Round 2 Pilot Projects are communicated to relevant organisations that are responsible for price based MBI design and implementation beyond the short term.

References

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Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
1	John Madden	Warren Musgrave		Koenraad Van Landeghem		20.2.09
2	John Madden	Emily Ray		Koenraad Van Landeghem		27.3.09