

Institutionalising Cost Sharing for Catchment Management: Lessons from Land and Water Management Planning in Australia¹

Graham R. Marshall*

* *Institute for Rural Futures, University of New England, Armidale 2351, NSW, Australia.*

Paper presented to *RiverSymposium 2001*, Brisbane, August 29-31, 2001.²

ABSTRACT

A recurring theme in recent Australian reports on integrated catchment management (ICM) has been the need to institutionalise more formally the cost-sharing commitments made within this domain. This represents a significant departure from earlier visions of ICM as essentially promoting voluntary uptake of resource-conservation measures. Two important questions raised by this nascent policy shift are addressed in this paper. Firstly, how might cost-sharing arrangements be given greater formality without undermining the efforts of ICM to increase the preparedness of civil stakeholders to voluntarily, or informally, accept responsibility for sharing costs? Secondly, how is it possible to formalise cost-sharing arrangements so that the transaction costs of enforcing compliance with them remain affordable? Answers to these questions are explored through a case study of the Land and Water Management Planning Program now being successfully implemented in the irrigation districts of the central-Murray region of southern inland New South Wales (NSW) surrounding Deniliquin. The sophisticated system of institutional arrangements introduced in the program to facilitate monitoring, enforcement and adaptive management of cost-sharing commitments is discussed, and insights into how informally-motivated cooperation can enhance the affordability and political feasibility of formal arrangements are presented.

Keywords: collective action, community participation, cost sharing, institutions, integrated catchment management, irrigation, salinity, voluntary cooperation, watershed management, collaborative environmental management, community-based natural resource management.

INTRODUCTION

Since the mid-1980's, governance of Australia's river catchments has followed a strategy of integrated catchment management (ICM) (Marshall *et al.* 1996). This strategy has its origins in a belief that greater collaboration among stakeholders in planning solutions to problems of natural-resources degradation increases their preparedness to cooperate voluntarily with one another in implementing those solutions. Notably, it was believed that involving local

¹ Financial and/or logistical support from the following organisations in completing the research upon which this article is based is gratefully acknowledged: Australian Research Council, NSW Department of Land and Water Conservation, River Basin Management Society, and Murray Irrigation Limited. Nevertheless, the views expressed herein do not necessarily reflect those of these organisations.

² A version of this paper has been published as Marshall, G.R (2002), 'Institutionalising cost sharing for catchment management: Lessons from land and water management planning in Australia', *Water, Science and Technology*, 45(11), 101-112.

communities in planning strategies for investing in natural-resources conservation would lead them to accept a greater share of the costs of implementing those investments.

Notwithstanding the efforts of ICM programs to realise this shift of responsibilities through awareness-raising and moral-suasion activities, the contribution of Australian governments to meeting the costs of natural-resources conservation has continued to escalate. At the same time, the strategy underpinning government resourcing of conservation projects has changed significantly. In place of the prior strategy of providing the bulk of funds for implementing conservation solutions, governments embraced a cost-sharing approach.

Nevertheless, governments have been reluctant to monitor and enforce the cost-sharing commitments made by communities. It seems that this reluctance has been due to fears that ICM's contribution to crafting voluntary cooperation would be compromised if community commitments to act were enforced ultimately through regulation. For instance, Hollick (1992 p. 51) commented upon government fears that "that a regulatory approach to ICM could focus farmers' energies on resisting interference by bureaucrats rather than on improved land management".

More recently, it seems that these fears within government are being sidelined by concerns that hopes for voluntary community compliance with cost-sharing agreements are too often not being fulfilled. For instance, the recent *Report of the Inquiry into Catchment Management* expressed this frustration (in relation to the Natural Heritage Trust (NHT)) as follows:

NHT funding is often dependent upon the recipient of the funding entering into an agreement to reach desired goals or outcomes. However, the Committee is of the view that these agreements are not always sufficiently rigorous, strictly enforced or closely monitored. ... As a result, the desired outcomes may not be attained (Commonwealth of Australia (CoA) 2000 p. 56).

Indeed, the need to institutionalise more formally ('contractualise') cost-sharing agreements has become a recurring theme in reports on ICM by Australian governments over the last half decade. These deliberations seem to be heading toward formalised partnership agreements between regional ICM organisations, on behalf of the catchment communities they represent, and government. Thus the discussion paper *Managing Natural Resources in Rural Australia for a Sustainable Future* raised the prospect of:

... placing greater emphasis on packaged or block funding by governments to regions, to implement regional strategies ... developed by regional and catchment communities ... [T]he region would be responsible for project implementation and would be held accountable to the investors and the stakeholders in the regional community for the use of funds (CoA 1999 pp. 31, 34).

If this prospect were to eventuate, it would make regional ICM organisations accountable for ensuring that their constituents comply with whatever cost-sharing agreements those organisations have entered into on their behalf. For instance, these organisations would become responsible for ensuring that landholders in their region meet any targets for aggregate adoption of conservation measures agreed to as part of the community's cost share. Failure to do so may result in the government applying sanctions to these organisations.

The effect of this shift would be to transfer the political problem of sanctioning individuals' compliance with their community's commitments from government—where mostly it has remained in the 'too-hard basket'—to the community itself. Even where this sanctioning is based primarily on inducements rather than penalties, the community's task of deciding on eligibility rules for those inducements will inevitably result in some individuals benefiting

more than others and thus, ordinarily, some degree of conflict. It seems it was for this kind of reason that Booth (in Booth and Hooper 1996 p. 28), one of the architects of the New South Wales (NSW) Government's *Catchment Management Act 1989*, argued that granting ICM organisations regulatory powers would "kill" their prospects of gaining voluntary cooperation from their constituents—who, he believed, would soon come to trust them as little as politicians and bureaucrats more generally.

This apparent conflict in policy stances—between the original vision of ICM as a vehicle for promoting voluntary adoption of conservation measures, on the one hand, and increasing demands for regional ICM organisations to be held accountable for their cost-sharing commitments, on the other—has been glossed over in recent policy deliberations. Thus the NSW Government's 1996 review of its ICM program (known as 'Total Catchment Management') heralded "a contractual approach to project implementation and program management" at the same time as rededicating the program to "achieving positive management through the voluntary efforts of government and the community" (Department of Land and Water Conservation 1997 p. 4). Similarly, the *Report of the Inquiry into Catchment Management* (CoA 2000) implied that ICM organisations should be made more accountable for their cost-sharing commitments (see above) despite acknowledging that:

... the best outcomes will be delivered when Australians see the extent of the problems facing Australia's catchment systems, the effect now and in the future on our lives, and as a result, voluntarily implement remedial action. (ibid. p. 79).

The purpose in this paper is to help redress this 'blind spot' in current deliberations over whether ICM investment programs involving cost sharing should be institutionalised more formally. A theoretical perspective on this issue is presented in the section following. This perspective is then illuminated in the subsequent section with evidence from Land and Water Management Planning in the central-Murray region of NSW. Finally, the paper closes with some concluding comments.

VOLUNTARY COOPERATION: A THEORETICAL PERSPECTIVE³

Efforts to explain how voluntary cooperation emerges in other than small, tight-knit groups led Ostrom (1998) to identify the primary constraint as the problem group members face in trusting one another to reciprocate their own acts of cooperation. The level of cooperation achieved thus depends on mutual trust they are able to establish. She proposed that the problem of establishing trust be framed as one in which trust, reciprocity and cooperation are mutually reinforcing. Thus once some cooperation gets started voluntarily, for instance between a small cluster of closely-related group members, trust might then grow organically with reciprocity in a 'virtuous circle'.

This does not preclude an important role for hierarchical organisation enabling still-greater levels of trust, reciprocity and cooperation to be achieved. A group need not depend primarily on outside help to provide this hierarchy. If a base of hierarchical organisation can be established to deal with some simpler problems, the task for the group providing itself with the hierarchy it requires to resolve more difficult problems becomes easier. Thus hierarchy may accumulate through "the incremental self-transformations that frequently are involved in

³ See Marshall (2001) for an in-depth review of the theory summarised here.

the process of supplying institutions” (Ostrom 1990 p. 190). An elaborate hierarchical system may thus arise organically as higher levels of hierarchy emerge from and ‘nest’ lower levels.

The benefits of hierarchical organisation in helping individuals to trust one another do not come for free. Aside from the resources required to establish and maintain such organisation, the introduction of hierarchy creates ‘vertical’ problems of trust. Hierarchy helps individuals only to the extent that they trust it not to fail them. To the extent that this trust is lacking, the less will individuals cooperate voluntarily with hierarchies, including governments, claiming to help them—and the greater will be the need for costly coercion.

The trust that people have in their governments cannot be taken for granted. Thus Randall (1999 p. 32) has observed “faith in the legitimacy and efficacy of scientific government has declined precipitously ...”. It seems a particular reason for declining trust in governments is the cultural insensitivity of their interventions, including in respect of local beliefs and social norms. Interventions lacking sensitivity to prevailing norms can easily transform these norms into “opposition norms” (Nee 1998 p. 88).

One way to escape from community mistrust of government would seem to be by way of what Berger and Neuhaus (1977) called the mediating structures of civil society. These make individuals “more ‘at home’ in society, and the political order ... more ‘meaningful’” (ibid. p. 3). Hence they offer neutral territory wherein tentative steps towards cooperation might be tried. With skillful nurturing of these humble beginnings, voluntary cooperation between communities and governments might thus proceed to gradually strengthen in a virtuous circle with trust.

The concept of mediating structure fits neatly with the original charter of regional ICM organisations, *viz.* to foster voluntary cooperation between communities and governments in implementing solutions to natural-resources problems. It also helps to understand the reluctance of some commentators to see some of the regulatory rights and responsibilities of governments devolved to these organisations. Such devolution risks these organisations being transformed in the minds of community members from neutral ground into extensions of government. These commentators are pessimistic about the prospects of successfully avoiding this risk.

The case study considered in the next section offers some cause for optimism. The case is one in which a hierarchical community-based organisation has been devolved powers to ensure that its constituents cooperate with one another in fulfilling their commitment collectively to share the costs of controlling degradation of natural resources in their region.

COMMUNITY-GOVERNMENT COOPERATION IN NATURAL-RESOURCES INVESTMENT: A CASE STUDY

Case-study setting

The community-based organisation is Murray Irrigation Limited (MIL). Subject to a Heads of Agreement (HoA) it co-signed in April 1996 with the NSW Government, it was devolved various property rights needed for it to ensure that landholders within its area of operation comply with the terms of the cost-sharing agreement in respect of implementation of Land

and Water Management Plans (LWMPs) that had been developed for each of four LWMP Districts.

These Districts are known as Berriquin, Denimein, Wakool and Cadell. The first two of these Districts coincide with the Berriquin and Denimein irrigation schemes, respectively. The third coincides with the Wakool/Tullakool irrigation scheme. The fourth comprises the Deniboota irrigation scheme as well as an adjoining area to the east (that came to be known as East Cadell). These Districts are situated in southern inland NSW in what is known as the central-Murray region. The schemes were constructed by the NSW Government during the 1930's and 1940's. The farm area within the schemes is 749,202 ha. The number of farm businesses within the schemes has been estimated at 1,610 (MIL 1998).

During the 1980's concerns regarding rising watertables within the scheme areas, and consequently about increased productivity losses due to soil salinisation as well as worsened waterlogging, became increasingly prominent. Broader concerns were emerging too regarding the water-quality effects of discharging drainage—predicted to become increasingly saline as soils salinised—from the schemes into streams that ultimately flow into the Murray River.

The Murray-Darling Basin Ministerial Council (MDBMC) responded to these broader concerns by promulgating a *Salinity and Drainage Policy* that set limits on the rights of NSW and other states in the Basin to discharge saline drainage into the Murray River system (MDBMC 1988). At about the same time, the MDBMC also promulgated a *Natural Resources Management Strategy* that signalled government funding of salinity-mitigation programs would be provided only to the extent that these programs involved effective collaboration between state governments and the affected communities (MDBMC 1989).

The combined effect of these initiatives was to encourage landholders in the irrigation schemes, as well as the NSW Government, to reassess how they had been trying to address their problems of soil salinisation and waterlogging. The communities of each of the four schemes had convened public meetings by June 1992. In each case a decision was made to develop a LWMP. These would be strategies whereby the collaborative vision of ICM would be pursued at the sub-catchment scale.

Negotiations between the NSW Government and the communities of the LWMP Districts over the final content of the LWMPs, including cost-sharing arrangements, occurred during September 1995. The outcome—formalised in the HoA—was that the Government agreed to contribute \$116 million over the first 15 years of implementing the four LWMPs, subject to the Commonwealth Government meeting half this cost and landholders in the District communities delivering annually on their cost-sharing commitments. These commitments sum to \$382 million over 30 years. Most of this commitment is 'in kind', in the form of costs incurred by landholders in adopting the conservation technologies and practices specified in their LWMP.

The irrigation schemes were privatised in March 1995 as part of a national process of water-policy reform. This left the schemes as the property of MIL, a private company incorporated under the Irrigation Corporations Act, 1994. Shares in the company are fully apportioned among irrigators in proportion to their irrigation entitlements. MIL is the largest privately-owned irrigation supply and drainage company in Australia, with a bulk irrigation entitlement of 1.445 million megalitres (MIL 1999).

The HoA requires that the company ensure implementation of the four LWMPs, including by honouring the community's cost-sharing commitments, if it is to remain in business. The rights conferred legally upon the company were considered sufficient for it to enforce landholder compliance with the LWMPs. It was anticipated that this enforcement would occur through the company attaching conditions to its water-supply agreements with the individual irrigators who are its customers (Schroo 1998).

The institutional arrangements established for implementation of this LWMP program are thus consistent with the broad details of recent proposals that cost-sharing arrangements for implementation of regional ICM strategies be more formally institutionalised. As in these proposals:

- (i) governments have provided block funding to a community-based organisation responsible for strategy implementation;
- (ii) the funding is to help this organisation implement strategies its constituents took the lead in developing and which government has agreed are acceptable;
- (iii) formal institutional arrangements ensure that the organisation is held accountable to government for the use of the funds granted to it;
- (iv) the organisation is accountable to its constituents for how it uses the government funding; and
- (v) the organisation has been devolved the authority it needs to enforce strategy compliance by its constituents.

Research method and findings

Research method and focus. In-depth interviews with thirty key informants were undertaken to explore whether the fit between the theory outlined earlier and the actual experience within a particular application of ICM. Hence the interviews explored the extent to which the use of collaborative processes in the LWMP program fostered trust and voluntary cooperation within the program. Moreover, it examined the effect of devolving regulatory powers to MIL on the propensity of landholders to cooperate voluntarily in fulfilling their cost-sharing obligations as a group.

The research methodology is detailed in Marshall (2001). The key informants included landholders, MIL directors, MIL staff, community leaders, chairpersons and executive officers (past and present) of the Murray Catchment Management Committee, staff from relevant agencies of the NSW Government (located in the region as well as in head office), staff from the Murray-Darling Basin Commission, the Program Coordinator, a consultant with substantial involvement in the program, and a local government councillor.

Overview of findings. The evidence from the interviews suggests strongly that landholders *are* complying more voluntarily with their cost-sharing commitments than they would if those commitments were instead imposed and enforced centrally by government. This suggests that the traditional top-down approach would have achieved landholders' acceptance of formal accountabilities in respect of these commitments only if the government had been prepared to upgrade the generosity of its own cost-sharing commitments considerably. Prof. Warren Musgrave, who was Chairperson of the Land and Water Planning Assessment Team⁴

⁴ This is an interdepartmental committee responsible for assessing the acceptability of LWMPs to the NSW Government according to specified criteria, as well as the acceptability of modifications to the LWMPs requested by MIL in the light of new knowledge or changed circumstances.

at the time of interview, observed accordingly that the fact that the program actually achieved a quasi-contractual cost-sharing agreement between a government and a community-based organisation was in itself:

... a significant breakthrough in resource management in Australia, to give that degree of discipline and formality of agreement between the parties. ... Now I don't think that a top-down approach would get you that far. Except perhaps with significantly greater incentives.

It is clear from the interviews that this success is attributable in large part to the authenticity of the NSW Government's commitment in this case to fostering community participation in a collaborative process.

A history of community mistrust of government. The authenticity of community participation in this case seems to have arisen initially from the foresight of Mr. Warren Martin who was at the time the Deputy Director of the Department of Water Resources (which was to become the lead agency within the NSW Government with respect to the LWMP program). His professional experiences during the 1980's had exposed him to the considerable antagonism and mistrust that had accumulated between the region's irrigator community and his agency. His comments that these entities "were at loggerheads to a large degree" and that the irrigator leadership "played the politics pretty hard" indicates that voluntary cooperation between them had indeed been at a premium.

Mr. Martin understood that community opposition would not be turned around unless a start could be made in building trust between his agency and the irrigator leadership. Thus he worked actively at developing trust between himself and the irrigator leaders. He observed that this "takes a long time. You've got to build it up. They've got to be confident that you know what you're talking about to a degree as well. And that you can deliver some things". He went on to comment that his perseverance eventually paid off since "they would tell me things that they wouldn't tell other people, because they trusted me to a degree".

Crafting community trust in a planning process. This nascent platform of trust between governmental and community leaders resulted during 1991 and 1992 in the small but significant step of them cooperating by organising public meetings for each District. At these meetings community leaders sought community support for the development of LWMPs for their respective Districts. The meetings were well attended by landholders and other community members. At each meeting a Community Working Group (CWG) consisting of landholders was elected to oversee the plan-development process for that District. Representatives of local government and relevant government agencies were subsequently invited to join the four CWGs.

At Mr. Martin's initiative, a Program Coordinator was appointed to independently drive the plan-development process. This person was Mr. Peter Stewart, who arrived with considerable experience in facilitating collaborative processes of environmental planning. This action was explained by Mr. Martin as follows: "[A]ntagonism management and trust building were important issues. My view was that we needed an independent person". Mr. Stewart's neutrality as a facilitator was reinforced by locating him and his small team of staff away from the regional offices of Government.

Mr. Stewart was also careful not to impose himself upon the CWGs, who for some time remained sceptical regarding the Government's motives. For instance, he waited to be invited to attend CWG meetings. Aside from the challenge of reversing government-community mistrust, there was also mistrust between sections of the regional community to be overcome

before the CWGs could begin to work effectively. For instance, Mr. Bill Anderson—who represented East Cadell on the CWG for Cadell—admitted that “there has been a fair bit of feeling between the two areas” (i.e., Deniboota and East Cadell) mainly because private irrigators in East Cadell believed that Deniboota irrigators had over the years won various concessions from Government at their expense. Asked whether there was mistrust initially within any of the CWGs, Mr. Stewart answered: “Yes, of course. Some people didn’t know each other to begin with. Some people came in with a bit of baggage ...”.

Reversing community mistrust of government within the CWGs would not in itself overcome mistrust within their respective communities. The CWGs needed themselves to be trusted by their constituents. Each CWG therefore devised a strategy of ‘grassroots’ community participation in plan development. In Berriquin, for instance, the CWG initially defined 23 localities (subsequently amalgamated to 17). During the planning process, landholders in this district were thus consulted in five rounds of meetings convened at each of these localities. The meetings were held in landholder-friendly venues including woolsheds, community halls and public hotels. The responsibility for chairing the meeting in a particular locality, presenting technical information and leading discussions was usually assigned to a CWG member who lived, or at least was well known, in that locality. The typical landholder attendance at each round of meetings was about 300. Thus around 40 per cent of all farm businesses were represented each round.

The Chairperson of the Denimein CWG, Mr. Daniel Liphuyzen, commented on the effectiveness of this participation strategy in his District as follows:

Smaller groups offer people much more of a hands-on involvement. They are much more at ease to comment on what they think of something. If you just had one regional meeting, you’d get people who always want to hear their own voice and also a lot of people that just sit and say nothing and have no input.

Even so, Mr. Gerard Lahy—the Chairperson of the Wakool CWG—recalled that a significant number of landholders would have withheld their opinions at the locality meetings too had they not been personally encouraged to share them by being asked something like “Well, what do *you* think?”. He concluded that the locality-based participation strategy pursued in his District was indeed successful in gaining trust from the landholder community that the Government and their CWG were genuine in seeking community ownership of the LWMPs. This seems to have been the case in the other LWMP Districts as well.

The strength of the leadership by the CWGs was also vital in gaining trust by their respective communities in the LWMPs finally negotiated with Government. For instance, Mr. Martin commented accordingly that:

You’ve got to give the credit for the success probably to the Working Groups and the Chairs who ran them. ... It wasn’t all pats on the back from the community people for the LWMPs. [They] actually won their hearts and minds over.

The tangible benefit of the community trust so established was, in Mr. Stewart’s words, “the overwhelming support the plans got at the final stage. Every plan had a large community meeting at the end to see if the plan was supported or not. And they turned up in droves”.

Crafting community trust in the process of plan implementation. The ownership of the LWMPs by the CWGs and their respective communities presented a new set of challenges when the time came to agree upon the institutional arrangements governing how the LWMPs would be implemented. Tensions developed particularly when the CWGs realised that it was the Government’s intention that MIL, once the privatisation occurred, would be assigned the

responsibility of administering on-ground LWMP implementation rather than themselves. Mr. Kelvin Baxter, an irrigator who became the first Chairperson of the MIL Board, recollected:

There was no doubt that the four individual CWGs developed a fair bit of ownership of what they were doing and desired to be themselves responsible for implementing the LWMPs. ... But they would never have been incorporated bodies, and that would have presented problems with managing the Government funds and so forth. And Murray Irrigation was going to be the entity that held the Supply License, the Operating License and the Pollution Control License. And a condition of those licenses was successful implementation of the LWMPs. It's not that we didn't trust those blokes, but we reckoned we'd need to have our foot on it. So a reasonably tense situation developed ...

Mr. Martin described the consequent challenge as follows:

Kelvin Baxter became a very strong advocate and had to go and sell the new company as the implementer. And he managed to sell it. But the Board⁵ itself wasn't necessarily fully trusted. People downstream in Deniboota and Wakool saw the Board as looking after Berriquin and not looking after them.

Mr. Baxter explained how, after an independent mediator was brought in to resolve the impasse, a mutually-acceptable compromise was negotiated:

[W]e ended up with the LWMPs all under the control of Murray Irrigation. ... The framework still gave the Community Implementation Groups⁶ (CIGs) plenty of room for local autonomy ... Under the framework, Murray Irrigation were responsible for the CIGs' actions. We had to ensure that what they did in their plan areas was in the best interests of us complying with our licenses. Provided our aims were being satisfied there, they were, and still are, given a lot of latitude in how they implement the broad objectives of the LWMPs.

The historical significance of this compromise was that an Australian government devolved many of the collective rights needed to effectively implement a natural-resources investment program to a community-based, or common-property, organisation. The institutional arrangements devised for LWMP implementation are significant also in so far as they provide a working example of a nested hierarchy, one grown organically from the bottom up. The CWGs thus became the base level of a more inclusive hierarchical system while retaining significant rights of self-governance.

Gaining community cooperation with plan implementation. Although accomplishing community-government agreement to these institutional innovations was undoubtedly impressive, the formidable challenge of making these innovations work in practice remained. A large part of this challenge related to MIL's ability to fulfil its regulatory responsibilities under the HoA without losing the hard-won trust of its constituents. This trust offered the promise of landholders cooperating more voluntarily with interventions in support of LWMP implementation than would have been the case otherwise. Ms. Sandy Robinson, a senior officer in the Murray-Darling Basin Commission, recalled confronting MIL personnel with the challenge of realising this promise by asking them: "How do you not become 'those bastards in town' as opposed to 'those bastards in Sydney'?"

⁵ This refers to the Irrigation Management Board (IMB) for the central-Murray region which the Government established under section 17 of the Water Resources Act. Mr. Baxter was Chairperson of the IMB by the time that deliberations over local implementation of the LWMPs had begun.

⁶ The CWGs were renamed as Community Implementation Groups once the LWMP implementation process began.

So far at least, MIL has responded to this challenge by maintaining an active commitment to designing and implementing LWMP-related policy interventions in collaboration with the relevant CIGs and the community members directly concerned. Thus Mr. Geoff McLeod, MIL's Environmental Manager at the time of interview, explained:

The company does go out of its way to listen to what people are saying, not only to be seen doing it. When developing major policies we have on each occasion set up consultative committees of local landholders to develop those policies.

Indeed, MIL has introduced and enforced some tough policies in support of LWMP implementation which Mr. Jamie Hearn, previously the Chairperson of the Cadell CWG, believes would have been beyond the political will of the NSW Government to pursue. He claimed that around 15-20 per cent of farmers have been upset by policies limiting, first, the rate of irrigation application per property and, second, the soils upon which rice can be grown. Mr. Lahy commented in respect of the first of these policies that: "It was a very difficult policy for Murray Irrigation to sell ...".

It seems that the ongoing authenticity of MIL's commitment to developing LWMP-implementation policies collaboratively has indeed helped it considerably to introduce policies that significantly attenuate the property rights of individual landholders while retaining the trust of the vast bulk of them. For instance, Mr. Liphuyzen remarked that a number of issues had led the Denimein CIG to:

... sort of come to loggerheads with Murray Irrigation. But I suppose Geoff McLeod ... also has got to answer to the CIGs for the other LWMPs. He's also got to answer back to Murray Irrigation. So when we try to push something through, we've got to have something that is workable and that we can all live with. So there has been a bit of compromise there. ... Whoever we had as the implementing body would have had the same onus on them.

The measured strategy pursued by MIL in responding to infractions of its rules appears to have helped it significantly to enforce its rules without unduly transgressing landholders' norms of procedural fairness and losing their trust as a result. Mr. McLeod described this strategy as follows:

Our approach has been, first, education, second, encourage by incentives, third, make them aware that there are sticks in the cupboard and, fourth, you pull the stick out and use it. ... As a generalisation, we often see that people only do the wrong thing because they don't understand the impacts of what they are doing. We focus first on increasing landholders' awareness of the impact of their actions, or how they might change their actions to benefit others as well as themselves. Murray Irrigation has got the ultimate stick of being able to turn someone's water off. We seek to use that as sparingly as possible. ... But there are individuals who will always try and get around us. And anyone who does, by stealing water for example, is hit pretty hard.

MIL's success as a regulator in retaining a high degree of voluntary cooperation from its landholders despite having introduced and enforced tough policies drew the remark following from Ms. Robinson: "It's interesting that once you've got things down to an arrangement, communities tend to be tougher on themselves than they'll let government be with them". Likewise, Mr. Tony McGlynn, a senior officer in the NSW Department of Land and Water Conservation (which became the lead agency for the LWMP program), observed that the way MIL has exercised the powers devolved to it in respect of the LWMP implementation process has been "very important in getting real change on farms. You wouldn't be able to get it out of Government. It would be a 'dig in' situation".

CONCLUSIONS

This case study indicates that current proposals to institutionalise ICM investment arrangements more formally—by making regional ICM organisations accountable for cost-sharing commitments made to governments by the communities they represent—are not necessarily inconsistent with the original hope that these organisations would increase voluntary cooperation by landholders in implementing on-ground solutions to natural-resources degradation. Nevertheless, it suggests also that the ability of ICM-type organisations to reconcile both sets of expectations depends critically on their capacity and commitment to providing their constituents with *authentic* opportunities to participate in deciding the shape of their cost-sharing obligations and the institutional arrangements for their enforcement.

An important lesson from the study is that authentic opportunities for community participation in collaborative processes do not arise by accident. Creating them is itself a complex project that usually requires substantial investments of leadership, hope, time, skill and money. The benefit stream from these investments arises if and when communities come to comply more voluntarily with their cost-sharing commitments as a result, so that transaction (including political) costs of enforcing these commitments are avoided in some degree. Indeed, the case study demonstrated that these benefits can be sufficient to make effective hierarchical enforcement possible when otherwise its political risks would be too costly to countenance.

REFERENCES

- Berger, P. L., and Neuhaus, R. J. (1977). *To Empower People: The Role of Mediating Structures in Public Policy*. American Enterprise Institute, Washington, D.C.
- Booth, C. A., and Hooper, B. (1996). Debate on the Topic: “Can ICM be effective in urbanising catchments?” Paper presented at the Integrated Catchment Management Forum: Effective ICM in an Urbanising Catchment, 28 February, at Radisson Rum Corp Resort.
- Commonwealth of Australia (CoA)(1999). *Managing Natural Resources in Rural Australia for a Sustainable Future: A Discussion Paper for Developing a National Policy*. Agriculture, Fisheries and Forestry – Australia, Canberra.
- . (2000). *Co-ordinating Catchment Management: Report of the Inquiry into Catchment Management*. House of Representatives Standing Committee on Environment and Heritage, Canberra.
- Department of Land and Water Conservation (1997). *Outcomes of the Review of Total Catchment Management in New South Wales*. Department of Land and Water Conservation, Sydney.
- Hollick, M. (1992). *Why won't they do it? Problems of implementing catchment management at the farm level*. Paper presented at the 5th Australian Soil Conservation Conference, at Perth.
- Marshall, G. R., Wall, L. M. and Jones, R. E. (1996). Economics of integrated catchment management. *Rev. Marketing & Agric. Econ.*, 64(2), 166-176.

- Marshall, G. R. (2001). *Crafting Cooperation in the Commons: An Economic Analysis of Prospects for Collaborative Environmental Governance*. Unpublished Ph.D. thesis, School of Economics, University of New England, Armidale.
- Murray-Darling Basin Ministerial Council (1988). *Draft Salinity and Drainage Strategy*. Discussion Paper No. 1. Murray-Darling Basin Ministerial Council, Canberra.
- . (1989). *Draft Murray-Darling Basin Natural Resources Management Strategy*. Discussion Paper No. 2. Murray-Darling Basin Ministerial Council, Canberra.
- Murray Irrigation Limited (MIL)(1998). *1997-98 Environment Report Summary*. Murray Irrigation Limited, Deniliquin.
- . (1999). *Murray Irrigation Limited*. Public relations booklet, Deniliquin.
- Nee, V. (1998). Norms and networks in economic and organizational performance. *Am. Econ. Rev.*, 88(2), 85-89.
- Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press, Cambridge.
- . 1998. A behavioral approach to the rational choice theory of collective action. *Am. Pol. Sci. Rev.*, 92(1), 1-22.
- Randall, A. (1999). A new look at the old problem of externalities. *Choices*, First Quarter, 29-32.
- Schroo, H. (1998). *Licensing of privatised and corporatised irrigation schemes in NSW*. Paper presented at the ANCID Conference 'Living with Limited Water', August, at Sale, Victoria.