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43rd Annual Conference of the Australian Agricultural and Resource Economics Society  
Christchurch, New Zealand, 20-22 January 1999

**SOME OBSERVATIONS ON THE NATURE OF GOVERNMENT  
INTERVENTION IN NATURAL RESOURCE MANAGEMENT**

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The objectives of government in relation to natural resource management in agriculture have changed significantly over time. Similarly, the process that government employs to develop natural resource management policy has also evolved. In the past, policy has been developed centrally, while more recently there has been greater effort to involve the community in this process.

There are clear linkages between changes in natural resource management objectives and changes in the policy development process. The implementation of the NSW Government's Water Reforms is used as a case study to consider these linkages and to examine the advantages and disadvantages of moving to a more community based approach to natural resource management. The implications of this approach for economists, in terms of their ability to contribute to the policy process, are also explored.

Key words: water reform, natural resource management, policy process, role of economists

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<sup>1</sup> The views expressed in this paper are those of the authors, rather than those of NSW Agriculture or the NSW Government.

## **1. INTRODUCTION**

### **1.1 Changing community and government objectives**

Community attitudes in relation to natural resource management have changed over time. The policies of Government have also changed, corresponding with and reflecting these changes in community values.

Prior to the 1970's, there was a much smaller body of government policy which had explicit natural resource management objectives. However, due to the high reliance on natural resources in providing a productive base for the Australian economy, other more general policies in relation to agricultural and economic development often had profound consequences for natural resources. This occurred even though these policies did not have explicit resource management objectives driving Government's desire to intervene. Examples include taxation concessions for tree clearance, fertilizer subsidies which were driven by export development objectives (Dumsday, Edwards and Chisholm, 1990), and land title conditions specifying Home Maintenance Areas and other size limitations which were driven by objectives related to social ideology (Dovers, 1993).

There is also evidence of government policy in which environmental objectives were acknowledged, but the policies developed to deal with the problems actually introduced more costly inefficiencies due to government failure. Dumsday et al. (1990) provide several examples of this in relation to erosion control subsidises, drought assistance policies, and stocking rate controls. These policies all had explicit conservation objectives, but unfortunately elicited perverse responses.

However, while there is this large body of examples of inadequately developed policy in regard to its ability to incorporate environmental concerns, it should be noted that, in many cases, the adverse environmental outcomes of past policy are only evident from the perspective of current values and knowledge. At the time that these policies were developed they did regularly consider environmental issues, and were often seen to be 'responsible' in how they addressed these concerns. An example of this is reflected in a speech made at the 1940 official opening of a new road linking Epping in Sydney to the Pacific Highway (Resource Assessment Commission, 1992). The Minister proclaimed that the road would open up a large area of natural bush for residential development and that "this new road runs through extraordinarily beautiful country, splendidly elevated and far too good to be left as it is". While such a perspective may seem abhorrent to many in the community today, at the time it undoubtedly echoed the thoughts of the broader community. The reasons for these changes over time in community attitudes, values, and objectives, are considered below.

### **1.2 The drivers of changing objectives**

The changes that we observe in the attitudes of individuals and governments are essentially driven by notions of conflict. That is, the increasing evidence of existing natural resource use conflicts, and by the recognition and perceptions of future conflicts in natural resource use and management. In some cases these natural resource use conflicts arise due to changes in the supply or demand of the environmental attribute. This includes increasing scarcity due to a diminishing supply of the environmental attribute due to the consumption/destruction of that part of the environment that produces the attribute, or because of increasing demand for a the static supply of the attribute.

Regularly, however, the conflict (or perceived conflict) is actually driven by the recognition of new attributes, that simply were not considered previously. Our increasing understanding of the attributes, interactions and processes occurring within ecological systems has uncovered an extraordinary array of existing and potential conflicts in the management of natural resources. This increase in environmental knowledge in the general community has produced a greater recognition that the environment is not a homogenous good. Consequently, the environment is now perceived to be much more of a collection of small, unique, ecosystems and processes, rather than generic landscapes. Putting a unique ecosystem at risk of degradation is much more concerning to the community, than risking degradation of a small part of a generic environment.

In concert with the growing recognition of the complexity and uniqueness of many ecosystems, has been society's growing concern with the sustainability of resource use. This includes the requirement to ensure inter-generational equity in the use and management of natural resources (for example, Garrett 1998, and Marshall et al. 1993). The recognition of these inter-generational issues, and consequently values such as bequest and option values, significantly increase the opportunity costs associated with utilising natural resources in an unsustainable manner.

### **1.3 The changing policy process**

As these changes in community values occur, and are subsequently reflected in government objectives, the process by which Government develops and implements policy also changes. Woodhill (1997) identifies technocratic, localist, and institutionalist eras of natural resource management, and notes the role that social scientists have increasingly played as the approach has moved to the more community focused models. The move from centrally developed policy that is generated from within government agencies and political structures, to more community centred approaches to policy development and implementation, has needed to be accompanied by a significant increase in the capacity of these groups to undertake this role.

In addition to changes in the policy development process, the instruments that Government has available to assist implementation have also been refined over time. These include regulatory tools, through which standards are established and compliance is sought through the threat of sanctions, and the economic and educative groups of tools. Both economic and educative tools can be described as suasive, as they encourage voluntary change through the provision of incentives (financial and information) which change the attitudes and actions of people (Department of Finance, 1994). While a mixture of all of these tools is generally required to effectively implement policy initiatives, there has been a general shift in balance from regulatory to suasive instruments in more recent times which has coincided with considerable effort in developing efficient and effective suasive tools. These factors have significant implications for the ability of government to implement more community focused approaches to natural resource management.

### **1.4 Structure of the paper**

The structure of the remainder of the paper is as follows. The rationale for government intervention through community based approaches is further developed in Section 2, while Section 3 identifies several issues which are important to the success of community based approaches. Section 4 reviews the NSW Water Reform community based structures in regard to their ability to accommodate these

issues. Section 5 briefly discusses what role economists can play in these processes, while Section 6 makes some concluding comments on the various issues raised within the paper.

## **2. RATIONALE FOR COMMUNITY BASED APPROACHES**

Increasing evidence of natural resource degradation and growing community concerns about environmental issues has led Governments to fundamentally reassess their role in natural resource management. Increasingly, Government responses to natural resource management problems have focused on regional or community based approaches<sup>2</sup>. Such a move represents a significant departure from the traditional ‘top-down’ approaches to problem solving to so called ‘bottom up’ approaches which are characterised by community involvement in the development and implementation of local solutions to local problems.

The recognition and adoption of more community based approaches to natural resource management in Australia is most notable in programs such as Integrated Catchment Management (ICM), Landcare and the Natural Heritage Trust (NHT).

ICM is promoted in Australia as a strategic framework where individuals, groups and government agencies with a vested interest in catchment outcomes can make group decisions on regional management strategies for sustainable resource use (Shaw, 1996). The ICM movement consists of committees of local stakeholder groups focused on the implementation of sustainable catchment management strategies. ICM underpins a number of initiatives in Australia including Land and Water Management Planning and the Natural Resource Management Strategy. In NSW, ICM principles are effectively implemented through Total Catchment Management (TCM) which has the legislative backing of the NSW Catchment Management Act (1989). TCM is defined as the ‘co-ordinated and sustainable use and management of land, water, vegetation and other natural resources, on a water catchment basis, to balance resource use and conservation’ (NSW Government, 1997).

The Landcare movement is the most prominent example of a community or regional based approach to natural resource management. The Landcare movement began in Australia in 1989 and has expanded rapidly to a point where there are some 4,200 groups involving around 34 per cent of the farming population. Landcare groups are voluntary organisations of local community members working together to address natural resource management issues relevant to their area. Landcare has demonstrated the power of community groups to successfully adopt an integrated approach to problems and achieve genuine public ownership (Cullen, 1997).

The Natural Heritage Trust is one of the more recent initiatives of Governments to address natural resource management issues. Official statements on the program define it as:

‘NHT is a partnership of Australians. It combines the knowledge and resources of scientists, farmers, Aboriginal people, community and environmental groups,

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<sup>2</sup> We refer to community based approaches in a generic sense. As noted by Byrne (1997), ‘there is a continuum of institutions, rather than sharp dividing lines between government and community’. Our focus is on those approaches which encompass more genuine attempts at involving stakeholders in natural resource management decisions. This generally goes beyond the rather mechanical and artificial nature of many examples of stakeholder consultation to more participatory based decision making.

governments and our agricultural industries, working with each other to manage our natural heritage responsibility' (Commonwealth Government, 1998).

Beyond the rhetoric of NHT, there would seem to be some realisation that integrated solutions to natural resource management problems are required and that these will necessarily involve partnerships between the community and Government.

These examples provide some evidence to support the notion that planning has evolved away from the technical, rational forms of planning which were driven by centralised government agencies, towards more realistic characterisations of planning which recognise the plurality of stakeholder interests (CSIRO, 1998). Attwater (1995) suggests that Australia is not alone in this paradigm shift with participatory approaches to rural development and catchment management developing throughout the world.

What has been the driving force behind the recent trend towards more community based approaches to natural resource management? A large range of factors are identified by an equally large number of authors. At a fundamental level, the ongoing trend in the degradation of land, water and vegetation resources is suggested by some as evidence that current institutional structures have failed and new approaches are required. Others identify that advantages of community based approaches stem from the regional nature of natural resource management problems and their complexity which generally makes them unamendable to generic solutions. Wolfenden (1997) states that:

‘the types of problems encountered under ICM are typically complex, involving technological, ecological, social, economic and political aspects. Moreover, the various parts of a catchment are interrelated, with actions in one part having necessary consequences elsewhere’.

Some commentators suggest that the move towards community based approaches reflects a principle that complex problems are best researched with people, rather than for people. Bellamy and Johnson (1997) identify a number of issues contributing to a shift in focus including:

- The need for the active involvement of the whole community that leads to community ownership of the problem and its solution, and ultimately the adoption of sustainable resource use and management practices;
- The need for coordination of decision making amongst stakeholders in government, industry and the community;
- The concept of the ‘whole being more than the sum of the parts’;
- The realisation that people are an integral part of the problem and not external to it; and
- Increasing community expectations for greater involvement in decision making and higher standards of accountability in environmental protection.

From an economic perspective, the advantages of such approaches can be viewed in terms of their impact on property rights and their ability to correct information failures associated with natural resource management problems.

According to Randall (1987, pg 157), 'property rights specify the proper relationships among people with respect to the use of things and penalties for violating those proper relationships'. When property rights are deficient the full costs and benefits of using a resource are not met by those accessing the resource. Many environmental problems are borne out of a deficiency in, and in some cases an absence of, property rights in natural resources.

While private property rights are often recognised as providing the strongest incentive for efficient use, the establishment and recognition of common property rights such as occurs within a Landcare group can lead to responsible and efficient use of resources that are otherwise very difficult to allocate private property rights to.

The modifications of property rights through institutional change can improve net social welfare provided that the costs associated with establishing and managing the new property right structure do not exceed the net benefits gained. Marshall, Wall and Jones, (1993) suggest that the facilitation of community participation in natural resource management represents an attempt by Government to modify the common property right of a community to participate in decision making, where this right is vested in the group representing the community.

Community participation in natural resource management creates incentives for individuals to act in the broader interest of the catchment through local peer group pressure and the sense of co-operative action. Marshall et al (1993) associate peer group pressure with the problem of 'assurance', recognised in the economic literature as critical to achieving economically efficient use of communally owned resources. Stakeholders are more likely to act in the collective interest of the community if they can be assured that others will also behave in a cooperative fashion towards the same objective. This is an example of a suasive measure in that non-cooperation will have no legal penalty attached to it, but rather a potential personal or psychological cost in terms of a deterioration in social relations with other members of the group.

From an economic viewpoint, the basis of more community based approaches can also be associated with market failure in the provision of information at a catchment or regional scale level. Information about natural resource management problems and their possible solutions have public good characteristics and may be under-provided in the absence of intervention<sup>3</sup>. It is generally accepted that poor information about cause and effect relationships in natural resource management has contributed to land degradation in Australia. This information problem may be partly attributed to the complex, multi-faceted nature of ecological systems which makes predictions of environmental responses difficult.

Edwards, Chisholm and Dumsday (1995) suggest that decision makers need to be well informed if efficient use of land and water is to be achieved. If a significant number of farmers are ignorant of methods to maintain and enhance the productivity of their resources, efficiency of resource use will suffer. Poor information acts as a barrier to landholders in ameliorating degradation, and constrains the development and implementation of policies to prevent future land degradation.

Government agencies and research institutions have historically attempted to correct information problems in natural resource management by undertaking scientific research. These approaches have

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<sup>3</sup> This is often treated as a necessary, but not a sufficient condition, for intervention. The likelihood of Government actually doing any better and the costs of intervention need also to be taken into consideration.

been largely technical in nature and have provided little scope for stakeholder involvement, despite the usual catchment orientation of such problems. The capacity of the broader community to contribute information on natural resource management problems and their possible solutions has been generally undervalued by research bureaucracies in the past.

Marshall et al (1993) suggest that 'ICM is aligned with an emerging consensus with the rural extension profession that information requirements for solving resource degradation problems exceed the capabilities of agencies or even groups of agencies, let alone individual extension officers'. The traditional information diffusion model, still underlying many agricultural extension services, is likely to be inappropriate in offering integrated solutions to commonly complex natural resource problems.

The simple adoption of ICM style approaches are unlikely to correct all information deficiencies associated with natural resource management problems. On face value, however, they would appear to offer a number of advantages over traditional approaches. These relate to the incorporation of different knowledge bases (landholders, managers and scientists) and greater opportunity for regular information feedback and environmental monitoring. ICM approaches may correct a greater part of the information deficiency problem than traditional approaches, and subsequently, lead to improvements in resource use efficiency.

### **3. ISSUES IN COMMUNITY BASED APPROACHES**

The previous section outlined a basic premise for a significant departure from previous centralised decision making processes to more community based approaches to natural resource management. The rationale can be briefly summarised as:

- i) the failure of traditional 'top-down' approaches to prevent on-going land and water degradation;
- ii) the complexity and regional nature of many natural resource management problems;
- iii) the importance of addressing the social and economic aspects of resource management problems in addition to technical aspects;
- iv) the importance of 'community ownership' of problems in adopting possible solutions;
- v) increasing community expectations for greater involvement in decision making; and from an economic perspective; and
- vi) the strengthening of collective property rights and the reduction in information failures which may be possible under more community based approaches.

While the above arguments present a case for change, many issues require consideration before endorsing more community based approaches to natural resource management. Indeed, mainstream economics has been largely critical of these types of approaches in the past in that arrangements for community participation have ignored the self-interested nature of individuals. Underlying self interest suggests that individuals will only act in the public interest to the extent that it is consistent with the pursuit of their own private interest. Consequently, many economists would argue that self-interested behaviour poses a major impediment to effective collective action to address many natural resource management problems.



In addition to these fundamental concerns, the adoption of these approaches are challenged by a number of other issues. These issues are discussed below under the three broad headings of government institutional structures, resource requirements and community participation processes.

### **3.1 Government institutional structures**

The effectiveness of community based approaches to natural resource management are challenged by the lack of integration of government activities. Problems relate to overlapping programs between different levels of Government in Australia and the lack of integration of programs within each level of government.

In regard to the former, there are problems in our institutional structures in that it is the Commonwealth Government which enters into international agreements on the environment and collects the majority of taxation revenue but it is the States who have the legislative responsibility for the management of natural resources and the protection of the environment (Cullen, 1997). This contributes to a situation where there are a number of agencies at Federal and State Government levels involved in programs targeted at environmental issues. These problems exist despite the 1992 Inter-governmental Agreement on the Environment (IGAE) which attempts to set out the responsibilities of Commonwealth, State and Local governments in relation to environmental issues<sup>4</sup>.

At a State level there is also scope for overlap in the delivery of policies and programs between agencies with natural resource responsibilities. The Standing Committee on Agriculture (1991) suggested that 'while Integrated Catchment Management (ICM) offers scope to coordinate resource management activities on a regional basis, sometimes the number of agencies involved in the resource management task within a catchment can act as a constraint on the ICM approach'.

Since 1991 there has been considerable institutional change within NSW with the formation of the NSW Department of Land and Water Conservation which now incorporates many of the natural resource management responsibilities previously spread across a number of agencies. In theory, this should lead to improvements in the efficiency with which natural resource management issues are addressed by Government. However, much depends on the operational integration of the former agencies into programs. Simple amalgamation of agencies under the one banner without a genuine effort to integrate skills and knowledge into operational programs is likely to be ineffective despite looking administratively tidy .

Another issue in respect to government institutional arrangements relates to the level of cooperation between government agencies. Cullen (1997) notes that there are some problems in agency cooperation when one agency has major responsibility for a program. Cullen cites TCM in NSW as a program which is viewed as belonging to the Department of Land and Water Conservation, and consequently, is largely ignored by other agencies such as Agriculture, Planning and Environmental Protection.

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<sup>4</sup> Further detail on these problems can be found in the 1996 Report to the Commonwealth Government by the National Commission of Audit.

It would appear that government institutional structures are not totally supportive of more community based approaches to the development and implementation of solutions to natural resource management problems.

### **3.2 Resources**

For community based approaches to natural resource management to be successful, sufficient resources are required to develop, implement and monitor strategies. Bellamy and Johnson (1997) believe that there is a limited capacity of resources at the local level to fulfil these roles and that this acts as an impediment to addressing natural resource management problems. Some of these concerns are discussed below.

#### *3.2.1 Lack of finance*

A problem commonly cited is the lack of financial resources to implement regional strategies and to coordinate the tasks of catchment management groups. Most catchment works have a component of capital investment in equipment, planting and protection of vegetation or structural earthworks. Woodhill (1997) observes that there is an enormous disparity between the funding available to implement regional strategies and what is required.

#### *3.2.2 Demands on agency resources*

Community based approaches can create additional demands on agency resources. This principally arises from the community's improved level of access to agency resources when they are given a more direct role in decision making. For example, greater involvement of the community in the assessment of resource policy alternatives affecting a catchment may involve the questioning of existing data sets of agencies, suggestions for refinement, requests for the presentation of alternative scenarios and sensitivity testing.

There are, however, also the potential for resource savings if the more direct role of the community results in less conflict and delays in the development and implementation of policy. It could be generally expected that in the short term, the demand on agency resources may be substantial, while in the longer term some savings could be possible as the community group becomes more proficient in developing and implementing natural resource policy.

Concerns about the resources required by more participatory processes extends to some scientists who are wary about increasing the involvement of the community in research projects. From workshops with scientists, Keen (1997) identified these concerns in terms of the additional resources and time required, the new skills required to interact with the community, and the belief that their own advancement might be compromised.

#### *3.2.3 Demands for multi-disciplinary research*

Community based approaches call for a better integration of information and create demands for multi-disciplinary research. Shaw (1996) identifies that there is a need for 'predictive models of bio-physical and socio-economic systems and multi-objective decision support systems to allow appropriate and sustainable resource management options to be selected within community based

approaches'. There would appear to be some recognition of the need for more multi-disciplinary research within the agricultural economics profession. For example, Pannell and MacAulay (1998) concluded that 'given the changing nature of the research environment and the problems to be resolved, it has become more important for agricultural and resource economists to engage in multi-disciplinary research'. Ziberman (1994) lends support in stating that 'research on environmental and resource issues are interdisciplinary by nature'.

Despite general support of the need for multi-disciplinary research, much of the information available for community based decision making is of a narrowly based technical nature. Some authors argue that this problem is attributable to the reductionist nature of science which encourages the intensive research of small components of the system rather than the system in its entirety. Some of the factors impeding efforts in multi-disciplinary research have been discussed by Mullen (1996) and Pannell and MacAulay (1998). A principal issue is that the reward structure facing researchers is often not conducive to multi-disciplinary research. Campbell (1995) also notes that 'institutional cultures within research and extension agencies militate against genuinely participatory approaches' and that training of professionals within research and extension is largely technocentric. These issues pose significant questions about the ability of scientists and economists to contribute to community based approaches to natural resource management.

Economic input, as part of a multi-disciplinary research effort, has been identified as a major deficiency in community based approaches to date. Holmes (LWRRDC, 1994) has argued that in the past 'the research effort was too narrowly focused' and that most of the problems are socio-political, not biophysical or technical. He suggests that the resolution of many natural resource management problems are largely in the realm of policy rather than in the technical arena, and that there should be a greater focus on the socio-political aspects of resource management. A consideration of trade-offs, implicit in many natural resource issues, has not been adequately incorporated into programs such as ICM in the past. Overcoming this deficiency may improve the effectiveness of community based approaches.

### **3.3 Community participation processes**

The fostering of community participation and the empowerment of the community to address natural resource issues is not straight forward. Experiences with ICM have shown that lack of knowledge and skills in this area have resulted in community involvement being less than ideal. Processes can be deficient in a number of areas and these are discussed below.

#### *3.3.1 Lack of representativeness*

In reviewing some of the problems of ICM, Woodhill (1997) identifies representativeness as a key issue affecting community perceptions about the legitimacy of ICM groups, and, as a consequence the level of support they receive. Cullen (1997) notes that the appointment of community representatives by government makes committees look more like agency advisory committees rather than having any real responsibility for natural resource management. It is also important for community based committees to be as inclusive as possible so that the full range of interests within catchments are reflected.

Sceptics query whether community based approaches represent a genuine transfer in ownership and power or just a government designed and imposed structure to promote participation rather than ownership. There is a danger that community based committees will lose their effectiveness in building community ownership if they are perceived as ‘quasi-government’ organisations or labelled as the 4<sup>th</sup> tier of government.

### *3.3.2 Communication strategies*

Communications between government agencies, the representative community group and the broader community is crucial to the success of community based approaches in achieving natural resource management objectives. Dugdale (1996) emphasises that clear and accessible information is paramount to creating successful dialogue and that stakeholders can only really contribute to the extent that they are informed. Interest groups on catchment committees have different perspectives on catchment problems and their potential solutions. Effective communication systems require conflict resolution mechanisms to be built into them so that solutions can be developed cooperatively in the presence of differing views. The processes and structures for effective communication is a complex area and has not received sufficient attention in community based approaches in the past.

### *3.3.3 Scale*

The issue of scale is critical to the achievement of objectives. While community based approaches such as Landcare may be effective in addressing resource management problems at a local level, efforts at this level may tend to address symptoms of problems rather than causes. Without higher level initiatives, the tyranny of small decisions is apparent (Hooper, 1997).

Woodhill (1997) describes the era in which Government provided catalytic funding to support the formation of local groups to address resource management problems as the localist era because it was essentially about local change. He suggests that there is a rapidly growing realisation that there are much wider forces at play that make it very difficult, if not impossible, to solve many natural resource management problems at the local or sub catchment level.

### *3.3.4 Responsibility and accountability*

Woodhill (1997) identifies that both the limited powers of influence of ICM bodies and the lack of accountability regarding the expenditure of tax payers money are constraints to ICM. McDonald (1997) suggests that stakeholders need to be collectively empowered ‘with institutional arrangements that recognise their role and input, recognise their responsibility for implementation and provide definite accountability criteria for the performance of all stakeholders’. Ensuring that such arrangements are in place is important for the long term success of community based approaches.

## **4. A LOOK AT THE NSW WATER REFORMS**

The previous section outlined some of the issues requiring consideration in the adoption of community based approaches to natural resource management. This section explores the relevance of these issues in the context of the NSW water reforms. A brief overview of the water reforms is initially provided to set the scene for the later discussion.

#### **4.1 Overview of the NSW Water Reforms**

The NSW Government initiated a comprehensive water reform program in August 1997 aimed at improving the health of NSW rivers, estuaries and groundwaters. The reforms come in response to increasing evidence of the poor state of many rivers in NSW and the need to better balance in-stream and consumptive uses of water to ensure long-term sustainability of both the natural resource and the communities which depend on these resources.

The NSW Government is articulating the water reforms as a whole-of-government and whole-of-community partnership in managing the State's water. Key to the community's involvement in water reform is the establishment of community based Water Management Committees (WMCs). DLWC (1998) states:

'Water Management Committees, representative of a wide range of stakeholders, are the cornerstone of determining future management arrangements for sharing water and addressing other environmental and sustainable production issues. Participation in water management is built around the empowerment of WMCs to deal with issues, influence overall operational policy development and take responsibility for developing various approaches for local interpretation and delivery of Statewide principles'.

WMCs have specific responsibility for the annual consideration and recommendation of environmental flow rules and water quality objectives, and the development of a Water Management Plan for the catchment over the five year resource secure period. The latter will incorporate the results of environmental and socio-economic monitoring reflecting the importance of adaptive management<sup>5</sup> in the implementation of water reforms.

The WMCs for regulated catchments were established in October 1997 while committees for other catchments are progressively being established. The committees are chaired by an independent person from the relevant catchment, with members drawn from water user, conservation, aboriginal, local government, Catchment Management Committee and NSW Government agencies<sup>6</sup>.

The NSW Government has advised the committees that their plans must provide a balance between, environmental, social and economic needs. The NSW Government has established an Independent Advisory Committee on Socio-Economic Analysis (IACSEA) to provide methodological guidance on, and oversight of, socio-economic analysis completed for the committees. Government initially proposed that the role of socio-economic analysis was as a monitoring activity, in which final proposals would be analysed and effects monitored following implementation. The more important role of socio-economic analysis in contributing information into the planning and decision process has subsequently been recognised.

#### **4.2 Consideration of key issues in the context of the water reforms**

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<sup>5</sup> Defined as an iterative process whereby decision makers review and modify water management strategies in light of experience and in response to new and improved information.

<sup>6</sup> Includes NSW Government agencies with a significant role in resource issues - DLWC, Environmental Protection Authority, NSW Agriculture, NSW Fisheries, and National Parks and Wildlife Service.

#### *4.2.1 Government institutional structures*

The NSW water reforms are linked to the principles established under the 1994 COAG water reform agreement. Under the COAG agreement, State Governments are required to implement a series of reforms (principally relating to pricing, establishing environmental allocations, property rights and trading) according to an agreed timetable. The inclusion of the reforms in the requirements to be met by States for payments under the Commonwealth Government's National Competition Policy (1995) represents a major commitment by governments to water reform and creates significant incentives for States to adhere to the agreement. In the case of water reforms, the role of respective levels of government have been clearly laid out minimising the potential problems relating to duplication of responsibilities and programs frequently attributed to having three tiers of government.

At the State level, the water reforms are supported through a whole-of-government approach. Structures have been established to facilitate the input of the water relevant agencies including groups such as an Implementation Management Committee and a Policy and Technical Committee which review the progress of reforms and address issues requiring further refinement. These, combined with agency representation on each catchment committee, improves the coordination of agency input while recognising different perspectives on water management issues. The longer term success of the approach relies on the co-operation of participating agencies in supporting the community based committees.

Effective institutional arrangements requires that the roles and responsibilities of the WMC's and Government are clearly defined in respect to water policy development. Government has essentially identified the broad objectives of water reform while WMC's have the main responsibility for developing options to achieve these objectives. However, the wide range of policy issues currently being considered under the water reforms, and the unresolved nature of some of the more major issues, has contributed to a blurring of this distinction. This has led to some uncertainty about the principal role of WMCs in water management. In addition, WMCs are likely to improve their capacity to contribute to policy development over time, and consequently, seek involvement not only in how to best achieve objectives but in the establishment of the objectives themselves. Both these issues suggest that further work is required in specifying the extent of community participation sought.

#### *4.2.2 Resources*

The issue of resources is considered in terms of the demands for agency resources created by the water reform process and the need for multi-disciplinary research.

The establishment of community based committees and the development of appropriate operating processes and procedures have created a significant demand on agency resources. Similarly, the supply of information to community based committees to assist decision making processed by agreed deadlines has created significant workloads for a number of agencies. The committees have required significant resources in the initial period of the reforms as this has required the familiarisation of community representatives with a broad range of catchment issues relevant to decisions about water management.

In the longer term, resource demands would be expected to decline but at this stage of the process it is impossible to judge whether the longer term outcomes justify the resource commitments to date.

Experiences with community participation processes in other areas suggest that they need not be overly expensive provided that comparisons are undertaken on the basis on long term costs and benefits for policy development and that community approaches adopted are established within an appropriate institutional framework.

The opening up of agency information and models to the community has been an interesting process. In part, the requirement to do so provides a stronger accountability link between agencies and the community and sets the basis for more collaborative, transparent and robust analyses in the future. However, in some catchments, key inputs such as hydrology simulation models are only in an early stage of development and the community has expressed concerns about the useability of the information for making substantive changes to water management rules. This can pose potential threats to the reforms if key stakeholders view the deficiencies as opportunities to derail reform initiatives even if the broad modelling indications are agreed with.

Jiggins et al (in Syme 1988) makes some important points in the opening up of analyses for community input.

‘the management of catchments necessitates opening up scientific practise. The effort to engage in dialogue rather than communicate results... and to open scientific judgements and processes to scrutiny and challenge involves major changes. Moreover, while science (both natural and social) has an essential and unique role to play in promoting, supporting and guiding the learning process, it is one of creating opportunities for learning rather than the role more familiar to science, of always delivering expert opinion’.

Experience with the reforms highlights a need for greater multi-disciplinary research and the evaluation of trade-offs associated with alternative environmental flow rules. This has required much greater interaction between hydrologists and economists than existed previously. Robust analysis requires that consistency be achieved in hydrology and economic modelling in terms of key assumptions such as the behaviour and responses of farmers to changing water security. The level of cooperation between disciplines is improving, however, further change is required if the research effort is to be considered as truly multi-disciplinary.

Previous planning initiatives have lacked consideration of socio-economic effects. The establishment of IACSEA attempts to overcome this deficiency. WMCs are required to consider socio-economic impacts of alternative water management options through the planning process and have been provided with some financial resources to undertake analyses in addition to agency economic and sociological input.

#### *4.2.3 Community participation processes*

Representativeness of the community is an issue for the WMCs established under the water reforms. Achieving an appropriate balance in committees so that the underlying community values are reflected is difficult. The assumption underpinning the establishment of WMCs is that the representation of key stakeholders in the catchment will ensure that the decisions of the committee will reflect the interests of the catchment. The personalities of individual members, however, affects the dynamics of committees and could lead to a more than proportionate contribution from particular interests. The

potential for this problem increases if the representatives selected are well versed in articulating their case through experience in other forums.

Effective communication strategies are important to the success of the water reform process. Communication between agencies and between agencies and committees has been generally successful through inter-agency committees, the representation of agencies of water management committees and the employment of facilitators and executive officers to work directly with committees. However, it is the WMCs who have the most difficult responsibility in ensuring broad community input into the committee's decision making process. Delivering on this responsibility is a long term objective and will require further work to foster communication and community input into the water management committees. Committees are in the process of developing better communication strategies to facilitate involvement.

Issues of scale have received consideration under the water reforms. Committees are generally established on a catchment or sub catchment (regulated versus unregulated) basis. To minimise potential conflicts, linkages are usually made between regulated and unregulated areas to ensure some level of integration in the development of river and groundwater management plans. However, further work will be required to ensure consistency in the development of river and groundwater management plans where there are clear hydrologic relationships.

Water management committees have been given a significant amount of responsibility in the development and implementation of water reforms. Decisions reached by committees are, however, subject to the approval of government which may tend to raise concerns within the community about the level of independence. The government will have some pressure to accept the committee decisions so that it will not be accused by the community of using the committee as a placebo. Governments will have to justify any rejection of committee decisions on the basis of welfare of the broader NSW community.

There are obviously trade-offs between the balance of community and government decision making. Giving water management committees absolute control over water management decisions opens up a potential for 'strategic behaviour', given that the objectives for one individual catchment rarely line up exactly with the broader public interests of government. While on the other hand, excessive government involvement compromises community involvement which then becomes more of a consultative process rather than a participatory process. In policy development, a fine line exists between genuine 'community based decision making' and essentially government decision making dressed up in the rhetoric of 'community empowerment'.

The water reforms attempt to find a balance by setting the broad objectives to be achieved while giving the community responsibility for the determination of strategies to meet these objectives. It is too early to determine whether such an arrangement is optimal in the sense of resource management from a NSW perspective.

## **5. ROLE OF ECONOMISTS**

The popularity of more community based approaches to natural resource management issues has increased significantly in recent times, particularly in NSW. Woodhill (1997) maintains that we have moved to an 'institutionalist era', whereby broad scale institutional change is required for effective



natural resource management. While many economists may be critical of the potential role of more participatory approaches, the profession is in a good position to contribute to the design of more effective institutional arrangements based on our appreciation of the role of incentives in changing human behaviour.

The shift towards these approaches has important implications for the operational roles of both scientists and economists. Economists will need new skills to effectively interact with communities and in working more collaboratively with scientists in an inter-disciplinary environment. Trends towards these approaches would tend to support Young (1995) who argued that the future is likely to place a premium on the ability of agricultural economists to work with other disciplines.

Economists can play an important role in community based decision making by providing information on the magnitude and distribution of trade-offs involved in particular resource allocation decisions. The involvement of economists in these more practical work areas may overcome some of the concerns of Ziberman (1994) who noted that economists need to address 'our tendency to abstract from reality and to rely on second hand data and to remove ourselves from primary data collections and from learning and communicating with people associated with the problem'.

Economists can also play a significant role in the evaluation of resource allocation decisions at the aggregate level to ensure that decisions government endorse measure up in terms of public benefits rather than just regional or catchment level benefits.

## **6. CONCLUDING REMARKS**

The community's natural resource management objectives are changing largely as a result of conflict over use. This conflict has been brought about by issues of scarcity, and recognition of the complexity and heterogeneity of natural resource systems. These issues have driven an increasing desire by the community to be more involved in the management of natural resource systems.

The move to community based systems of policy development embraces this desire for involvement. The approach recognises that generic policy is inappropriate for diverse systems, and because of the socio-political nature of many natural resource management problems (as opposed to a purely technical nature). Community based approaches to policy development facilitate the strengthening of common property rights, and the rectification of information failures. Both of these are essential for effective natural resource management policy.

Community based approaches, however, also suffer from a wide range of potential problems including inappropriate government institutional structures, constraints on the level of relevant resources and failure in the design of appropriate community participation processes incorporating issues of representativeness, communication, scale and responsibility.

A number of these issues are relevant in the context of the NSW water reforms. However, it is not possible at this stage to make any judgement about the success, or otherwise, of the community based approach adopted. Nevertheless, it is apparent that the shift in the policy development process will be both a learning experience for government agencies and the community in developing appropriate

water management policy that recognises both the public interest and the interests of catchment communities across NSW.

Lastly, the move towards more community based approaches needs to be underpinned by effective institutional arrangements that outlines appropriate roles and responsibilities of community based organisations and government. Economists are in a good position to contribute to such arrangements, whilst also contributing operationally to identifying the magnitude and distribution of trade-offs involved in particular resource allocation decisions.

## REFERENCES

- Attwater, R. (1995). 'Institutional economics, soft systems methodology and catchment management: a story of stakeholders in an upland Thai catchment', Paper presented at the Inaugural Ecological Economics Conference, 19-23 November, Coffs Harbour.
- Bellamy, J. A., and Johnson A.K.L. (1997). 'ICM and sustainable agriculture: moving from rhetoric to practice', *Proceedings of the Second National Workshop on Integrated Catchment Management*, Australian National University, 29 September - 1 October, Canberra.
- Byrne, T. (1997). 'The national context for Integrated Catchment Management', *Proceedings of the Second National Workshop on Integrated Catchment Management*, Australian National University, 29 September - 1 October, Canberra.
- Campbell, A. (1994), 'Landcare: Communities shaping the land and the future', Allen and Unwin Sydney.
- Commonwealth Government (1998). 'Natural Heritage Trust overview: a better environment for Australia in the 21<sup>st</sup> Century', URL:<http://www.nht.gov.au/overview/intro.html>
- Cullen, P. (1997), 'The Australian scene: visions for integrating catchment management', *Proceedings of the Second National Workshop on Integrated Catchment Management*, Australian National University, 29 September - 1 October, Canberra.
- Department of Finance (1994). 'In pursuit of Australia's environment and resource use goals: the potential role of economic instruments', Discussion Paper, August, Canberra.
- Department of Land and Water Conservation (1998). 'Water sharing the way forward – Community/Government Partnership in Water Management – a reciprocal agreement', Information Leaflet, DLWC, Sydney.
- Dovers, S. (1993). 'A history of natural resource use in rural Australia: practicalities and ideologies', in Lawrence, G., Vanclay, F., and Furze, B., Agriculture, Environment and Society: Contemporary Issues for Australia, Macmillan, Melbourne.
- Dumsday, R., Edwards, G., and Chisholm, A. (1990). 'Resource Management', in Williams, D.B., (ed.) Agriculture in the Australian Economy, Oxford University Press, Melbourne.
- Edwards, G., Chisholm, A., and Dumsday, R. (1995). 'Efficiency in the use of Australia's land and water: concepts and policies', Invited paper presented at the Murray Darling Basin National Conference, 17-18 August, Broken Hill.
- Garrett, P. (1998). 'The environment movement: quiet achievers in taxing times', address to the National Press Club, 26 August, Canberra.
- Holmes, (1994). 'Rural adjustment and natural resource management: a rural community perspective', Land and Water Resources Research and Development Corporation, Occasional Paper No.

7/97, Canberra.

- Marshall, G., Wall, L., and Jones R. (1993). 'The role of economists in land and water management', Paper presented at the 37<sup>th</sup> Annual Conference of the Australian Agricultural Economics Society, 9-11 February, University of Sydney, Sydney.
- McDonald, J. (1997) 'Community participation in Integrated Catchment Management', *Proceedings of the Second National Workshop on Integrated Catchment Management*, Australian National University, 29 September - 1 October, Canberra.
- Mullen, J. (1996), 'Why economists and scientists find cooperation costly', *Review of Marketing and Agricultural Economics*, Vol 64 (2).
- NSW Department of Land and Water Conservation (1997). 'Role of community based committees', NSW Water Reform Fact Sheet Number 19, NSW Department of Land and Water Conservation, Sydney.
- NSW Department of Land and Water Conservation, (1998). Support Package for River, Groundwater and Water Management Committees, NSW Department of Land and Water Conservation, Sydney.
- NSW Government (1997). Outcomes of the Review of Total Catchment Management in New South Wales, Total Catchment Management, Sydney.
- Pannell, D.J., and MacAulay, T.G. (1998). 'Practical and economic issues in multidisciplinary research' *Proceedings of the Bioeconomics Workshop*, AARES, 22 January, Armidale.
- Randall, A. (1987). Resource Economics: An Economic Approach to Natural Resource and Environmental Policy, Second Ed., Wiley.
- Shaw, R. (1996). 'The Role of Models in Decision Making for Natural Resource Use and Management', Paper presented to the Murray Darling Basin Commission workshop on the role of computer modelling in the development of and implementation of land and water management plans for irrigated catchments, 18-19 June, Melbourne.
- Standing Committee on Agriculture (1991), 'Sustainable agriculture', Report of the Working Group on Sustainable Agriculture, SCA Technical Report Series No. 36.
- Stayner, R., Crean, J., and Pagan, P. (1997). 'Assessment of the socio-economic impacts of NSW Water reforms: draft scoping paper', Prepared for the Independent Advisory Committee on Socio-economic Analysis.
- Wolfenden, J. (1997). 'A systematic approach to dealing with the complex issues typically encountered within the context of Integrated Catchment Management', *Proceedings of the Second National Workshop on Integrated Catchment Management*, Australian National University, 29 September - 1 October, Canberra.

Woodhill, J. (1997). 'Resource sharing for on-ground change: a systemic perspective', *Proceedings of the Second National Workshop on Integrated Catchment Management*, Australian National University, 29 September - 1 October, Canberra.

Ziberman, D. (1994), 'Economics and interdisciplinary collaborative efforts', *Journal of Agricultural and Applied Economics*, vol 26.