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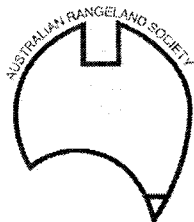
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# LINKING LANDUSE AND MANAGEMENT WITH ECOLOGICAL SUSTAINABILITY IN A REGIONAL PLANNING FRAMEWORK

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## ABSTRACT

*In Australia, as in other developed countries, rural industries are responding to increasing pressure to demonstrate their environmental credentials. At the same time, there is an increasing trend toward the shedding to the local level of roles and responsibilities for environmental stewardship. In responding to these requirements, industries and people based in the rangelands face particular difficulties. This paper discusses the potential benefits of regional planning for resource use and management, and goes on to propose a new approach to rangelands R&D which attempts to link productive use and ecological sustainability within a framework of regional resource planning.*

## INTRODUCTION

Many authors, for example in papers at earlier ARS conferences, at rangeland workshops (Morton and Price 1994), and in the draft National Rangeland Management Strategy (Robertson 1994), have identified a wide range of problems associated with current landuse and management in Australia's rangelands. Our aim in this paper is to discuss briefly the organisational structures and the processes that might be needed to respond to those problems, and how research and development could best be organised to support them.

Throughout developed countries rural industries face increasing scrutiny of the long-term impact of their activities on natural resources. In both domestic and international markets, 'proof' of ecological sustainability is becoming a significant market requirement with potential to influence both market share and price margins. The wider community is also expressing its legitimate concern to ensure that natural resources are not being depleted or degraded, reflecting increasing recognition of the value of these resources for uses other than agriculture and for their intrinsic worth. At the same time, there is an increasing trend in Australia, as elsewhere, towards the recognition of a need for individual and collective action and the shedding by governments to local communities and organisations of responsibilities for environmental stewardship.

## THE ISSUES

Although these two groups of pressures for change have been evident for some time, as a community Australia has been slow to respond. Current social and political processes are ineffectual when it comes to equitably planning the use of natural resources, or assessing the environmental, economic or social outcomes of policy at the regional level in the rangelands. There is a lack of a clear locus of responsibility for resource use, management and planning, with basic resources such as soil, forest, land, water, fisheries, and wildlife being managed by different institutions and jurisdictions. This fragmentation of responsibilities occurs: across the three levels of government; between departments within any one tier of government; within and between commodity industries; and within the general community. Fragmentation, together with confusion about the necessary balance between top-down and bottom-up processes, and institutional rigidities that impede change, provides a fundamental barrier to the achievement of ecologically and economically sustainable use and management of our rangelands.

At federal, State and local levels there is a plethora of government priorities, policies, programs and actions that relate to sustainable resource use and management. These include the broad policy settings

of government such as taxation provisions and land tenure, integrated and total catchment management, the network of landcare and other governmental programs, and a wide range of community-based groups and processes including Land Councils. This diverse range of processes and activities has been established through a wish to respond to perceived needs and problems, and with the best of intent; nevertheless, its result is confusion, duplication, and a high probability of using scarce resources of people and money at less-than-optimal effectiveness.

If we accept that the move to regional planning of resource use is here to stay, at least for the political medium-term, then we need to find some way to integrate and coordinate this broad spectrum of policy and action across all levels of responsibility. We also need to make sure that this process moves beyond a purely coordination function, to one that involves commitment to specific roles and responsibilities for implementing and monitoring planning decisions at the regional level that reflect societal values and expectations relating to natural resource use and environmental management.

We suggest that similar comments could be made about rangelands research and development in Australia, despite the undoubted benefits gained from informal research networks and more formal processes of coordination such as establishment of the Rangelands Research and Development Group. We contend that much of Australia's past rangelands R&D, while of good scientific quality and leading to a greatly-improved understanding of the ecology of our rangelands, has had relatively little impact on decisions about resource use or on management practices. This is not to criticise individual organisations or researchers, but rather to comment on the way in which research has been organised in the past. There has been little impact on patterns of resource use precisely because there has been no effective process for examining and planning the use of natural resources in the rangelands at a regional scale. There has been relatively little impact on management practices because of poor linkage between the research and the socioeconomic and management context of the pastoral industries and others (Walker, in press). The lack of serious analysis of the public and private benefits and costs of alternative land uses and management practices has meant that there has not been an agreed basis for public intervention to support the implementation of research findings.

Given the growing importance of regional planning processes for resource use and management in the rangelands, it is clear that somehow research and development programs need to be linked firmly into those processes; publication of scientific results or even presentation at conferences and field days will not lead to their uptake when the real barriers to improved management lie in low enterprise margins (Wilcox and Cunningham 1994) or lack of any process to reward landholders who achieve public benefit through ecologically sustainable land management. Moreover, research organisations and researchers will need to make a genuine commitment to work closely with, and be influenced by (as well as in turn influencing), those regional resource planning and management processes.

## **DISCUSSION**

An integrated approach to regional planning requires the linking across spatial scales and disciplines of information on ecology, economics, sociology and policy processes, and institutional arrangements for resource use. It also requires the availability and ready accessibility of this information to a range of stakeholders and planners at spatial and temporal scales relevant to their needs. Poor availability and lack of effective participation have been key problems in the past, and the constraints of distance and time, and lack of organisational structure for non-government participants, remain major barriers. It is equally important to gain full political and organisational commitment to regional planning and the changes that it may bring about. There is little point in regional planning for resource use if at the end of the process there is no commitment to provide resources to support the changes agreed.

Planning and participation are the keys for change in our extensive rangelands, and an equitable and evolutionary planning strategy is the necessary process for change. To develop such a strategy, two things are needed. Firstly, there is a need for generally-agreed goals that may accommodate different

values but identify clearly the outcomes we as a community are trying to achieve in our use and management of the rangelands. The second essential ingredient is information on ecological, economic and social processes and outputs so that we can compare alternative land use and management options in terms of their impact on those processes and on our ability to meet the goals. The development, justification and implementation of a planning strategy will have to be negotiated through processes of public participation and community consultation to ensure ownership of the process by all stakeholder groups, and to provide a long-term basis for regional planning and development. The strategy will also need to identify the need and capacity for change and adaptation, and provide for a flexible process or experiential learning by the range of stakeholders, including those not resident in the particular region.

The key challenge in establishing a regional strategy is to develop and implement resource use and management which enable rural production, ecosystem function, biodiversity conservation and other community needs, values and expectations to be met as far as possible. In general, Australia has a rich base of information on productive capacity and productive management of rangeland ecosystems. We have not yet, however, fully explored the relationships between different types of enterprises, management systems, property size and tenure conditions, and likely future international market places. Many graziers can provide an immediate comment on the current situation, but we still need to explore the economic potential of different mixes of these factors.

Researchers have also developed, particularly over the past decade, an increasing understanding of ecosystem function in the rangelands. There is, of course, more to be done, particularly in aspects of special landscape components, keystone habitats, management of wildlife, and conservation of biodiversity. However, we suggest that the main gap is an inability to link data on productivity with data on ecological sustainability in order to examine a range of options and trade-offs. Without such information, we cannot hope to identify or design options for resource use and management that will help to maximise achievement of multiple goals for the rangelands, even at a regional level. The concept of sustainable resource use is sometimes taken to mean simply the protection of the productive resource base in order to ensure continued viability of current industries. However this does not include the conservation of biological diversity. Australia's international commitment to the Convention on Biological Diversity obliges us to take active steps to protect our rich diversity of life. Successful conservation of biodiversity cannot be achieved through protected area planning alone, for example a system of nature conservation reserves (Morton and Stafford Smith 1994). It also requires the sustainable use of biological resources to maintain essential ecological processes, many of which operate at the regional or landscape scale well beyond the boundaries of individual properties. It is worth noting here that conservation of biodiversity is not just a theoretical or purely environmental consideration; there are plenty of examples of local communities and individual landholders who are achieving a significant income from such conservation.

Grazing by domestic animals can considerably modify vegetation structure and botanical composition. Habitat fragmentation and species loss are largely incremental. To hope to achieve some reasonable level of conservation of biodiversity in Australia's rangelands will inevitably require the incorporation of this concept and appropriate strategies in other programs and planning processes, including paddock and property level decision-making and management. This does not necessarily mean maximum biodiversity must be maintained at every part of a region, and we see the regional planning process as an essential forum to enable broad conservation goals to be assessed against productivity requirements, with the regional scale of the process allowing optimum decisions to be made taking into account ecological, economic and social requirements. The need to establish effective links between planning at a regional level and active management at the property or paddock level remains a high priority.

Finally, we also propose that regional planning offers an important process for considering the long-term social sustainability of regional communities. This is a little-researched and poorly-understood concept, but it is one of special importance to people living in the rangelands. The continued availability of social networks, and provision of the social services taken for granted by other Australians, are

important considerations. We see them as an integral part of sustainable land management; given the changes wrought in the rangelands by introduced plants and animals and by past patterns of use, it is hard to see how sustainable resource use or management can be achieved in the absence of a human population. We see development of skills and the social sustainability of rangeland populations as being an urgent priority to help support regional planning processes.

## CONCLUSION

If the potential benefits of regional planning for resource use are accepted, then clearly at least some part of rangelands R&D needs to be organised in a different way. It may still be necessary for individual researchers or small groups to tackle particular issues using the reductionist methods of the natural sciences. However, it is also clear that individual skills and pieces of research information then need to be rebuilt, integrated and tested against each other in order to better reflect the complex realities in which decisions are made about rangeland use and management. It is not sensible to leave this until after the research is completed because we will inevitably find that the methods or measurement parameters used differ from one group to another so that the results cannot be assimilated and compared. Instead, we propose a paradigm shift so that research priorities and projects reflect the needs identified by the regional planning process. In other words, we envisage R&D having its key role informed by, and in turn informing, the regional planning process. We see this process as providing substantial benefits, not only to regional communities who need the information from R&D, but also for researchers themselves. Nevertheless, this change will only take place if there is commitment by researchers, research organisations and funding agencies. We also see this as an important way of maximising the benefit gained to the nation from its limited pools of rangeland research skills as it provides a means of bringing together those skills across geographic areas, organisations and disciplines.

The process is already under way with a major project commenced in the southern rangelands of WA involving researchers from different organisations and disciplines working together to support a regional planning process. Another is under development in Qld, and a third is well-advanced in western NSW. We consider that these projects represent a significant shift in the linkages between research and resource use and planning. They will not solve all difficulties overnight, and it remains to be seen whether the rangeland and wider communities find this process more valuable than past activities, and whether the political commitment essential to its success will be forthcoming. Nevertheless, we also believe that this change in approach is essential if we are ever to address the multitude of barriers and difficulties in achieving our goal of productive and sustainable management of Australia's rangelands.

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