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POLICY CONTRIBUTIONS TO ENVIRONMENTAL RISK MANAGEMENT – MATCHING POLICY TO THE RANGELAND ENVIRONMENT

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ABSTRACT

It is argued that current policy settings in relation to land administration, drought, taxation and other financial measures (e.g. Farm Management Deposits) do not provide an adequate framework for the management of environmental risk in the rangelands. A particular deficiency is the lack of policies or measures that discourage short term profit taking and promote longer term environmental outcomes, directly relate assistance to those outcomes, and actively encourage learning and adaptation by land managers. Incentive-based policies have the potential to redress these deficiencies and are the subject of much current interest. One approach currently under evaluation in the Western Division of NSW is described, in which payments are related to the achievement of ground cover targets.

INTRODUCTION

At the Centenary Symposium of this Society Hacker *et al.* (2000) argued that the ‘mainstream’ view of rangeland management, based on the economic and ecological benefits of conservative stocking, frequently failed to capture the realities of the pastoral economy. An alternative model, in which pastoralists choose among management options and select those that maximise the net present value of production subject to certain assumptions about discount rates, seemed to provide a better explanation of the range of management styles that may be observed in practice. A consequence of this model is that short term exploitation of the resource is often logical from a private perspective since the benefits of more conservative management accrue only in the long term. We argued that under this model increased research and extension effort may not greatly change pastoralists’ management strategies, that the market did not operate efficiently to maximize both public and private good, and that a case existed to broaden the range of policy instruments to ensure that land use conformed to community expectations.

Before considering what those instruments might be, it is appropriate to review briefly the historical policy settings, how well they have matched the rangeland environment and what benefits they have delivered in terms of environmental risk management.

THE POLICY ENVIRONMENT

Land administration

In all rangeland States, the historical approach to the administration of pastoral leases has included, in addition to general obligations to preserve the resource, various prescriptive management requirements (e.g. development conditions, maximum or minimum stocking rates) and a regulatory system largely dependent on provisions for lease forfeiture or non-renewal. The deficiencies of this command and control approach have been widely recognised. They include the absence of any graduated system of response (Young and Wilcox 1984), the corresponding reluctance of administrative agencies to apply draconian penalties except in extreme circumstances, and a tendency towards preoccupation with other aspects of lease provisions (e.g. extent of development, or state of infrastructure) rather than land condition.

While the historical influence of these deficiencies can hardly be ignored, some have been addressed by amendments to pastoral land legislation in all states in recent years. Amendments in 2002 to the Western Lands Act in NSW, for example, provided additional flexibility for pastoralists to adjust stocking rate in relation to seasonal conditions (e.g. relaxation of agistment provisions), and provided a rental-based incentive to encourage conservation measures over parts of the lease.

Drought policy

Since 1992 the National Drought Policy (NDP) has stressed self reliance through the management of periodic rainfall deficits as a normal business risk, except in 'exceptional circumstances' when assistance from the public purse is justified. Part of this policy required the phasing out of transactional subsidies offered by State governments (e.g. freight subsidies for livestock or fodder) due to their perceived adverse environmental impacts, although this has not been universally achieved.

While the NDP has been a significant policy milestone, the operation of the joint Commonwealth-State arrangements for declaration of Exceptional Circumstances and the subsequent provision of financial support has not been straight forward. Botterill (2003) noted that the intent of the policy can often be thwarted by political realities, especially those associated with the pattern of Commonwealth and State elections. The declaration process has proved onerous, and uptake of the assistance available has often been low.

O'Meagher (2003) argued that few of the intervention measures applied under the NDP in the 1990s actually addressed clear instances of market failure. Most were argued to address symptoms rather than causes and some were even considered inconsistent with the overarching objectives of the policy. The continued use of interest rate and transactional subsidies was of particular concern from an economic perspective, although Condon (2002) considered that such measures have assisted the recovery of rangelands in western NSW since the 1950s.

While Exceptional Circumstances and other forms of drought relief have been the most prominent feature of drought policy in recent years, other integral components such as Farmbiz and its predecessor, the national Property Management Planning (PMP) campaign, have sought to foster self reliance through subsidised education and training activities. While the success of the PMP campaign varied considerably between regions, training opportunities through Farmbiz have been well subscribed. Together, these programs have probably made a worthwhile contribution to improved risk management across Australian agriculture.

Taxation

Condon (2002) considered that taxation concessions that encouraged the development of watering points and subdivisional fencing were second only to climate as a factor encouraging the recovery in western NSW referred to above, and in ensuring better resource management. To this extent, taxation policy could be argued to have provided a strategic basis for the reduction of environmental risk across the rangelands.

At the tactical level, however, the environmental benefits of current tax instruments are much more questionable. Stafford-Smith (2003), quoting Cross and Stafford-Smith (2001), noted that the common practice of deferring tax liability by use of low livestock valuations and drought-linked livestock sale elections discouraged early response to developing drought conditions, providing an incentive to achieve short-term financial benefits at the expense of long term planning. Increased environmental risk will be an inevitable consequence. These instruments thus reinforce the natural tendency for firms with high (or even normal) discount rates to prefer exploitative strategies,

particularly in systems that are already operating below their productive potential and are characterised by long response times (Wang and Hacker 1997).

Income averaging, in Cross and Stafford-Smith's study, appeared to be relatively benign from an environmental perspective since it increased income variability as well as mean after-tax income and thus did not provide a means of reducing financial risk at the expense of environmental risk.

Other financial measures

Farm Management Deposits (FMD) have been well accepted by primary producers across Australia and will remain an important component of the policy environment. In the studies summarised in Stafford Smith (2003), they were thought to foster a closer relationship between financial decisions and natural resource implications than more direct taxation instruments, while providing a 'moderate' financial benefit. However, if redeemed for purchase of fodder, leading to the retention of stock on drought affected land, their potential for negative environmental impact may be greater than this study suggests, at least in those parts of the rangelands where this is a feasible option (D. Patton, *pers. comm.*).

No comprehensive assessment of the various drought-related financial measures that apply at the State level can be provided here. Taking NSW as an example, however, the Special Conservation Loans (SCL) scheme, which provides loans of up to \$100,000 over 10 years at a fixed rate of 4.5% is the State's leading drought preparedness strategy, supporting a range of on-farm activities including planting of perennial pastures, and the development of fodder storage and water related infrastructure.

POLICY AND THE RANGELAND ENVIRONMENT

The common feature of the biophysical environment of all rangelands is the episodic nature of those events, particularly related to rainfall, that trigger changes in the so-called 'slow variables' that underpin ecosystem function. These include the processes that control nutrient cycling, soil loss, the spatial distribution of nutrients and water, and changes in the composition of perennial species. However, while major changes in these variables may occur episodically, at the extremes of the climatic spectrum, the response at these times is strongly conditioned by the management regime in the intervening periods (Watson *et al.* 1996). The risk of mortality of perennial grasses under drought conditions, for example, is closely related to pre-drought grazing history (Hodgkinson, 1995) and erosion under intense rainfall will be exacerbated where ground cover is reduced. Policies that minimise environmental risk should therefore not only foster a prompt response under deteriorating conditions but also a management regime in more 'normal' times that positions the system for the best possible outcome if environmental conditions move towards either end of the spectrum.

When social and economic dimensions are added to the biophysical, rangelands may be regarded as 'complex adaptive systems'. A characteristic of such systems appears to be that policies that restrict learning opportunities through regulatory approaches aimed at maintaining some desired system state ultimately lead to reduced economic performance compared to policies that allow learning and adaptation, even though the latter will result in initial resource degradation and economic hardship for some individuals. Balancing the need for learning with the need to prevent excessive resource degradation emerges as a challenge for policy makers (Walker and Janssen 2002).

Criteria for evaluating policy contributions to environmental risk management in rangelands might therefore include the extent to which policies:

- a) stimulate early response to deteriorating seasonal conditions – drought responsiveness

- b) encourage management at other times that positions the biophysical system for the best possible outcomes under more extreme conditions – resource conditioning
- c) provide an incentive to avoid short-term profit taking to the long term detriment of the resource – discount compensation, and
- d) ensure continuous learning and adaptation by pastoralists, by fostering a close relationship between financial decision making and environmental consequences – outcome focus.

While these criteria are not strictly independent they provide a useful starting point for the present purpose.

An assessment, in these terms, of the policies and measures outlined above is shown in Table 1, with particular reference to NSW. The overall impression is that while each of the criteria is satisfied by at least one measure, the current policy settings are not particularly well tuned to environmental risk management in the rangelands. This is particularly so given that participation in those measures with a favourable impact is far from universal, and that favourable impacts in relation to ‘discount compensation’ and ‘outcome focus’ arise only through the relatively weak provisions of the 2002 Western Lands Act amendments as they apply to rental determination. Although the measures summarised in Table 1 do undoubtedly contribute substantial public support to rangeland pastoralists in pursuit of legitimate objectives, the targeting of this assistance is not sufficiently precise to satisfy the criteria proposed here.

While this analysis is biased towards NSW it seems likely that the general conclusion would be more widely applicable.

Table 1. Assessment of the effectiveness of current policy measures in mitigating environmental risk, with particular reference to NSW. (✓ – favourable impact; X – no impact or negative impact)

Policy regime	Assessment criteria			
	Drought responsiveness	Resource conditioning	Discount compensation	Outcome focus
Land Administration	X	X	✓	✓
Drought policy				
- Drought relief	X	X	X	X
- Education & training	✓ (?)	✓ (?)	X	X
Taxation	X	✓	X	X
Other financial measures (eg FMD, SCL)	✓ (?)	✓	X	X

AN ALTERNATIVE APPROACH

The analysis above suggests that policy initiatives should be investigated that satisfy particularly the criteria of ‘outcome focus’ and ‘discount compensation’. This would focus public support directly on those desirable environmental outcomes that may be sought but are not guaranteed by existing policies. These initiatives will inevitably involve incentives and a move in this direction is already evident on a number of levels. Virtually all of the Catchment Blueprints accredited by the State and Commonwealth governments as vehicles for the delivery of public funding to natural resource management in NSW include provision for incentive payments in one form or other. A pilot program, the Environmental Services Scheme, is currently being implemented to purchase a range of environmental services from landholders, though predominantly outside the rangelands. Some other innovative programs, such as Bushtender in Victoria and the Liverpool Plains project in NSW, also reflect this outcome focus.

A program specific to the rangelands in NSW is the Enterprise Based Conservation component of the WEST 2000 Plus Rural Partnership Program. This pilot program is aimed at evaluating alternative approaches to the achievement of natural resource outcomes in the rangeland environment. Of particular interest in light of the discussion above is the 'ground cover option' which is currently being implemented on three of the 12 participating leases.

Pastoralists participating in the 'ground cover option' will receive a variable incentive related to their success in maintaining ground cover above a specified threshold. The general characteristics of this approach are summarised in Table 2. While a number of variations to this basic outline could be suggested, and may prove necessary, the measure in principle meets all of the criteria discussed in the preceding section. Drought responsiveness and resource conditioning are clearly encouraged. The increasing private cost of achieving public good outcomes (soil stability) as seasonal conditions deteriorate is recognised by a progressively increasing level of payment, consistent with the 'discount compensation' criterion. Finally, the 'outcome focus' criterion is met by the direct link between payment and on-ground results which simultaneously, since management is entirely unregulated, encourages learning and adaptation, and ensures that management actions, natural resource impact and financial consequences remain closely coupled.

The economic attractiveness of this proposal to landholders and governments remains an open question and has not yet been subject to detailed analysis. However, assistance to Western Division leaseholders in the current drought from all sources (State and Commonwealth) is expected to amount to approximately \$59m, or more than \$40,000 per lessee, by December 2004, after two years of drought exceptional circumstances (G. File, *pers. comm.*). Cost-neutral introduction of a ground cover based policy as an alternative to the current provisions might therefore require expenditure of a similar amount over a twenty year period, but with payments made over the eight years that would be expected below the 40th percentile rather than the two years of EC declaration. While the maximum payment would not therefore be large (though still larger than what is likely through lease rental mechanisms) this arrangement would have the advantages of commencing much earlier in the drought cycle and avoiding the current difficulties associated with EC declaration. It should also promote more resilient pastoral businesses.

Table 2. Characteristics of the 'ground cover option' for incentive payments under the WEST 2000 Plus Enterprise Based Conservation program.

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- Ground cover is measured at monitoring sites located by mutual agreement.
 - Measurements are made annually in an agreed month (when cover is likely to be lowest).
 - Seasonal conditions over the preceding year are based on a certified rainfall record and related to the historical record of an agreed base meteorological station.
 - No incentive is payable if rainfall over the preceding 12 months exceeds the 40th percentile.
 - If rainfall is below the 40th percentile, an incentive is paid that depends on
 - The rainfall percentile, with the potential payment increasing linearly to a maximum at or below the 5th percentile.
 - The number of sites at which ground cover exceeds the threshold.
 - Payment of the maximum incentive, regardless of groundcover, if stock numbers have been reduced below 10% of the average number over the last 5 years (to provide for the possible impact of feral animals or other factors despite management response).
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CONCLUSIONS

Commentators on drought policy frequently make the point that there is no single correct solution and that a range of policy instruments is required. That position is not disputed here. What does seem apparent however, is that the policy settings and instruments so far developed do not entirely satisfy

the criteria one might reasonably apply if the objective of those policies, even if only in part, is to reduce environmental risk.

A particular deficiency is the lack of policies or measures that provide appropriate incentives for management that conforms to the public interest under those conditions of rainfall deficit when the conflict with private interest is arguably greatest, directly relate support to natural resource outcomes, and actively encourage learning and adaptation by land managers.

Fortunately, there is much current interest in the evaluation of incentive-based measures that have the potential to satisfy these requirements and contribute to a policy mix more closely aligned with the realities of the rangeland environment.

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