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AUSTRALIA'S RANGELANDS: ANALYSING NATURAL RESOURCES, PATTERNS OF USE AND COMMUNITY ASSETS

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INTRODUCTION

Alternative land management options for the rangelands have important implications for Australia's natural resources - and the communities and industries that depend on their use. The Bureau of Rural Sciences is working to improve our understanding of uses of the natural resources of the rangelands, in particular to:

- identify and locate key natural resource and primary production assets,
- explore tensions between alternative claims on the natural resource base, and
- consider how trade-offs in the use of these assets may be investigated.

RANGELAND ASSETS

The first stage in the assessment involved development of a series of spatial profiles describing rangeland assets. The datasets on which these profiles are based were drawn from a wide range of sources including the Australian Bureau of Statistics and the National Land and Water Resources Audit. These profiles describe the natural resource base (physical environmental and biological assets), industry and community assets and threatening processes (see definitions below). A review of natural resource management issues facing the rangelands (e.g. National Land and Water Resources Audit 2001) assisted profile development and highlighted information gaps.

Natural resource base	Biophysical assets (actual and potential) supplied by nature enabling production of goods and services – including conservation.
Production base	The management of resources to produce goods and services.
Threatening processes	Processes that threaten sustainability of natural resources and production.

MULTI-CRITERIA EVALUATION

The profiles of rangeland assets formed a database for a spatial analysis of the tensions between alternative uses and their claims on natural resources. The Bureau of Rural Sciences has been utilizing decision aids such as ASSESS (Hill *et al.* 2004) for multi-criteria decision analysis (MCDA) in the Department of Agriculture, Fisheries and Forestry policy environment for a number of years. ASSESS provides a GIS-based interface enabling the simple spatial association of data layers ranked for developing output scenarios that may be constructed from different user viewpoints.

A multi-criteria decision analysis approach provides for:

- simple linear addition and combination of data layers,
- balance between evidence-based science and soft systems approaches to decision-making,
- flexible exploration of relationships between biophysical, economic and social phenomena.

The analysis procedure involves six key steps; the final two must be iterative.

1. Define problem and decision criteria.
2. Identify variables that influence decision criteria (biophysical, economic, social).
3. Assemble data inputs and establish relative rating.
4. Design operations and functions for synthesis.
5. Develop viewpoint profiles with clients, interest groups.
6. Workshop the results, develop consensus view / redefine problem.

Tensions between alternative claims on natural resources are analysed and expressed in terms of the spatial interaction between those resources, production values, and threatening processes (Figs. 1 & 2).

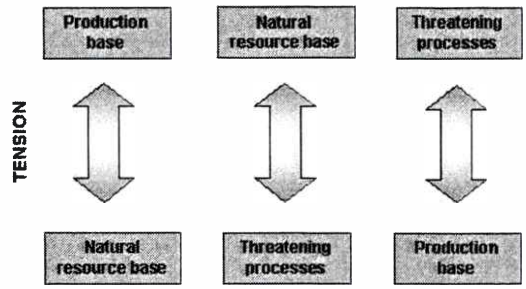

Figure 1. Framework for analysing alternative claims on the natural resource base.

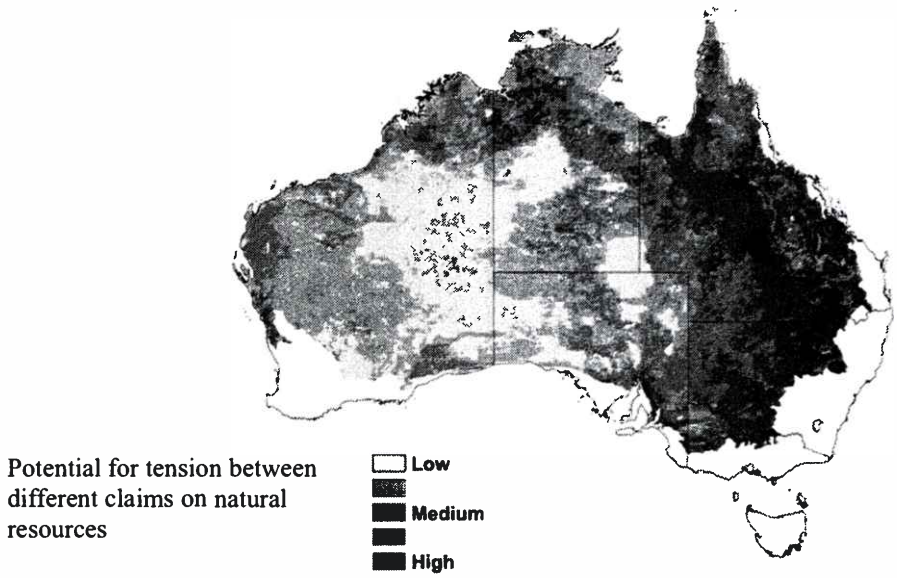

Figure 2. Illustrative index of tension among different claims on natural resources in the rangelands

OUTCOMES

It is anticipated that this MCDA-based approach will help:

- identify key issues and regions for investigation and information gaps in the rangelands,
- guide the development of more detailed investigations into rangeland issues,
- inform policy development for the rangelands, including ACRIS, and
- scope alternative landscape futures.

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