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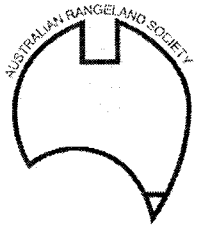

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SOCIAL SCIENCE AND THE NATIONAL LAND AND WATER RESOURCES AUDIT

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Introduction

The National Land and Water Resources Audit (Audit) has the task of providing nationwide assessments of Australia's land, vegetation and water resources to support sustainable development now and in the future. The program is intended to facilitate improved decision making in natural resources management by compiling nationally compatible data sets that characterise the status of Australia's land and water resources and the changes taking place.

The Social Sciences Centre (SSC) of the Bureau of Rural Sciences (BRS) is presently undertaking two projects within the Audit. Project 6.2.2 – *Integrated social and economic database system for sustainable management*, aims to develop a social atlas of rural Australia including cropping and intensive grazing lands and providing an interpretation of the social and economic data in a natural resource management context. The socio-economic and socio-demographic indicators being utilised within this project were originally developed in Project 6.2.1, which was also managed by the SSC. Project 4.2.1 – *Indicators within a decision framework*, more specifically targets the rangelands. While this is a unique project, it never the less also draws heavily on the indicators developed within projects 6.2.1 and 6.2.2.

Project 4.2.1 - Research Methods

A framework of factors affecting adoption of Sustainable Resource Management Practices (SRMP) was developed from a broad literature review where it was found that the change to, or adoption of, SRMP requires:

- **understanding** of a problem or opportunity and a management practice as the solution or way forward;
- **motivation** to adopt the practice given by the benefit of adoption — financial or otherwise — exceeding the cost; and
- **capacity** to adopt, which requires inputs, both personal (skills and time), and financial (cash and infrastructure), that are required to adopt the practice.

The framework acknowledges that these three must be considered within the context of biophysical, economic and social environments (Fig 1).

Explanatory indicators (independent variables) for these three were also identified from literature and can be broadly grouped accordingly: the individual farm manager; the farming family; and, the farming enterprise characteristics. An influence analysis was also conducted with key informants (Rangelands Steering Committee) to identify the relative importance of the different primary drivers or constructs (Fig 2). Much of the data associated with the drivers and indicators is available from secondary sources such as the ABS census, the ABARE farm surveys and the BRS Social Atlas at a variety of scales. However, it is recognised within the Audit brief of Project 4.2.1 that it is also important to test the predictive capacity of the drivers and indicators in three Rangeland case study regions. The case study regions are:

- Mitchell grass downs in Queensland and across into the Northern Territory – representing inherently productive areas that are generally resilient and in good condition, dominated by large pastoral companies in the NT but private concerns in Queensland;
- Port Augusta ATSIC area of South Australia – which is less productive country, and there are some Indigenous pastoral companies; and,

- The Gascoyne-Murchinson region of Western Australia – which is an area of more complex country, often relatively less productive with recognised degradation problems, and currently facing additional difficulties due to low wool prices.

Testing involves conducting a survey of land managers within these regions. The survey has two functions: it provides indicators for collection on an *ad hoc* basis as regional studies are undertaken; and, as eluded to above, it provides the means of testing the validity of the chosen secondary indicators via primary data and framework for interpretation.

A questionnaire containing 38 questions addressing the three themes of understanding, motivation and capacity, has been sent to 1,250 rangeland property managers in the three regions (750 to the Mitchell grass downs, 250 to the Port Augusta region, and 250 to the Gascoyne-Murchison region). The questionnaire has been tailored for each region to ensure questions are appropriate with respect to landscape type and landscape condition.

Analysis
As a first step correlations between all the variables will be examined to highlight potential problems with multi-collinearity. Where variables effectively measure the same thing, alternative versions of the models will be tested to find the more robust indicator.

Linear regression will be utilised to explore the relationships between the explanatory variables and the dependent variables — adoption of SRMP, and recent adoption of SRMP. The framework — where adoption of SRMP depends on the primary drivers — is the first model for testing. The models or hypotheses that link attributes to the primary drivers form a second set of models for testing. These tests will demonstrate how well variations in attributes are at explaining the variations in the primary drivers. The third set of regressions will test how well the attributes explain the adoption of SRMP directly.

Significance
The Audit website will allow user-friendly access to many of the outcomes of these projects. The site will provide a map of the indicators by regions at the greatest possible resolution given the data as well as text describing the indicators, including data source, and interpretation.

The framework developed in the Audit's Project 4.2.3 provides a useful way of identifying where impediments to adoption actually lie, and hence the best approach to removing them. Understanding the drivers and their regional variance will enhance policies and programs aimed at improving capacity to adopt SRMP, such as training programs. The results of the survey analysis will provide empirical evidence of the drivers of adoption of SRMP. For example, if the problem is perception, improving the knowledge base may be the sensible starting point.