

# **Social and economic information for NRM: An initial discussion paper**

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## **Executive summary**

Natural resources are managed by people. Understanding the needs, capacities and motivations of Australia's land managers is critical to designing sound policy and program interventions and evaluating their impact at both the national and regional scale. It is widely acknowledged that the condition of the natural resource base, a land manager's socio-demographic characteristics and management practices, enterprise financial status and the level of social capital in a community/industry are interdependent.

Socio-economic information plays an important role in NRM decision making by:

- providing context to regional planning through enhanced understanding of baseline social and economic conditions and processes which impact upon a region's capacity for NRM,
- enhancing understanding of the social and economic impacts of particular interventions, noting that impacts can be positive or negative and unevenly distributed in the community,
- contributing to the monitoring and evaluation of the effectiveness of NRM interventions, and
- informing the assumptions which underpin major policy initiatives, particularly in relation to the decision making behaviour of individuals, families and firms.

The above uses have been incorporated within the context of the NAP/NHT program logic to identify the types of questions facing decision makers that can be answered using socio-economic information.

A review of the current MEWG socio-economic indicators notes that there is a need for better clarity in terms of the questions they will be used for, consistency in the hierarchical level they seek to provide information on, coverage over the range of uses of socio-economic information, and that they would benefit from the collection of qualitative data to support the interpretation of numerical data. Further consideration of a broader range of data collection methodologies (such as case studies, focus groups, and interviews) is required to answer a number of questions, particularly those relating to capacity building within regional groups.

The paper also highlights that there are a number of gaps in the availability of socio-economic information for decision making at a national and regional level, and proposes an option for data collection that can be tailored to specific regions (eg. NAP regions), based upon existing collections, while the refinement of the framework and indicators is undertaken and new collection vehicles are considered.

## Part 1: Introduction

The National Natural Resource Management Monitoring and Evaluation Framework seeks to assess progress towards improved natural resource condition through the development of accurate, cost-effective and timely information on the performance of programs, strategies and policies which provide national approaches to:

- environmental protection (maintaining, conserving, preserving, protecting, restoring, improving or replenishing components of the natural environment, including biodiversity<sup>1</sup>);
- sustainable agriculture (the use of agricultural practices and systems that maintain or improve the economic viability of agricultural production; the social viability and well-being of rural communities; the ecologically sustainable use of Australia's biodiversity; the natural resource base; ecosystems that are influenced by agricultural activities); and
- natural resources management (the use, development or conservation of soil, water or vegetation; or any other natural resources).

The Monitoring and Evaluation Working Group (MEWG) has been tasked with establishing an appropriate framework, standards and indicator protocols to provide accurate, cost effective and timely performance information for decision-making. An initial list of 10 indicators for social and economic issues have been considered inadequate and the MEWG referred the issue of social and economic information to the National Land and Water Resources Audit (NLWRA) for review. The MEWG sought:

1. examination of the development of an overriding model to link current social and economic information needs with existing data - focussing on regional needs, (Parts 2, 3 and 4)
2. a review of the current indicators (Part 5),
3. measures of capacity building at the regional level (Part 6), and
4. statistical advice on the use of nationally collected indicators at the regional and national levels (Part 7).

This paper is an initial step in answering these questions and establishing a well articulated and well developed model for identifying regional and national social and economic information needs for NRM. The paper is set out in the following format:

- Part 2: identifies a number of issues relevant to the use of social and economic information
- Part 3: describes the main types of uses for social and economic information in NRM
- Part 4: uses the NHT program logic to develop a basis for identifying social and economic information needs
- Parts 5, 6 and 7 address points 2, 3 and 4 as indicated above.

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<sup>1</sup> Definitions of environmental protection, sustainable agriculture and natural resources management were drawn from the *Natural Heritage Trust of Australia Act 1997 (Cwlth.)*.

## **Part 2: Issues in using social and economic information for NRM**

### ***The nature of NRM***

Natural resource management is not just a technical activity of, for example, best management practices, but it is also a discursive activity in which various participants (eg farmers, landholders, catchment management bodies, government departments, NGOs) take part to define and re-define the types of landscapes they seek to create. The negotiation, argument, conflict and discussion in determining, say, a course of action to plant a recharge zone with perennial vegetation, is equally a part of NRM as the planting of the perennial vegetation. To be relevant to NRM, social and economic information cannot focus on outcomes alone, but must also reflect the processes in reaching, or not, the outcomes.

Furthermore, the discursive nature of NRM recognises that concepts such as sustainability, best management practices, and sustainable agriculture must be understood as normative, value-laden concepts. That is these concepts will be defined and re-defined in different ways by different individuals, groups and institutions depending upon their purposes and goals.

### ***Types of social and economic information for NRM***

Social and economic information can be characterised into information about human capital; social and institutional capital and produced economic capital.

Human capital represents ‘individuals’ capacity to contribute to their own and others satisfaction’. Elements of human capital includes the size and structure of the population and the resources of skills and knowledge held within that population. A fundamental aspect of human capital is the physical and mental health of individuals within a community. Stress associated with drought has a direct impact on the capacity of landholders to manage their lands sustainably. Human capital is important to NRM at several scales. At an individual level the skills and abilities of an individual landholder will play an important role in their capacity to adopt more sustainable NRM practices. At the scale of the regional community the diversity of skills and abilities across a broad range of technical, managerial, administrative, financial, planning and communication fields will be important in assisting the community to adapt to change.

Social capital refers to the group relations, or norms and networks. The recent Productivity Commission review of social capital highlights the contribution of social capital to public policy through reducing the costs of conducting day-to-day affairs; facilitating the spread of knowledge and innovation; and by promoting cooperative behaviour where narrow self interest does not generate good outcomes for society. Social capital is important in the context of NRM, particularly given the policy focus on capacity building and community based management, as it facilitates the workings of groups and collectives to produce desired outcomes.

Produced economic capital refers to those commodities that have been brought into existence through human endeavour. This includes products that are harvested and manufactured, the built environment and financial resources. Considering NRM, produced economic capital is a fundamental contributor to the capacity of regional communities. Economic resources, are crucial to a community’s wellbeing, including individual landholders, NRM groups and the broader community, and their ability to invest in NRM activities.

### ***Existing information collections***

There are considerable national data collections that were compiled and collated as part of the first phase of the NLWRA. These data cover a range of topics of relevance to a better

understanding of the social and economic context in which NRM activities take place. Much of these data were drawn from existing regular collections including the Population and Housing Census and the Agricultural Census and Surveys of the ABS, and the annual Farm Survey of ABARE. ABARE has also conducted supplementary surveys exploring land management and recently carried out a Small Farms and Other Industry Survey.

Additionally other information sources that may be useful in establishing a national social and economic information system include the administrative and program data collected by Commonwealth, State and Territory agencies. These information sources may be particularly useful in program and project evaluation. In developing management plans some catchment management bodies have invested in targeted social and economic information collection, for example the social data projects carried out by the BRS for the Wimmera, Burnett-Mary and Lachlan catchments. Nationally based programs often have socio-demographic profiles of program participants. FarmBis for example, has data characterising informal education and training participants.

Importantly in considering the use of any existing collection of social or economic information it is necessary to ensure that it is used with an understanding of the design and assumptions underpinning the collection. Not the least is the need to recognise the difference between collections designed to collect economic information about firms and business entities and those designed to collect social information about individuals and households.

In the context of NRM it is also necessary to recognise the breadth of stakeholders about whom social and economic information may be relevant. For example while farmers will continue to be a major focus in NRM, increasing numbers of landholders are not farmers and thus not included within sampling frames premised upon agricultural production. Such landholders are likely to be important in peri-urban regions and regions of high visual amenity. In northern and central Australia Indigenous peoples will be significant landholders.

### **Part 3: Social and economic information needs for NRM**

#### *Understanding the social and economic context in which NRM activities take place*

For this purpose social and economic information is used to provide an understanding of the baseline social and economic conditions and trends over a range of scales. At the regional or catchment scale the information provides a characterisation of the region's or catchment's capacity for NRM, and is essential in the preparation of regional/catchment management plans.

Information is also required about the social and economic processes operating. Drawing on Vanclay (2002), in the context of NRM important processes may include demographic processes (eg ageing patterns, migration patterns, fertility), economic processes (eg farmer's declining terms of trade; vertical integration; economic globalisation), socio-cultural processes (eg 'greening' of food/fibre requirements; environmentalism; indigenous reconciliation), and institutional and legal processes (eg privatisation; user-pays; market deregulation). The character of these processes will be region and context specific. For example processes of vertical integration may have little relevance in most broadacre agriculture, however for some horticultural production purchaser-contracts may remove farmer autonomy regarding cultivation systems. In contrast farmer's declining terms of trade will be relevant to all farming enterprises.

### ***Social and economic impacts of proposed NRM interventions***

Understanding social and economic impacts of particular interventions are central to the development of NRM targets. Impacts can be positive and negative, and are unevenly distributed through the community. Social Impact Assessment (SIA) provides a framework to assess the intended and unintended consequences of planned interventions on the human environment.

Three main tasks can be delineated: assessment and prediction; mitigation and monitoring; and audit and analysis. While early stages of SIA may involve similar social and economic information that would be used to understand the social and economic context, these types of information are, alone, insufficient for SIA. The specifics of social and economic impact assessments required will be dependent on the nature of the intervention being considered. Extensive community involvement will be required to identify and characterise potential impacts and stakeholder's responses to them. It is important to note that national strategies for social and economic data collection may assist in SIA but they will be inadequate. SIA requires specifically targeted and designed collections of relevant primary information.

### ***Evaluation of effectiveness of NRM interventions***

The third broad use relates social and economic information directly back to the processes and outcomes expected of NRM interventions. Social and economic information used for this purpose enables the modification and refinements of interventions to ensure outcomes delivered. Relevant information can be related to the program awareness and participation and to ensure that the program or policy reaches relevant target audiences.

Information can be divided into that relating to program implementation and that related to program results. The hierarchy developed by Bennett in the 1970s provides a useful framework assembling evidence for program intervention / evaluation (see Bennett and Rockwell 1995).

1. Resources: staff and volunteer time; salaries; resources
2. Activities: events, education and extension methods, subject matter, promotion
3. Participation: number of people reached, who was involved, degree of involvement
4. Reactions: degree of interest; acceptance of activities and personnel, positive/negative feedback about program
5. Learning: knowledge gained, values changes, skills learnt, aspiration clarified
6. Actions: patterns of behaviour changed, best practices adopted, innovation uptake
7. Impact: social, economic and environmental outcomes as results, unintended outcomes, public and private benefits

### ***Understanding decision-making behaviour of individuals, families and firms***

Ultimately the aim of all NRM policy, program or strategy is to encourage social change, typically human behaviour, with respect to the biophysical environment. A range of interventions have typically been used. For example education and training about more sustainable farming practices; subsidising the cost of environmental works through taxation or grants; campaigns of moral suasion; prohibition of particular activities; funding support and information networks. These approaches all make assumptions about the nature of decision-making and behaviour. The social science disciplines of psychology, sociology, and economics all provide useful contributions to better understand human decision-making and

behaviour, though no single disciplinary approach will be effective in providing a complete understanding.

Earlier models of agricultural extension assumed a linear transfer of knowledge and skill from some external 'expert' to a passive landholder who would then change behaviour or adopt the new innovation. It is now widely recognised that the process is more active with landholders being proactive agents seeking out information and assessing this for their situation prior to making rational judgments and decisions about innovations or behaviour change. Importantly what an individual landholder may decide as an appropriate and rational course of action for their situation may not coincide with broader regional, state or national goals.

***A potential role for nationally coordinated data collection in satisfying information needs***

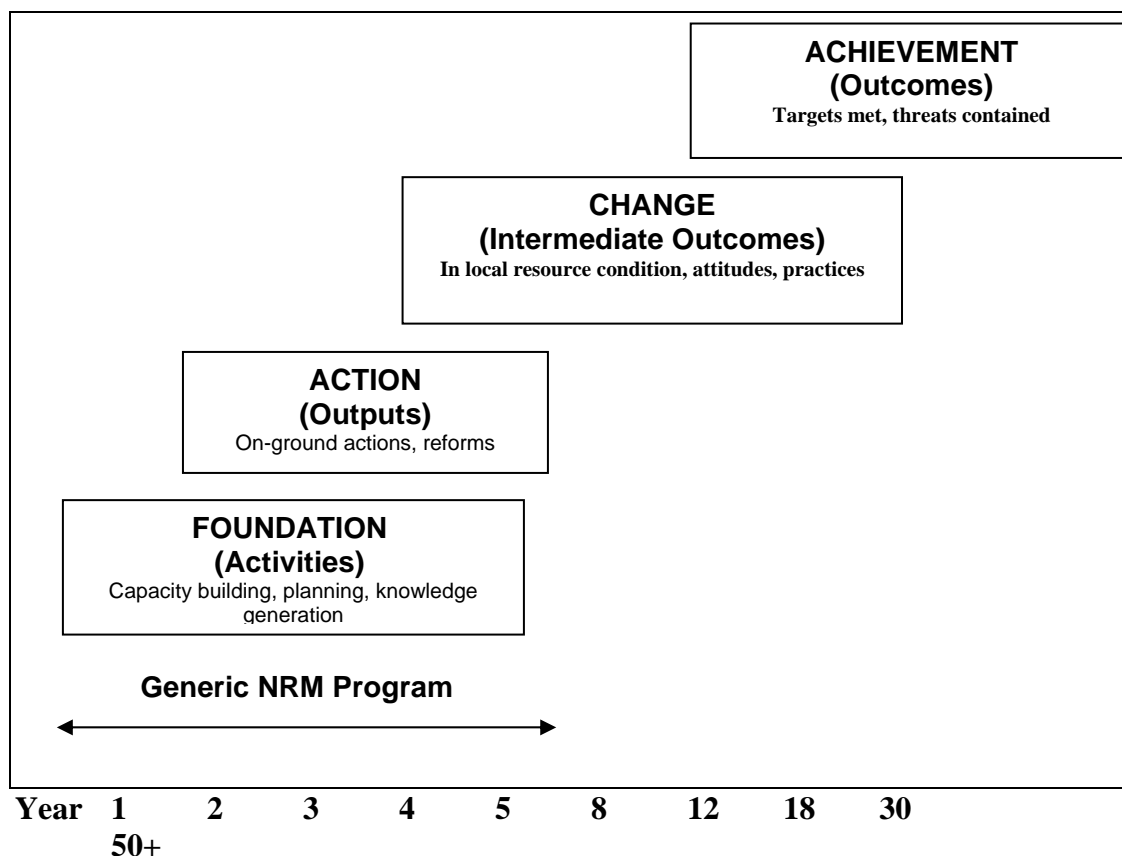
Outlining these four broad types of uses for social and economic information in NRM raises the question: "which types of uses should nationally coordinated data collection covering social and economic information focus upon"? Nationally coordinated data collection would be best focused on providing social and economic information that provides an understanding of the social and economic context in which NRM activities take place and can assist in the evaluation of the effectiveness of NRM interventions.

Nationally coordinated data collection would be unable to provide the context specific information required in SIA, though information to provide a social and economic context may be relevant to the initial stages of the SIA process.

Understanding the decision-making behaviour of individuals, families and firms is central to designing effective NRM interventions, however this is a largely research purpose and information would be tailored to the particular research questions being asked. The findings from such research are used to inform the types of information considered useful in providing a social and economic context for NRM.

**Part 4: A model to link social and economic information needs with NRM policy/program objectives**

The NHT2 and NAP program logics provide a relevant structure for the development of a model identifying social and economic information needs for NRM. The following diagram represents the generalised program logic for the NAP/NHT2 explicitly highlighting the temporal scale of activities ultimately leading to outcomes.



Drawing upon the National Natural Resource Management Monitoring and Evaluation Framework and the National Framework for Natural Resource Management Standards and Targets the four levels in the program logic can be further articulated.

- **Foundations** (activities): Focuses on short-term activities that develop the capacity for NRM, including the generation of relevant knowledge, the engagement of regional communities and stakeholders, enhancement of skills and awareness, infrastructure development, the development of plans and establishing of short-term regional targets.
- **Actions** (outputs): Focuses on on-ground actions and reforms, the adoption of more sustainable farming practices, the development of institutions and targeted data and information collection.
- **Change** (intermediate outcomes): Focuses on improved decision-making capability, institutional responsiveness, increased sustainability of resource use and management; resource condition, and change in impact of threatening processes. A set of ten resource condition matters for targets guide the development of achievable resource condition targets for inclusion in regional levels planning.
- **Achievement** (outcomes): Focuses on high level outcomes including the protection of key environment assets, conservation of biodiversity, the sustainable use of natural resources and community capacity building and institutional change.

The following table provides examples of how the satisfaction of social and economic information needs contributes towards the successful design, implementation and evaluation of NRM initiatives. The table seek to identify:

- The types of questions requiring an answer and whether they have been identified as a regional information need in Key M&E documents
- The nature of the information needs and special requirements for answering questions posed.
- Indicators currently being used at a regional level.
- Major gaps in data or appropriate methodologies.

## **Part 5: Review of current MEWG indicators**

The table below provides some back ground and contextual information regarding the interim socio-economic indicators suggested by MEWG. The ten ‘indicators’ originally selected do not provide a consistent or even approach to information that may be needed by the MEWG. Specific issues include:

**Lack of clarity in questions:** The model being developed in Part 4 links social and economic information to the answering of a particular question that has been identified in within MEWG or NHT program documents. It is unclear to which questions the original list of indicators seeks to serve. Some of those suggested may well be relevant to important questions for the MEWG or regional bodies. For example information about education may well serve to understand the social context in which NRM activities take place, it may serve to provide information regarding the likelihood of adoption of more sustainable farming practices by individual landholders. For each purpose the indicator may need to be operationalised to focus on the topic of interest.

**Inconsistency of level:** The list of indicators are inconsistent in the level that they are presented. Some are operationalised indicators that currently exist. For example ‘Farm cash income’ is an indicator that has been defined and data for its calculation is collected by ABARE as part of the annual farm survey. In contrast ‘Education’ is a type of information that may be useful to MEWG and depending upon the question would be operationalised in an appropriate manner. Some indicators are subsets under broader themes, for example ‘Youth net migration’ is a contributor to ‘Annual population growth’. The indicator set should have a well-developed hierarchical structure that relates to the answering of relevant questions as identified in Table 1.

**Lack of coverage:** The list of interim indicators primarily focus on limited types of information. Specifically they deal with some elements of human capital (age and population; education) and some elements of produced economic capital (economic resources only). Social capital is touched upon in the ‘Effectiveness of information networks’. A more consistent coverage of relevant information is required.

**Numerical focus:** The development of indicators privileges numerical data. As NRM involves ongoing negotiation between individuals, groups and institutions much of the relevant information to monitoring NRM will not be amenable to numerical forms, but requires rich descriptive and qualitative information. Where relevant indicators should be supported by appropriate qualitative information to aid in understanding and interpretation.

<b>Interim indicator identified by MEWG</b>	<b>Definition/Rationale</b>	<b>Relevance to NRM</b>
Effectiveness of information networks	Measures the structure and quality of networks, an important aspect of social capital. In landholders may be linked to adoption.	Provides information on mechanisms for information dissemination. Complex (with both bonding and bridging links) networks may facilitate information exchange.
Youth net migration	Measures the retention of youth in a region and provides information into the employment prospects for youth in the region. In general, positively associated with strong community and economic base.	Provides information on broad community context and general community capacity.
Index of economic diversity	Measures the breadth of a region's employment base. A broader base is generally more resilient to economic downturns in specific industries.	Provides information on broad community context. A region that has employment concentrated in agriculture and associated industries community will be vulnerable to NRM interventions that reduce agricultural productivity.
Median income and income distribution	Measures the economic wellbeing and equity within a region. Higher levels are generally associated with economic wellbeing.	Provides information on broad community context and general community capacity.
Farm cash income	A measure of farm financial performance.	Provides information on the financial capacity of farming families. May be linked to adoption of sustainable farming practices.
Farm family off-farm income	Measures off-farm income from wages, other businesses, investment and social security payments.	Provides information on the financial capacity of farming families. May be linked to adoption of sustainable farming practices. May also be used to distinguish commercial from hobby/lifestyle farms.
Farm debt-equity ratio	Contributes to a measure of farm financial performance. Provides an indication of the pressure on farm business to meet loan obligations.	Provides information on the financial capacity of farming families. May be linked to adoption of sustainable farming practices.
Education	Measures skills, abilities and knowledge within the community. Higher levels of educational attainment are generally related to social and economic wellbeing.	Provides information on broad community context and capacity. Education levels of landholders may be linked to adoption.

Age and experience	Measure of life stage.	Provides information on broad community context and capacity. Age and experience of landholders may be linked to adoption, however indicators often confounded with other aspects (eg education, financial situation)
Population growth	Measure of rate of population growth/decline. In general, positively associated with community wellbeing.	Provides information on broad community context and capacity.

## **Part 6: Measures of Capacity Building At the Regional Level**

Regional capacity building aims to support change in the way individuals, institutions and organizations think and go about their daily business.

Quantitative measures of capacity building relating to *individuals* have been used in a number of survey instruments in recent years, with examples provided in Table 1. These surveys were underpinned by extensive investigation of issues through quantitative methods, including focus groups, stakeholder consultations, and case studies.

As noted in Table 1 however, quantitative measures of capacity building in *regional groups* are not as advanced, and will require further development - based upon solid qualitative data. The areas for investigation outlined in key monitoring and evaluation documents (Attachment 1) can be summarised as: the capacity of regional groups to engage in regional NRM planning, implement NRM actions and monitor / evaluate the effectiveness of the actions in achieving intermediate and long term outcomes.

The capacity of regional groups to undertake these tasks will be dependant upon a number of factors that could be assessed through nationally coordinated data collection. The types of factors for investigation could include the:

- current level of expertise, experience, history of INRM planning of regions and regional organizations,
- level of social capital within the community (for example, level of development of community leadership, trust and NRM reciprocal networks / partnerships within the region),
- availability of baseline information relevant to their region and their ability to commission additional information,
- effectiveness of current and past Commonwealth/State investments and institutional arrangements aimed at assisting regions to fulfil their role, and in particular to undertake:
  - planning which meets Accreditation Criteria
  - stakeholder engagement / consultation processes
  - social, environmental and economic trade-off analysis, and
  - monitoring and evaluation reporting requirements.

## **Part 7: Statistical advice concerning national collections used at regional scales**

In order to present a statistical picture of social and economic issues for NRM, relevant statistics need to be shown in a structured, logical manner. Frameworks are a well recognised tool to support statistical measurement, data analysis and analytical commentary. The primary function of a framework is to map the conceptual terrain surrounding an area of interest. The development or choice of a framework also enables any gaps in available statistics to be identified, thus identifying priority areas for new statistical collection activities.

Successful frameworks share some common attributes, such as being:

- Logical in structure
- Comprehensive but concise
- Dynamic and flexible to allow for change
- Cognisant of other frameworks, classifications and standards

Above all, frameworks represent an agreed way of thinking about an area of interest and are therefore valuable in promoting standards, consistency and comparability across data collections and between jurisdictions (eg. Regions, states, countries) and sectors (public and private.) If a framework does not exist, there is a risk that, in the effort to provide a comprehensive picture, any apparent relevant statistics will be thrown together without due consideration as to whether the statistics help to tell a meaningful story. The lack of a framework encourages statistical compilation only from existing statistics without thought being given to other statistics not yet available but more appropriate.

The framework proposed in this paper is an initial step in establishing a system to collect relevant social and economic information on NRM, It seeks to link the types of uses for economic and social information in NRM with the NHT2 and NAP program logics.

It should be noted that the indicators proposed are provisional and more work will need to be done in establishing whether they meet the criteria for an appropriate indicator. A good indicator needs to be:

- Relevant to the issue or idea being considered
- Show unambiguous directions of movement ('good' or 'bad')
- Supported by timely data of good quality
- Available as a time series
- Sensitive to the underlying phenomena being measured
- Summary in nature
- Capable of disaggregation (eg. By geography or population group)
- Intelligible and easily interpreted

A further issue that needs to be considered is the appropriateness of using nationally collected information at the regional level. For some indicators, the information will be able to be applied at the regional level (eg. contextual information about population size, age, education levels etc.) but for other indicators, they may not be appropriate. Reasons why they may not be appropriate include:

- The original purpose for which the information was collected may be different to the regional requirements
- The quality of the data may be poor due to lack of sample size
- The level of geographic output may not be appropriate

Many of the nationally collected indicators that can be used at the regional, state and national levels can be found in the ABS Agricultural Census/Survey, Land Management and Salinity Survey, and the Population and Housing Census. The information coming from these sources avoid many of the problems listed above by having large sample sizes or a census, and provide various levels of geographic output. In the past, statistical geography such as

statistical local areas (SLA's) or statistical divisions (SD's) has been problematic when considering NRM because it does not correlate well with physical boundaries such as catchments. However with advances in the spatial sciences, it is now possible to manipulate some of this information to present it at various scales eg. NAP regions.

As an initial step, this paper has proposed a framework and some contextual indicators that could be used in the foundation stage of NAP and NHT2. Clearly, more work will need to be done. However, there is now an enhanced capacity to produce previously collected information at different spatial scales more appropriate for NRM. This work could be done in concert with the refinement of the framework, development of further indicators and consideration of future collection vehicles for social and economic information for NRM.

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**Specific uses of Socio-economic data cited in key NAP/NHT2 Monitoring and Evaluation documents**

Item	Category of Use	Specific Use Cited	Source Document
1	<b>Regional Planning</b>	Regional plans should provide: <ol style="list-style-type: none"> <li>1. An overview of region’s natural, cultural, social and economic resources and management practices could include:                             <ul style="list-style-type: none"> <li>• Production / economic issues</li> <li>• Social/demographic characteristics</li> <li>• Land use and tenure</li> <li>• An analysis of socio-economic and institutional factors affecting environment &amp; resource degradation</li> </ul> </li> </ol>	Page 4 & 5 National guidelines for the accreditation of integrated catchment/regional NRM plans
2		Regional plans should demonstrate: <ul style="list-style-type: none"> <li>• Comprehensive consultation took place with broad public awareness of the process</li> <li>• Stakeholder support and awareness of their role</li> <li>• strategies to achieve changes in NRM practices which are tailored to the region’s social, economic and environmental circumstances</li> </ul>	Page 6&7 National guidelines for the accreditation of integrated catchment/regional NRM plans
3		Regional plans should describe and evaluate the range of possible actions to address the issues and their social, economic and environmental impacts, including: <ul style="list-style-type: none"> <li>• where relevant, modelling proposed actions and their economic, social and environmental impacts</li> <li>• outlining trade-offs or mitigation strategies</li> <li>• identifying the circumstances in which regions may need structural adjustment assistance as a result of the plan’s implementation</li> <li>• identifying community capacity building activities necessary to promote sustainable resource management &amp; biodiversity conservation</li> </ul>	Page 10 National guidelines for the accreditation of integrated catchment/regional NRM plans
4		Regional plans should include details on available baseline data including measures of resource condition, attitude and behaviours where relevant to the plan	Page 13 National guidelines for the accreditation of integrated catchment /regional NRM plans
5		Where relevant, investment proposals should identify (and provide costings for) strategies to address social and economic consequences of NRM actions	Page 15 National guidelines for the accreditation of integrated catchment/regional NRM plans

6	<b>Trade-off analysis</b>  <b>Social Impact Assessment</b>	Impact of resource use and management on ESD  Identification of social and economic values requiring consideration  Assessment of broad social and economic impacts: <ul style="list-style-type: none"> <li>• Economic production profile</li> <li>• Social profile demography, social trends etc.</li> <li>• Structural adjustment processes</li> </ul>	Page 2 Accreditation of integrated catchment/regional NRM plans  Para 17 & 18 National Framework of NRM Standards & Targets
7	<b>Adaptive management – assessing achievement of intermediate outcomes</b>	Monitoring capacity building to encompass measures of: <ul style="list-style-type: none"> <li>• community and social processes relevant to or affected by NRM programs</li> <li>• attitude/behaviour</li> <li>• adoption of sustainable development &amp; production techniques</li> <li>• changes in land use</li> </ul>	Para 6 National NRM M&E Framework  Page 5 Draft users’ guide monitoring & reporting on NRM
8	<b>Adaptive management – assessing effectiveness of strategies</b>	Communication <ul style="list-style-type: none"> <li>• awareness</li> <li>• participation of target group</li> <li>• broader community support</li> </ul>	
9	<b>National standards defining best practice management of natural resources</b>	Apply principally to government: <ul style="list-style-type: none"> <li>• legislative</li> <li>• policy</li> <li>• process, and</li> <li>• institutional systems</li> </ul>	Para 26 & 27 National Framework of NRM Standards & Targets
10	<b>Contribution of regional strategies to broader national and State policies</b>	Examples of strategies and policies provided	Page 8 National guidelines for the accreditation of integrated catchment/regional NRM plans

The following collections are capable of being used at NAP/NHT regional and national scale

- ABS Agricultural Survey 2002 (ABS AS 2002)
- ABS Population and Housing Census 2001
- ABS Agricultural Census 2001
- ABS Land Management and Salinity Survey 2002

**Table 1**

**NRM social and economic information needs linked with current data collections – highlighting regional information priorities**

*Note these socio-economic indicators could be undertaken in parallel to a set of biophysical indicators*

**Foundations** (building, planning, knowledge generation)

	<b>Broad questions or topic of interest</b>	<b>Type and nature of social and economic information required</b>	<b>Relevant information source</b>	<b>Relevant indicators currently being used</b>	<b>Major gaps</b>
<b>Regional profiling</b>	<p>What is the social and economic context in which NRM activities take place?</p> <p><i>Identified as a regional priority Attachment 2.1A Item 1</i></p> <p><i>(Need to clarify boundaries – whether interested in socio-ec context of region as a whole or natural resource managers. Primary target group will be primary producers, however a multiplicity of communities exist and need to identify their interaction. )</i></p> <p><i>(eg. Individual managers, community of managers, broader community and broader aggregates)</i></p>	<p>Baseline social and economic information and trends including information on</p> <ul style="list-style-type: none"> <li>human capital:               <ul style="list-style-type: none"> <li>population and age structure</li> <li>education</li> <li>health</li> <li>cultural diversity</li> <li>individual well being – self efficacy</li> </ul> </li> <li>social and institutional capital:               <ul style="list-style-type: none"> <li>structure of networks</li> <li>quality of networks (norms, process)</li> <li>governance</li> <li>civic participation</li> <li>social participation</li> </ul> </li> <li>produced economic capital:               <ul style="list-style-type: none"> <li>economic resources</li> <li>economic physical infrastructure</li> <li>social physical infrastructure – hospital</li> </ul> </li> </ul> <p>Broader economic indicators for region eg. regional GDP, down stream agriculture, trade</p> <p>Baseline information on the nature of dominant social and economic processes including information on:</p> <ul style="list-style-type: none"> <li>demographic processes</li> <li>economic processes (debt relative to productivity, capacity to service debt)</li> <li>socio-cultural processes</li> <li>institutional and legal processes and structures</li> <li>farm size, land use</li> </ul>	<p>ABARE and ABS national collections provide an excellent basis for information on human and produced economic capital</p> <p>Information should have the capacity to be tailored to various social aggregates (eg industry; landholders; farmers; geographic communities; communities of interest</p> <p><i>Most of the originally listed MEWG socio-economic indicators fit within population and age structure; education and economic resources.</i></p>	<p>population; age of population; sex ratio; dependency ratios; industries of employment; indigenous population; NESB population; unemployment rates; labor force participation rates; farm establishments and change over time; EVAO, farm size, industry, levels of formal and informal educational attainment; household income; farm cash income, farm debt-equity ratio; off-farm income;</p> <p>Note: lists of indicators have been produced that suggest sets of indicators to provide a social and economic context: eg. Webb &amp; Curtis (2002); Cavaye (2003); Black &amp; Hughes (2001); Bray (2001); Bureau of Rural Sciences (in press); Macgregor &amp; Cary (2002); Vanclay (2000); Reeve et al. (2003).</p>	<p>Very limited sources of data on social capital.</p> <p>Limited sources of data on socio-cultural and institutional and legal processes.</p>

	<b>Broad questions or topic of interest</b>	<b>Type and nature of social and economic information required</b>	<b>Relevant information source</b>	<b>Relevant indicators currently being used</b>	<b>Major gaps</b>
<b>Socio-economic Drivers</b>	What are the economic influences of resource degradation?	<p>Economic information and modelling regarding the economic returns to agricultural activity</p> <p>An economic analysis of each (resource condition) problem, eg. what are the yield loss relationships for different degradation problems?</p> <p>Understanding of where and under what conditions agriculture can be economically sustainable</p> <p>The nature of the market failure causing resource degradation.</p> <p>Regulatory and incentives structure – government programs &amp; outside influences</p>			<p>Limited data, methodologies require development</p> <p>Research to explore the integration of biophysical and economic models to investigate the benefits of improved NRM</p>
<b>Socio-economic Drivers</b>	<p>What are the social factors associated with resource degradation?</p> <p><i>Identified as a regional priority Attachment 2.1 Item 2</i></p>	<p>Information about the underlying social norms, culture and values that underpin particular types of behaviours</p> <p>Understand the historical development of resource degradation issues, links to past policy and practice</p>	<p>One-off collections may provide some insights</p> <p>Case studies and oral histories will provide context to this question</p>		<p>Limited, scattered sources of information no regular collections exploring rural norms/values</p> <p>Require development of theoretical models and tools</p>
	What are the environmental influences on management practices.	Impact of drought on behaviours.			

	<b>Broad questions or topic of interest</b>	<b>Type and nature of social and economic information required</b>	<b>Relevant information source</b>	<b>Relevant indicators currently being used</b>	<b>Major gaps</b>
<b>Socio-economic Drivers</b>	<p>What is the capacity of individuals, firms and regional communities to adopt change <i>Identified as a regional priority Attachment 2.1 Item 4</i></p> <p>Communities are made of individuals, organisations, and institutions each with their own capacity to change. Decisions at the individual level can therefore differ to the regional level. eg. the difference between private and public good.</p> <p>The adoption of change includes individual decisions to leave an industry, changing farm management practices, or the commodity/industry mix in a region, It is linked to the drivers/influencers of change</p> <p>Need to define &amp; unpack “capacity”. eg, the ability to change is also described as a function of capacity, motivation and attitude, and capacity has a behavioural component</p>	<p>Capacity refers to the ability of an individual, community, or enterprise to realise some desired outcome.</p> <p>Different elements of human, social and institutional, and produced economic capital will produce different types of regional capacity</p> <p>Allows integration of cultural items – includes “resilience”- capacity to adapt to negative change.</p>	<p>Some ABS and ABARE national collections provide data for some elements of capacity</p>	<p>Age, level sand participation in education, EVAO, farm size, farm planning documents; identified barriers to change</p> <p>Capacity =no. of people currently adopting management practices</p> <p>Current status and future intent wrt farming</p> <p>Significant research has provided insights into individual questions of adoption eg. see Cary et al. (2002); Cary et al. (2001); Guerin &amp; Guerin (1994); Mues et al. (1998) CIE (2001); Wejnert (2002).</p>	<p>Needs further theoretical development and research to link potential indicators of capacity to identified outcomes and actions at a range of scales</p> <p>Research required to better understand contribution of social capital to individual adoption</p> <p>Theoretical work underway with 12 months to delivery</p>

	<b>Broad questions or topic of interest</b>	<b>Type and nature of social and economic information required</b>	<b>Relevant information source</b>	<b>Relevant indicators currently being used</b>	<b>Major gaps</b>
<b>Regional trade-off analysis</b>	<p>What environmental, social and economic trade-offs are socially and economically acceptable?</p> <p><i>Identified as a regional priority Attachment 2.1 Items 3 &amp; 5</i></p> <p><i>How do we achieve an economic/social/environmental balance in NRM</i></p>	<p>detailed social and economic impact assessment processes that engage relevant stakeholders (This has a process versus data orientation)</p> <p>information on the social viability and well-being of rural communities</p> <p>The current economic/social tradeoffs that are feeding into the process</p>	<p>Will require primary data collection</p> <p>This activity is central to the regional target setting and planning process, however the specificity and local context will require substantial primary data tailored to the purpose. This is not appropriate for a national information system.</p>	<p>Needs to be determined within local context.</p>	<p>Generic data on current economic/social tradeoffs</p> <p>Note the Audit has a role in informing national investments. Best placed to provide data on current economic/social tradeoffs that will feed into the process.</p> <p>Ultimately regions will have to engage in negotiation/resolution processes. Issues relating to data credibility and weighting will differ between regions.</p>

**Actions** (On-ground actions, reforms)

	<b>Broad questions or topic of interest</b>	<b>Type and nature of social and economic information required</b>	<b>Potential National information source</b>	<b>Relevant indicators currently being used</b>	<b>Major gaps</b>
<b>Socio-economic Drivers</b>	<p>What are the current behaviours of landholders and land managers? What is the extent of adoption of land management practices?</p> <p><i>Identified as a regional priority Attachment 2.1 Item 4</i></p>	<p>Information about current practices, program awareness and participation</p> <p>Participation in training and NRM forums</p> <p>Landcare membership, participation and support</p> <p>Regional groups' targets for land management practices</p> <p>Landmanagers' opinions of what are good management practices and rationale for adoption – ie. link between adoption and production</p> <p>Note: Current practices should be examined in relation to specific industries, geographic settings, degradation problems, and environmental issues. Lifestylers and indigenous managers should also be considered.</p>	<p>wide range of data sources including ABARE surveys, ABS commissioned surveys, agency commissioned collections</p>	<p>Adoption of: Property Management Plans and comprehensiveness, Revegetation, Fertiliser, Management responses to perceptions of salinity General changes in management practices in last year; Landcare membership</p> <p>Program awareness &amp; participation</p> <p>Participation in formal and informal ed/training</p>	<p>Requires review and collation to determine information sources and gaps</p> <p>Identification of BMPs or CRPs</p>
<b>Socio-economic Drivers</b>	<p>What is the suite of potential interventions?</p> <p><i>Identified as a regional priority Attachment 2.1 Item 3</i></p>	<p>How do individuals, families and firms respond to the range of NRM interventions- which are likely to have the highest levels of adoption/compliance. Links between particular farming styles and/or socio-demographic groups to particular types of interventions</p> <p>What are the best timings for intervention (Process versus mechanism orientation)</p> <p>What are the equity and distributional consequences of potential interventions</p> <p>Effectiveness of previous similar individual and institutional interventions (Would guide establishment of targets, timing of interventions and measurement of impacts)</p>	<p>data from program evaluation and market research may be useful in segmenting communities</p>	<p>Interest in management information</p> <p>Potential linkage to DoTaRS National Regional Evaluation Framework – effectiveness of government intervention in region</p>	<p>Will require review and collation to determine information sources and gaps.</p> <p>Note: Audit would have to clarify it's interest in this. eg. bringing to the fore awareness of the data required to answer the question. Would have implications for data provision and research activities.</p>

	<b>Broad questions or topic of interest</b>	<b>Type and nature of social and economic information required</b>	<b>Potential National information source</b>	<b>Relevant indicators currently being used</b>	<b>Major gaps</b>
	What activities are currently taking place?	Progress against targets sets (including knowledge and capacity), actions proposed, investment decisions made  Introduce a time dimension eg. Compared with what was planned, identify what is occurring.	Requires collation and collection from agencies and catchment management bodies	Program administrator	
Assessing change in regional groups /communities / institutions	To what extent is the broader community engaged and aware of sustainability and need for action  <i>Identified as a regional priority Attachment 2.1 Item 2</i>  <i>(Note: Sustainability includes consideration of the economic viability of farming and the environmental context in which farming occurs).</i>	How widely is the problem recognised?  Is there community support for action, eg. support for environmental levies or actions <sup>1</sup> on their part.  What norms and values serve to support the actions of landholders and land managers?	Some collections concerning level of awareness and engagement  Undertaking choice modelling survey - NSW EPA  DEH undertake community perceptions of environment (Limited info on rural industries and sampling of regional areas)  ABS level of environmental activity (eg. Landcare membership, letters to Ministers)		Collections for rural community norms and values need development.  Note: Need to define broader community- eg. refers to those individuals not directly engaged in NRM eg. Rural and urban community.  Need to define “actions” engaged in

**Change** (intermediate outcomes)

	<b>Broad questions or topic of interest</b>	<b>Type and nature of social and economic information required</b>	<b>Potential information source</b>	<b>Relevant indicators currently being used</b>	<b>Major gaps</b>
Assessing change in regional groups /communities / institutions	<p>Has decision-making capability improved? <i>Identified as a regional priority Attachment 2.1 Item 6</i></p> <p><i>(The scale to which this question pertains is primarily natural resource managers at the individual and regional organisation level.</i></p> <p><i>Is a subset of human capital – with the individual affected by the social capital of industry and regional organisation. )</i></p>	<p>information about the understanding of problems and knowledge of potential solutions</p> <p>skills and understanding of need for environmental, social and economic trade-offs</p> <p>level and quality of property planning in relation to specific activities (eg. written, comprehensiveness, linkage to regional plans)</p> <p>use of risk-management strategies</p> <p>enhanced levels of social capital, (including trust strong intra- and inter-group linkages) and effective conflict resolution skills</p> <p>supportive legislative structures</p> <p>social and organisational capacity – eg. social networks, levels of conflict</p>	Some data from ABARE's triennial Resource Management Survey		<p>Theoretical frameworks need developing and testing</p> <p>Quality</p>

	<b>Broad questions or topic of interest</b>	<b>Type and nature of social and economic information required</b>	<b>Potential information source</b>	<b>Relevant indicators currently being used</b>	<b>Major gaps</b>
<b>Assessing change in regional groups /communities / institutions</b>	<p>Have institutions responded more effectively?</p> <p><i>Identified as a regional priority Attachment 2.1 Item 8</i></p> <p><i>(Usually considered organisational capital - Eg. Institutions can respond through adaptive management to planning issues)</i></p>	<p>levels of trust<sup>2</sup> in institutions, levels of generalised community trust, social coherence eg. watershed management</p> <p>extent that institutions have effectively engaged diverse communities</p> <p>case studies of changes within institutions, for example how has structural adjustment policy and programs changed to incorporate NRM concerns</p> <p>cooperation and integration of activities across agencies, departments and portfolios</p> <p>quality of decision making in institutions eg. rapport, learning organisation , good governance practice</p>	<p>Work in the private sector eg. turnover rates, health of an organisation</p>		<p>Theoretical frameworks need developing and testing</p> <p>Audit could identify it as a gap.</p>
<b>Trade-off analysis</b>	<p>Has resource use and management become more sustainable?</p> <p><i>Identified as a regional priority Attachment 2.1 Item 6</i></p>	<p>information regarding the uptake of more sustainable farming practices</p> <p>changes in behaviour and practices</p> <p>social resilience</p>	<p>Some data from ABARE's triennial Resource Management Survey</p>		<p>ABARE data needs to be linked to farm resource attributes. Broad scale integration on the uptake of practices and impact on biophysical</p> <p>Requires longitudinal studies.</p>
<b>Trade-off analysis</b>	<p>Has resource condition improved?</p> <p><i>(Compare individual perceptions with expert assessment)</i></p>	<p>perceptions of resource condition, links between expert and local assessments of resource conditions (Links to values)</p>	<p>Some data from ABARE's triennial Resource Management Survey</p>		

**Achievements** (outcomes - not processes)

	<b>Broad questions or topic of interest</b>	<b>Type and nature of social and economic information required</b>	<b>Potential information source</b>	<b>Relevant indicators currently being used</b>	<b>Major gaps</b>
Assessing change in regional groups /communities / institutions	<p>To what extent have communities signed on to the vision for a sustainable future.</p> <p><i>(The vision needs to be defined)</i></p> <p>Has social condition improved</p>	<p>information about levels and nature of social capital</p> <p>level of community support for 8 national outcomes and regional aspirational targets</p> <p>recruitment and development of community leaders and champions</p> <p>level of engagement/ ownership, contribution to the vision</p> <p>resilience, quality of life/well being</p> <p>intergenerational equity</p>	<p>would generally require primary data collection and collation from administrative activities</p> <p>Vanclay, &amp; CSIRO inclusive wealth model (includes all values)</p>		
Assessing change in regional groups /communities / institutions	<p>Have communities enhanced their capacity to respond and manage for effective NRM outcomes?</p> <p><i>(Can the regional model survive – eg. appropriate level of power, resources, governance structures, related to whether institutions have responded effectively)</i></p>	<p>information about the changes in levels and characterisation of human, social and institutional and produced-economic capital through time</p> <p>capacity to resolve conflict and recognise competing value stances</p>	<p>would generally require targeted data collection, though trends from national collections (ABARE, ABS) will provide a baseline</p>		

	<b>Broad questions or topic of interest</b>	<b>Type and nature of social and economic information required</b>	<b>Potential information source</b>	<b>Relevant indicators currently being used</b>	<b>Major gaps</b>
Assessing change in agriculture	Has agriculture become more economically viable	Economic modelling of changes in practice – Total Factor Productivity Measures  Economic returns to resources, factoring in climate, exchange rate and resource degradation	Can be done at industry level using ABARE data  Longitudinal data – Valuer General price of land and ATO values	Michael Dunlop of CSIRO examining long term viability of particular land uses in regions	
	Were there any unintended impacts of NRM policy?	information about unintended impacts, positive, negative	would generally require collation of stories  Social monitoring processes using qualitative data		* Worth doing