

# **indicators and measures for the social asset in natural resource management**

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Proposes at what point, in the logic of processes and outcomes, targets should be set for the social asset in NRM. Proposes indicators for the social asset in NRM, presents evidence for the link between indicators and improvement in practices and resource condition, and recommends measures for the indicators.

**scope**

The Community Strategies Project is a NAP Multi-Region Project in Victoria developing:

- Guidelines for regions developing a Community Strategy as part of their Regional Catchment Strategy, based on four pilot Regional Community Strategies;
- Methodology for developing social targets within asset-based approach.

The participating CMAs are Wimmera, Glenelg-Hopkins, Corangamite and East Gippsland. The Project Leader is Polly Hall, Corangamite CMA.

This report presents progress with the second objective above, specifically with the development of measures of the outcomes of engagement and social capacity building.

It builds on development of a logic for engagement and social capacity building, and a review of measures of processes of engagement and social capacity building.<sup>1</sup>

**the social asset in NRM**

*The social asset* is the individuals, organisations, social networks and working relationships in NRM that drive improvement in practices and resource condition:

- *Working relationships around current NRM priorities*, with the right mix of partnership, collaboration, consultation and informing. Relationships around current priorities are the tangible and immediate expression of social capacity, and a ready point of access for building social capacity in NRM. All parties benefit by working together better, and all can contribute to improving working relationships.
- *Social networks*, through which people get information, advice and emotional support and through which they influence decision makers. Extensive and dense social networks make working relationships more effective. Well-connected people have a wide network of resources to call on, and can get ideas and information quickly when they need it.
- *Effective organisations*, able to contribute to NRM planning and take action in their own sphere of influence, underpin relationships around current priorities. People working together on a priority are more effective when their respective organisations are clear about their goals, have effective decision making in place, manage staff, finances, and projects efficiently.
- *Effective individuals* contribute to NRM planning and take action in their own sphere of influence. The capacity of individuals in the community at large has an impact on what can be achieved in NRM. People’s knowledge, skills and attitudes in relation to sustainable practices affect how readily changes targeted in NRM planning are translated into action.

Alternative conceptualization of the social asset

‘Defining social assets for the Salinity Investment Framework’ a report to the WA Water and Rivers Commission for the Salinity Investment Framework, 2003, broke up the social asset into ‘asset types’:<sup>2</sup>

Asset type	Category
Knowledge and skills	Knowledge and skills available
	Ability to grow knowledge and skills

	Robustness and availability
Values/ culture	NRM values
	Sense of place, cultural heritage
	Robustness, persistence, resilience and availability
Community well-being	Community health
	Cohesiveness
Networks/ organizations	NRM values
	Quality of social interaction
	Information flow
	Learning capacity
Economic resources	Investment available from businesses reliant on natural resources
	Investment available from sources not reliant on the natural resources
Governance capacity	Institutional arrangements for NRM

This framework mixes logical categories: “values” are one aspect of social systems; “community well-being” is an emergent quality of local communities, “governance capacity” is an outcome of the functioning of relationships around current NRM priorities, social networks in NRM and organisational capacity; “knowledge and skills” begs the question of knowledge and skills for action in which social systems – government NRM or community NRM; “networks and organisations” are so distinctly different as social structures (the latter often esteeming hierarchical modes of organisations, the former working through trust and reciprocity in a web of relationships) that they ought to be considered separately.

The approach to the social asset taken in this report is to separate out the types of social structure that contribute to NRM at regional scale: individuals, organisations, networks and their respective capacities, and the working relationships around NRM tasks.

Another approach to the social asset in NRM is to view it as an ecology of communities of practice. Macadam and colleagues assert that communities of practice are an influential social structure, that defines “what constitutes competence for the people who belong to them and hence what is expected of them.” They observe that “the members of various communities of practice contribute their competence by participating in cross-functional projects and teams that combine their knowledge and practice to get something done. This simultaneous participation in a community of practice and a project team creates learning loops that combine application to improve the project situation with capability development in the participants. The learning and innovation accruing from the project are disseminated through the members of the home communities of practice.”<sup>3</sup>

This view of the social asset would see communities around conservation of native vegetation, or farm productivity, or regional NRM governance. However, communities of practices are not yet used as a construct in the NRM field. Assessment of working relationships around specific NRM programs, and measures of social networks, begin to look at the functioning of communities of practice, but without attempting to measure them directly.

### the value of having indicators and measures for the social asset

It is useful to dwell a while on the value of having indicators and measures. NRM policy in Australia has headlined the importance of engagement with communities and partnerships between contributors for at least a decade. One of the Natural Heritage Trust's 1997 goals was "Community Capacity Building and Institutional Change – support for individuals, landholders, industry and communities with skills, knowledge, information and institutional frameworks to promote biodiversity conservation and sustainable resource use and management."

In 1999, the National Natural Resource Management Taskforce argued for devolution of decision making to regions and catchments to "give the people of the region greater authority over natural resource management," with regional bodies planning and implementing regional NRM strategies.<sup>4</sup> It said that industry needed to play a stronger role, saw Landcare groups as key participants and anticipate the need to develop the capacity of participants in regional planning and action. National Action Plan acted on these recommendations, and the midterm review reiterated the importance of regional governance arrangements and partnerships in setting, implementing and evaluation priorities.<sup>5</sup>

However, measures for the social aspects of NRM have lagged a long way behind measures of biophysical assets and threats. Developers of national indicators have mentioned the need for indicators in this area, but there has been limited progress.<sup>6</sup>

Regional NRM bodies have in the past been wary of setting targets for the social asset for fear of taking on responsibility for the state of the whole community, which is clearly not their brief and for which they are not resourced. Taking head of this, the indicators presented here are for social capacity in relation to natural resource management activity only.

Setting targets for the social asset is not common practice. Most often, engagement and social capacity building is an integral part of programs targeting biophysical outcomes, but it is resource condition outcomes that are seen as consequential. Social dimensions of change are seen as instrumental.

While regional bodies may be reluctant to commit to specific targets for the social asset, the fact is that they do have substantial and sustained impact on working relationships, social networks, organisations and individuals that goes beyond immediate activity. Their activity is either building up or running down social capacity, with consequences for subsequent projects. Indeed, NRM projects like those targeting landcare and local government, indigenous Australians, or improving NRM planning itself, have as their primary goal improvement in working relationships, social networks and organisational capacity.

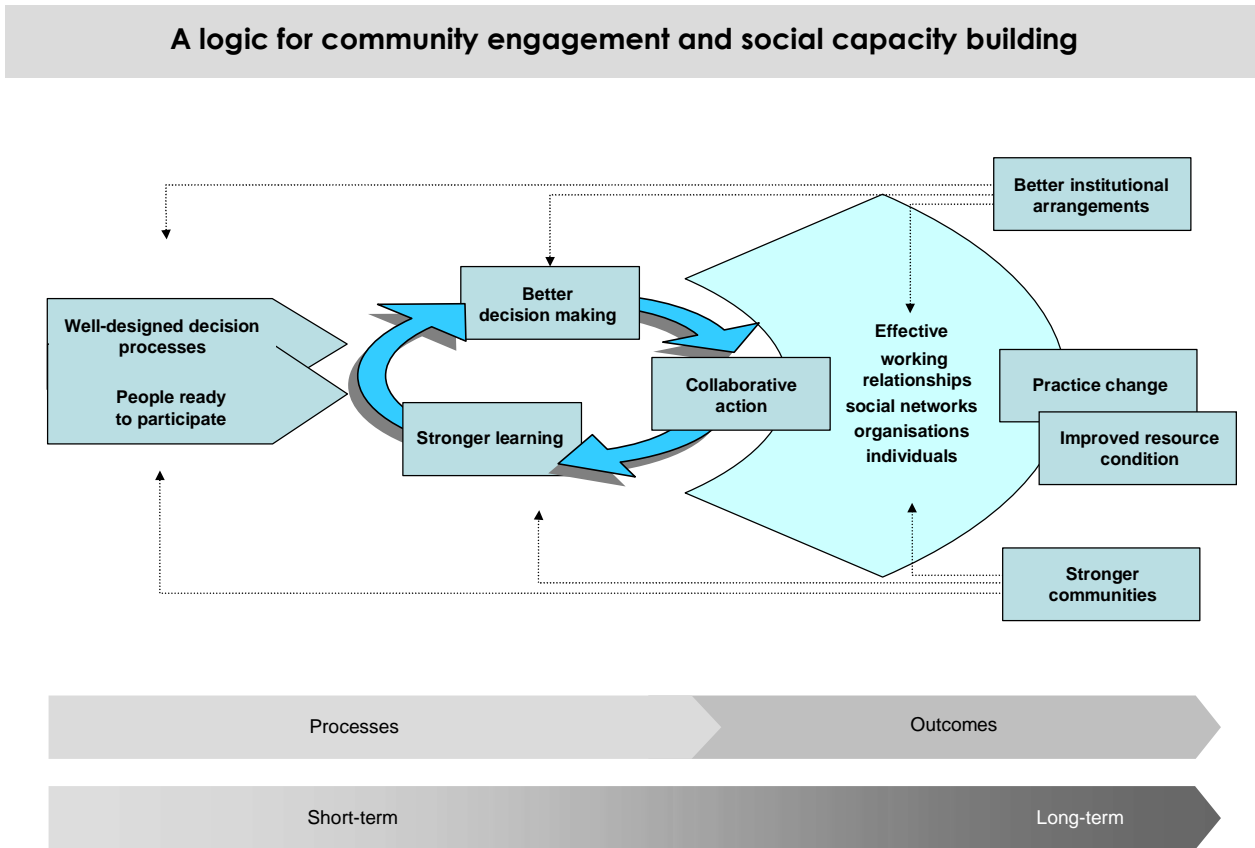
There are three benefits from setting targets for the social asset at regional level:

- *Targets enable regional bodies to direct activity and investment in the social asset.* NRM is a target-driven work system – if a matter is a target, it gets attention. NRM staff do plenty of engagement as part of projects, but management does not typically decide where relationships need to be built and where social capacity needs to be increased, nor what resources are required to achieve those goals. If CMAs have targets for the social asset, they will be more effective with their limited resources.
- *Targets for outcomes let investors see what has been achieved with their investment.* At present, the measures of engagement and social capacity are of activity (counts of meetings, workshops and the like), not outcome. Funders want to know what difference investment in social capacity makes to practices and resource condition. Measures of improvements in the capacity of working relationships, social networks, organisations and individuals provide a medium-term measure of outcomes, midway between short-term activities and long-term change in practices and resource condition.

- *Targets enable regional bodies to make a case for resources.* Community members and agencies make the most of limited funding, and work heroically against the trend of degradation. But it's a 50-100 year task, not a 10 year task, and one that requires society to behave and govern itself differently. Regions complain that, in building an effective NRM system and changing social attitudes and behaviours, they are expected to do much more than they are resourced to do. Targets for the social asset, and data against the targets, will enable regional bodies to make a stronger case for resources to build the social capacity that can produce sustained improvement in practices and resource condition.

**where should the social asset be measured?**

*Effective working relationships, social networks, organisations and individuals* is the appropriate place in the logic to set targets for the social asset and measure outcomes of engagement and social capacity building activity. Effective engagement and social capacity building shows up as long-term improvement in these elements.



Outcomes in NRM show up:

- first in the relationships around NRM;
- then as improvements in community well-being, institutional arrangements,<sup>7</sup> practices and resource condition.

*Change in practices* is driven by many influences other than engagement – money, technical solutions, regulations, economic prosperity and political will, to name a few. Change in practices is not an appropriate point to measure the outcomes of engagement and social capacity building activity.

NRM activity, and the investments in social capacity in support of better NRM planning and action, do have impacts on local communities and institutions:

- *Local communities* in this instance means affiliation to a particular place, and the relationships that form around shared involvement in a place. Local government provides one focus for formal relationships and planning for place, but informal social relationships also support local affiliation and action. Effective engagement is likely to contribute to local communities that are safer, more cohesive and more able to adapt to change.
- *Institutional arrangements* in this instance means formal requirements of legislation, policy and administration, and the un-mandated relationships between agencies. The balance between competition and collaboration in agency relationships and between levels of government has a powerful effect on NRM activity.

Should targets be set for long-term improvements in these two social structures?

*Community well being* underpins participation in natural resource management, but is not itself a target. A community with strong relationships, where people willingly contribute to the public good, will be one where people are active in natural resource management. Measures of a community's functioning and capacity reveal strengths and weaknesses and can guide action to mobilise local community effort<sup>8</sup>. There is work underway to better measure general community well-being: Local government is beginning to adopt measures of community well-being,<sup>9</sup> some regional NRM bodies are gathering social data by geographic location<sup>10</sup> and research is beginning on the relationships between capacity to participate in NRM and the processes of local communities, and between environmental health and community well being.<sup>11</sup>

However, while engagement in NRM may have a beneficial impact on community well-being, this is not a target of NRM engagement. Community well-being is shaped by many other forces over which the NRM system has no control, such as changing demographics, changing economic conditions, planning decisions across other government sectors.<sup>12</sup>

*Improvement in institutional arrangements* is not a matter for targets. These arrangements are affected by many factors other than regional scale action – by government policies, State agency senior management decisions and the culture of organisations. Institutional arrangements are also difficult to measure, because not much work has been done on measures. At this point, they are not a matter for social targets for a region.

I turn offer some observations about the role of indicators in a functioning NRM system, before turning to the indicators themselves.

### **the indicators of “effective working relationships, social networks, organisations and individuals”**

indicators capture limited aspects of a complex social system

Many individuals and organisations influence practices and resource condition: individual landholders and residents, private land developers, Local Government, community NRM groups, industry groups, the Catchment Management Authority, State agencies managing public land, State agencies providing services to agriculture and rural and urban areas, State agencies whose activities affect land use and the environment, indigenous groups, non-government organisations with environmental interests, government business enterprises such as water authorities, Commonwealth agencies and national R&D bodies.

The number of relationships *between* these organisations are an order of magnitude higher than the number of organisations. Any single player would likely name ten or more other organisations with whom they maintain active relationships around their specific NRM

interests.<sup>13</sup> People work together in short-term alliances between several players, on specific issues where their interests coincide (for example, on vegetation management, or dairy effluent). Their organisations also form longer-term alliances.

These collaborations and partnerships are overlaid on social networks maintained by each individual organisation, or more particularly, by the individuals in the organisations, each with their own access to people who can assist them with information, advice, emotional support and influence.

Together, working relationships, and the social networks, organisations and individuals that underpin them, function as an “NRM community,” within which there is a broad commitment to managing natural resources. Relationships in this community are not ephemeral: they have a history, and within them there is sustained discussion and negotiation aimed at developing effective practices for managing natural resources. In fact, the relationships, the knowledge they create and the action they produce can be separated conceptually but occur together.<sup>14</sup>

Indicators should sense several dimensions of this complex social system, and measure features known to be linked to practices and resource condition. If an indicator of the state of the NRM community is strengthening or weakening, the implications for practices and resource condition should be in the frame as well.

Indicators need to focus on capacity for natural resource management planning and implementation

The indicators measure capacity for NRM by looking at aspects of working relationships, social networks, organisations and individuals known to be associated with improved practices and condition.

An alternative approach to measuring regional capacity has been taken by Webb and Curtis, who trialed indicators and existing ABS data for three kinds of capital:

- human capital (age and population, education, health, cultural diversity);
- economic capital (economic resources, physical infrastructure, knowledge infrastructure)
- social capital (social participation, civic participation and governance).<sup>15</sup>

The focus in these indicators is capacity of the whole community, whereas the focus in this report is capacity in that portion of the whole community engaged in the planning and implementation of NRM.

In selecting indicators, one touchstone has been whether the strategies and investment allocation of regional NRM bodies can influence the indicator.<sup>16</sup> In my view, the indicators of regional capacity identified by Webb and Curtis are not open to direct influence by regional bodies, and are not therefore a good measure of the outcomes of the work of regional bodies. They are useful, however, in assessing the potential for adoption of sustainable practices, a use suggested by their report’s subtitle, *“A method to map regional capacity to adopt more sustainable natural resource management practices.”*

measures have to be do-able and of immediate benefit

In searching for measures, I have considered not only what the indicators demand, but also what will be low cost and of immediate benefit to staff. With NRM funds limited and monitoring and evaluation demands for all aspects of NRM rising, it is unrealistic to expect to win large sums for on-going assessment of social capacity. Measurement should where possible be incorporated as part of the normal business of project and program delivery, augmented by contracted survey work.

In the best case, measurement will deliver immediate value to NRM staff. Staff at regional and local level assess relationships in NRM every day, *strategically* (with whom do I need to build my relationship? what capacity might they bring? what capacity needs to be strengthened?) and *tactically* (how can I get this person to commit to this project?). If the measures of outcome strengthen staff decision making on matters like this, the measures will be used.

The chosen indicators are:

1. Strength of relationships around regional priorities
2. Organisational capacity
3. Stakeholder satisfaction with regional NRM planning
4. Strength of social networks
5. Knowledge of sustainable practices
6. Participation in environmental programs.

For each of these indicators, I first present evidence of the links to improvement in practices and resource condition, and then propose measures for the indicator. The causal links and the measures for some of the indicators have had little research, and for all there is limited baseline data to guide setting targets for the social asset. However, lack on any of these counts is not an insuperable difficulty to developing measures, nor is current lack an excuse for not beginning.

### **strength of relationships around regional priorities**

the impact of relationships on practices and resource condition

NRM is a relationship business. For any NRM issue, there are many people with distinct and legitimate knowledge and preferences. Ecosystems themselves operate without regard to policy and agency boundaries. Action to improve natural resource condition therefore usually requires several parties to work together in agreeing what is happening, deciding what to do and then doing it.

There are many ways in which integration in NRM should be pursued: securing stronger political commitment and policy; agreeing on the roles and powers of various agencies at each level of government and of formal interest groups; clarity about the linkage of decision processes across decision making groups; sharing of resources between contributors to NRM; and development of technical and methodological cooperation between disciplines and with citizens.<sup>17</sup> Whatever gains these integrative efforts deliver, NRM will remain a complex social territory, where actors with overlapping responsibilities and interests continually rework their alliances and maintain their networks in order to get things done.

The research shows that relationships are stronger when those affected by or able to contribute to the decisions and action are involved, when they work towards shared goals, when the decision making process is fair, transparent, and backed by those with power and resources, and when people trust each other and learn from each other. These factors create stronger relationships,<sup>18</sup> but what is the evidence that stronger relationships lead to improvement in practices and resource condition?

*Good decisions*. Bierle looked at 100 attributes of 239 published case studies of stakeholder involvement in environmental decision-making and found that in the majority of cases, stakeholder participation improved decisions over the status quo and added new



information, ideas and analysis. Processes that stressed consensus scored higher on substantive quality measures than those that did not.<sup>19</sup>

In Oliver's analysis of 19 case studies of NRM partnership groups in Queensland, participants rated outcomes for effective groups as better than what participants could have achieved on their own.<sup>20</sup>

*Effective action to implement plans.* Gusteyer et al (2002) analysed 50 case studies of community participation in protection of water quality to find out what produced effective action, and identified nine elements:<sup>21</sup>

- Context specificity – identification of issues important to the catchment as a whole;
- Collective vision – making explicit what people want long-term, for the place itself;
- Neutral facilitators – having a neutral person facilitating connections between people and thinking about the capacity building aspect of the process;
- Group inquiry – the community itself identifies the cause of problems (rather than symptoms), gathers evidence of concerns that affect the entire catchment and evidence that community wellbeing depends on environmental well-being;
- Diverse perspectives – engaging a team that includes experts, practitioners, interested community members, those affected by current environmental quality, minorities, and in particular, including those who disagree.;
- Participatory contract – identifying who is accountable for what, to whom, including funders, and using this as planning moves to specific actions;
- Monitoring – the community identifies the changes and the causes of changes, celebrates and publicises success and acknowledges that there is still work to do;
- Sustained systematic learning – measuring, reflecting, action, measuring, reflecting action as a group. There isn't one solution, things are connected and progress is gradual;
- Evaluation – identifying the community's view of causes of problems, of goals, and of what success will look like, then taking action and measuring using the community's criteria.

Imperial reviewed case studies of ecosystem-based management of estuaries and river basins and found that many studies concluded that the use of collaborative decision making, strong public participation, and a focus on incorporating scientific findings into decision making enhanced program success.<sup>22</sup> Case studies from the field of network governance are documenting collaborations with significant impact on outcomes.<sup>23</sup>

*Adoption of sustainable practices.* Research on Landcare groups shows that the activities of local groups lead to adoption of sustainable practices, and that one of the contributing factors is the relationships created within landcare groups and with government agencies.<sup>24</sup>

*Stakeholder support for difficult resource allocation decisions.* CSIRO research on water allocation has found that people will accept implementation of decisions when they can see that relevant stakeholder have had a chance to have their interests considered, and will do this even when a decision goes against their economic interests. Involvement in designing or critiquing the proposed decision process support perceptions of fair and transparent process.<sup>25</sup>

*Faster change at regional scale.* At regional scale, Macadam and his colleagues found that shared goals, collaboration between communities of practices, and the alignment of institutional arrangements with regional goals increased capacity to change.<sup>26</sup> A Victorian study of ways to enhance the capabilities of people in the food and agriculture sector to

manage and respond positively to change found this was higher with shared norms, values and vision, knowledge, skills in working together and having adequate opportunities to interact.<sup>27</sup>

Participative processes are no guarantee of successful outcomes, and lack of integration with those with final decision-making power is one point of breakdown. For example, Hendricks investigated four deliberative processes and concluded that “powerful groups will only engage in a deliberative forum under certain policy conditions, for example, when the dominant policy paradigm is unstable and contested, when public discussion on the issue is emerging, when policy networks are interdependent and heterogeneous, and when the broader social and political system supports public accountability, consensus and deliberation.”<sup>28</sup>

A similar message comes from Craig and Vanclay, who studied the development of Water Sharing Plans by Water Management Committees in NSW between 1995 and 2003. In these committees, community, industry and environmental interests worked with regional water managers to revise water allocations. Many committee members reported satisfaction with the processes, but not with the ultimate outcomes, believing that the plan was ‘railroaded’ politically when blanket changes to water entitlements were set by Cabinet. Distrust of government increased, and many viewed the community process as ultimately only a ‘token gesture’.<sup>29</sup>

levels of engagement

Not everyone wants or needs to be involved with every issue. The level of engagement varies with the issues at hand: judgment and negotiation are needed to decide who really needs to be part of planning and action, at what level. The possible levels of engagement are:

*Inform* - People are kept up-to-date with the situation and what is being done.

*Consult* - People are asked what they think about the situation, the options and the action.

*Collaborate* - People pursue their separate plans, but fit together their ideas and activities in order to achieve more.

*Partner* - People work together closely, have an equal say in the big decisions, and share the risks.

Public-private collaboration in setting goals and priorities is common, and regional arrangements typically rely on interagency collaboration to fund and deliver many programs. However, the espousal of “partnership” often fails to mention the costs for organisations – the loss of some freedom to act independently and the effort and time required to maintain relationships when outcomes are uncertain or intangible.<sup>30</sup> For example, in the establishment of regional NRM planning, government agencies have had to invest a lot of time in relationships with regional bodies and community groups (though not as much as some community groups would have liked).<sup>31</sup>

*Collaboration* is a relationship where parties pool their knowledge and resources and coordinate their actions in pursuit of shared goals. They recognize that they can achieve more together than alone, and they each gain from their shared efforts. However, they make their decisions separately, and manage their own risks.<sup>32</sup>

*Partnership* is a relationship where the parties set shared goals and commit resources for joint use, to benefit themselves and others. They share power when making decisions, and share the risks that go with their decisions and action. There are other factors associated with successful partnerships, such as good communication, shared values, and good processes for gathering, sharing and learning from knowledge,<sup>33</sup> but the sharing of power and risks distinguishes partnership from collaboration.

measures of the strength of the four types of relationship

CMA program staff engage stakeholders around the full suite of NRM issues, at all levels (local, sub-regional and State level). They are able to say which relationships are partnerships and which collaborations, assess the quality of the relationship, and say what their target is for each relationship. Landcare Networks are able to do the same at sub-regional scale.

The Corangamite CMA is trialing a process where each program maps its stakeholders, across the four levels of engagement, then rates current strength and set targets for future relationship strength. The assessment limits itself to the relationships needed *to drive improvement in practices and resource condition*. This puts the goals for practice change and resource condition in the foreground and asks for the relationships needed to achieve these goals.<sup>34</sup>

The same process has been conducted by Landcare Networks, providing assessment of relationships at sub-catchment scale.

Reports can be generated on current and targeted strength of relationships by sub-catchment, program and for stakeholder types.<sup>35</sup>

strengths of the measures

*Program staff think strategically about stakeholders and change.* The focus question is “what relationships will drive improvement in practices and resource condition?” Program staff think about all the players, across all levels of engagement, and look for the most efficient and effective balance of engagement.

*The quality of relationships is made explicit.* The rating scale forces staff to assess quality on explicit criteria. This may lead them to ask what action will improve relationships around those criteria.

*A broad range of NRM issues is assessed.* CMA programs deal with most of the NRM issues in a region. For example, the trial under way at the Corangamite CMA is getting an assessment from 16 programs.<sup>36</sup> Landcare Networks have relationships with all Landcare groups and many other community groups, government NRM agencies, public land managers, industry groups and Local Government. Assessment on these two vectors gives a comprehensive probing of NRM relationships in a region.

limitations of the measures

*Measurement depends of the willingness of CMA Program staff and Landcare Networks to make assessments.* These people are very busy and this is an area where they haven't had to assess or report in the past. For the measurement system to be viable, they have to embrace it as a tool for making better decisions on engagement.

*Only CMA Program staff or Landcare Network executive rate each relationship.* The rating would be more soundly based if other parties in each case gave their rating, and stronger still if the two parties agreed on ratings for current and future. Each of these moves can be made once staff and Networks are familiar with the process themselves. Alternatively, seeking the ratings of other parties could be contracted out to an independent survey.

*The relationship with the CMA is only one set of relationships.* There are relationships between all stakeholders not just between the CMA and the stakeholder. For example, in maintaining water quality, the relationships between Water Authorities, Local Government and DSE are as important as the relationship between the CMA and each of these players. The difficulty is getting access to all these relationships.

*Assessment of relationships at regional scale is weak.* The Landcare Network assessment deals with relationships at local scale, and the CMA Program view can be thought of as an issue-

based vertical slice from regional to local level. What's missing is a view of relationships operating primarily at regional scale – relationships between agencies, industry bodies and local government, but between government agencies in particular. This could be picked up in assessment of networks at regional scale (see next section).

### **organisational capacity**

the impact of organisational capacity on practices and resource condition

Greater capacity is assumed to lead to improved practices and resource condition.

Landcare groups with higher positive perceptions about the way their group operates internally were more active groups, and more active groups do more on-ground work and have more influence on landholder practice. Internal group processes associated with positive perceptions include: willingness for members to take on leadership roles, agreement on direction, action planning, acknowledgement of member contribution, evaluation of project success.<sup>37</sup>

measures of the capacity of organisations

The recommended measures balance the need to be comprehensive in assessing factors that contribute to organisational capacity, manageable in the number of questions asked, and suitable for use by government and non-government organisations. Three frameworks have informed our measures.

Fenton, reviewing models of organisational effectiveness that might be used to measure capacity of regional NRM bodies, recommends assessment of management capacity (capacity to manage human resource and financial systems), program capacity (capacity to develop and implement NRM plans and on-ground activities to achieve NRM resource condition targets), and environmental controls (factors in the surrounding social environment that enhance or limit capacity).<sup>38</sup> He has recently developed and trialed an instrument to measure indicators of these three dimensions.

The United Nations Development Programme developed a Participatory Organizational Evaluation Tool of 100 items across seven capacities, to assess organisational capacity of civil society organisations and their partners. The tool is integrated with discussion amongst staff of recent events related to each area, arriving at a self-assessment.<sup>39</sup>

The McKinsey Capacity Assessment Grid is a tool designed to help nonprofit organizations assess their organizational capacity. The grid asks the reader to score the organization on each element of organizational capacity, by selecting the text that best describes the organization's current status or performance. The framework and the descriptions in the grid were developed based on McKinsey's Venture Philanthropy team, with input from many nonprofit experts and practitioners.<sup>40</sup>

Six dimensions of organisational capacity emerge as relevant to organisations in NRM:

- Governance
- Management of human resources
- Financial management
- Project management
- Stakeholder management
- Culture

The best way to get an accurate assessment of an organisation's capacity is to have a representative group of staff and managers in each organisation look at all these dimensions,

reflect on what has actually happened in those areas over the last year or so, and then assess capacity using a standard set of questions. Doing that for all the organisations involved in NRM is not going to happen anytime soon (though a version of it might happen between several partners to a project), so a lighter assessment is needed.

In a trial survey to assess stakeholder perception of capacity, the Corangamite CMA polled stakeholders identified by each CMA program as critical to their program's success over the next three years.

An early test of 35 questions on organisational capacity found that respondents felt uncomfortable answering too many questions and questions that went beyond what they could speak for as individuals. So the number was reduced to just six questions, and made specific to the issues of the program with which the respondent was involved:

- Our organisation is clear about its goals in relation to program issues.
- Our organisation is able to turn plans and projects into action, in relation to program issues.
- Our senior staff communicate well with people.
- In our organisation, responsibilities and lines of accountability for staff in relation to program issues are clear.
- Our organisation has and holds onto the staff needed for work in the area of program issues.
- Our organisation provides good support for staff to develop their skills.

In most of these questions, respondents don't have to think about their whole organisation, just its capacity to deliver on a specific set of issues, such as biodiversity or salinity.

Findings are valid only to the degree that respondents are objective, candid, and knowledgeable about their organisation. Using respondents nominated by CMA programs (usually a leader in the group, organisation or team), and restricting questions to organisational capacity in relation to a specific program areas, makes it more likely respondents are knowledgeable about capacity. Using an external interviewer and asking only a small number of questions increases candour. Framing questions to describe specific behaviours improves objectivity.

This data has been used:

- For all stakeholders, to identify what dimensions of capacity are strongest and weakest;
- For types of stakeholder, to identify how types of stakeholders differ in their capacity;
- To set capacity building goals for specific types of stakeholder.

Developing capacity of organisations is a matter where an organisation itself must take primary responsibility. However, CMAs can directly influence, and can mobilise resources from other government organisations, to support organisations developing capacity. For example, proceeding through the six survey questions above, CMAs:

- sponsor negotiation between NRM organisations as to their respective roles around many issue;
- have influence on project management, by virtue of being a funder or project partner;

- work as peers and potentially as models to the leadership of other organisations;
- can be clear, in their working relationship with other organisations, about their own lines of accountability, creating impetus for greater clarity in partner organisations;
- can support skill development by providing expertise and coaching in specialist areas, or by organising skill development on specific issues across cluster of related organisations.

### stakeholder satisfaction with regional NRM planning

the impact of stakeholder satisfaction on practices and resource condition

Regional NRM planning is currently the primary process through which priorities are set and investment allocated. The assumption is that good decisions require willing participation by many parties, and that satisfaction with the planning process is likely to be associated with better plans, and through that, with improved practices and resource condition.

Research is just beginning on the impact of regional NRM planning on practices and resource condition. It is difficult to separate the impact of governance arrangements from other factors, and there is a time lag between new arrangements and measurable change.<sup>41</sup>

There is enough evidence to be wary of the assumption that regional NRM planning means better decision making. Morrison found that the introduction regional natural resource management planning in Australia had, on its own, failed to secure rural sustainability. Devolution of decision making to regions had added to the complexity of management, been resource inefficient or simply politically impossible to get off the ground. She found that, despite this, integration across organisations, issues, disciplines and activities is maintained largely through informal regional networks and more formal activity around nodes where integration had high value to participants and had supportive conditions.<sup>42</sup> Observers of decentralized governance in environmental management in developing countries have reported “increased dominance of local elites, deepened authoritarianism in governance, and even increased intolerance of minorities.”<sup>43</sup>

Satisfaction with regional NRM planning is a convenient starting point, but better measures of precursors and consequences of effective regional planning are needed. We know, for example, that landcare groups that develop sub-catchment plans (a matter measured by the National Landcare Program) are more active and have greater impact on practices and resource condition through on-ground works and through influencing landholder practices. What we don't know is whether such groups are also more likely to participate in regional planning system, and whether their local action is better because of their involvement with regional planning.

The Commonwealth Government's current project “Monitoring and evaluating the social and institutional foundations of the NHT and the NAPSWQ,” is developing indicators and measures for the strength of regional bodies, their relationship with the Commonwealth and their relationship with regional stakeholders. The results of a pilot are due for release soon. Use of these measures would allow some assessment of the impact of satisfaction on outcomes across different regions.

measures of stakeholder satisfaction

The six measures develop for trial use by this project are:

- Within this region, NRM investment is going to the most important priorities.
- Over the last 2 years, there have been sufficient opportunities for local communities to understand and give their views on regional priorities.

- Over the last 2 years, there have been sufficient opportunities for organisations actively involved in NRM to understand and give their views on regional priorities and investment.
- Over the last 2 years, the way decisions on regional priorities and investment are made has been clear.
- Over the last 2 years, decisions on regional priorities and investment have fairly assessed competing needs and interests.
- Over the last 2 years, progress to translate regional priorities and investment decisions into action on the ground has been good.

### strength of social networks

the impact of networks on practices and resource condition

The purpose-built relationships created by NRM agencies – to partner, collaborate, consult and inform – are not the only relationships driving improvements in practices and the environment. As individuals connect to others, to increase their influence, access others' knowledge and resources, and contribute on issues important to them, they create networks which underpin the more explicit business of natural resource management.

Networks provide individuals and groups with access to resources and support. Their effectiveness depends in the first instance on the structure of relationships in the network (such as how large it is, and the density of connections) and the dynamics of interaction in the relationships (whether for example, people share information and advice readily, and whether there are norms of reciprocity – you help me and I'll help you).<sup>44</sup>

Networks deliver not just individual but public benefits. They may be deliberately tapped and facilitated in order to improve public good outcomes, in situations where:

- there is no consensus as to problem, causes or solutions and the economic, policy and social context is changing in a way that makes previous understandings redundant (cognitive uncertainty);
- power to change the situation is spread across a number of players (for example, three levels of government, many different agencies, industry bodies, and private landholders) (strategic uncertainty); and,
- decisions are made in different places and arenas, and are only loosely coupled (institutional uncertainty).<sup>45 46</sup>

There is evidence that strong social networks lead to support for and participation in democratic parties and politics, better physical health, better mental health and higher levels of happiness, greater public safety and lower levels of vandalism and crime, and economic prosperity.<sup>47</sup> In the light of such benefits, policy makers are becoming interested in social capital, and there are now substantial reviews of the potential role of social capital in delivering policy goals,<sup>48</sup> discussion of social capital in NRM and rural communities,<sup>49</sup> and recommendations that the role of social capital and the potential influence of public policy should be investigated amongst populations at risk of social exclusion, around major life transitions and in community development.<sup>50</sup>

What is the evidence of benefits from networks in NRM? The strength of landholders' social networks and local organisations,<sup>51</sup> and farmer membership of organisations such as catchment groups<sup>52</sup> are both positively related to adoption. Curtis, reviewing research on Landcare networks, found that Landcare groups established new relationships or built on existing relationships amongst neighbours, and between landholders, industry and government. These relationships were characterised by:

- increased levels of trust that reduced transaction costs amongst leaders, between leaders and agency staff, and between leaders and members; enabled complex and difficult issues to be explored with little conflict; and facilitated communication and learning that lead to the adoption of more sustainable farming practices;
- new norms of behaviour, particularly in terms of the importance of trialing new practices and monitoring and documenting key learnings from trials; adopting more professional approaches to the management of finances; and accepting the need to demonstrate project outcomes; and,
- reciprocal relationships where landholders, leaders and agency staff could expect support in terms of access to money or materials, labour or information.<sup>53</sup>

Complementary to such norms, individuals' sense of empowerment,<sup>54</sup> commitment to shared goals,<sup>55</sup> and links between local networks and government programs have all been suggested as factors that make for an effective network.<sup>56</sup>

options in measuring the strength of networks

The first issue is just what networks to measure. Networks operate at different social scales: *personal networks* between family and close friends; *community networks*, where relationships are less personal but based on common interests around a place or around an issue; and *governance networks*, where individuals and community link to organisations with the power to set priorities and policy and allocate resources.<sup>57</sup> The networks relevant to regional NRM are the latter two:

- *community networks* will be both *locality-based*, made up of community members, community groups, agency staff and local government, and focused is making a difference in a local place, and *issue-based* (native vegetation, sustainable cropping systems, wetlands, water use, and so on), made up of agency service providers, decision makers and researchers, community members and industry bodies, with a focus on sharing information and other resources around effective practices and influencing priorities and policy affecting the issue.
- *governance networks*, made up of agency staff, industry bodies, environmental groups and leaders from local community groups, focused on regional priorities, governance arrangements and policy affecting regional governance arrangements.

The effectiveness of networks depends on the *structure* of relationships, and the *dynamics of interaction* – the way members of a network actually interact to mobilise and use resources and support.

*Structure* is a matter of the size, density, diversity and the frequency, intensity and proximity of connections. Networks can be:

- bigger or smaller, based on the number of people in the network, and the number of connections between them – the larger a network and the more dense the connections, the greater the chance of finding someone with the resource you need;<sup>58</sup>
- more or less diverse in the types of people in the network, making for more or fewer bonding ties (between people close at hand), bridging ties (to people with resources and ideas beyond people close at hand), and linking ties (to decision makers who can change the opportunities and constraints within which the network operates) – effective networks have diverse members and a mix of bonding, bridging and linking ties to connect to a diverse range of resources.<sup>59</sup> A balance is required: bridging ties support innovation and change by bringing in new ideas; bonding ties with high trust support knowledge sharing to implement change.<sup>60</sup>



- made of interactions which are more or less frequent, intense and proximate – in an effective network, people can access the resources they need, even when they don't have a direct connection to the person who has that resource.

Mapping network structure is attractive, because it reveals where influence lies, but it is resource intensive. It requires interviewing many people across a network, recording who they would choose to talk to on a specific matter, and making sure you know who each of those people would choose. Social Network Analysis software then displays the pattern of relationship between respondents and measures density and diversity.

Network effectiveness also depends on the *dynamics of interaction* in the network. Because of the difficulty of directly observing these interactions, measures here rely on people's assessment of the behaviour in the network:

- trust - the expectation that others will follow keep commitments, act honestly and avoid taking advantage of you;
- reciprocity - the expectation that if you help others, they will help you;
- diversity – tolerance of people from different background;
- shared goals, norms and sanctions, which support cooperation within the network.

Trust is the most frequently used measure of network dynamics, and seems intuitively to be a necessary part of a network. We maintain relationships with those we trust. However, trust may be a precursor to participation in networks as much as an outcome - trusting people get involved in social networks. Other researchers have found that people can cooperate even when they don't have high trust in each other,<sup>61</sup> and even when trust is present, it is associated with factors other than participation.<sup>62</sup>

Questions that ask about the *behaviours* associated with trustworthiness within a specific network, rather than assessment of trust as a global characteristic, are more likely to yield valid measures.<sup>63</sup> That said, even if trust is taken as an indicator of conditions in which resources are shared for common goals, what matters in the end is that sharing, and measures need to be directed here as well as at the precursor conditions.<sup>64</sup>

measures for the strengths of networks

In a trial of measures for social capacity in NRM, we measured *number of contacts* - the more contacts a person has, the more able they are to get the resources they need when they need them. We used as our starting point a need common to people in both community networks and governance networks – the need to keep track of changes in Government priorities, policies and funding.

Respondents were chosen by Corangamite CMA staff as those critical to the effectiveness of CMA programs. 260 respondents were asked how many people they know well enough:

- to phone up and ask for information on Government priorities, policies and funding;
- to talk with to think through how those changes might affect them and their NRM work;
- if they were concerned about the impacts of a change in priorities, policy or funding, to give feedback on the changes.

Respondents are prompted at each step for contacts in possible sectors - government agencies, community organisations, industry groups, peak bodies and universities, and family and friends. Note that the number of contacts for each type of resource is the critical measure, not the total number of persons available.

The questions tap three distinct kinds of resource relevant to effective action in NRM:

- information about changes that affect support for NRM work in the public domain, where ties in community and governance networks will be useful;
- discussion about the implications of changes for NRM work, where ties in person, community and governance networks will be called on; and,
- feedback to people who might have some influence over changes, where ties governance networks will be used.

To measure the dynamics of interaction, respondents were asked how satisfied they are, in relation to keeping track of changes in Government priorities, with their contacts for staying informed about changes, thinking through the implications of changes, and giving feedback if they are concerned about the impact of changes.

These questions do not reveal what it is about the dynamics of interaction that are satisfying and unsatisfying, but they do measure the outcome of those dynamics for respondents – do the networks provide people with valued resources?

Finally we sought some indication of how networks might be made more effective by asking:

“If you could strengthen your connections to one type of stakeholder in NRM, who would that be? What would be the benefit of having a stronger connection there?”

### **individuals' knowledge of sustainable practices**

the impact of individuals' knowledge

Adoption of sustainable practices leads to improved environmental condition. Knowledge of practices has been found to be associated with farmers' adoption of practices,<sup>65</sup> for practice such as:

- planting of trees and shrubs;
- encouraging growth of native vegetation;
- recording soil test results
- use of perennial pastures or lucerne;
- fencing to allow management by land classes;
- application of lime;
- control of pest animals and plants.

However, knowledge is just one of a suite of factors contributing to adoption: farmers adopt practices that offer clear benefits and are easy to implement, that fit their aspirations for their enterprise and their lifestyle, and for which they have the necessary resources - knowledge, and social, natural, physical and financial resources.<sup>66</sup>

How much knowledge is a *driver* of adoption of sustainable practices is therefore uncertain. Knowledge is needed to take action, but landholders seek that knowledge only after deciding they have a significant opportunity to improve their property and business. Recognition of problems and knowledge of viable options come together to support testing of options by individual landholder, and knowledge will develop right through the adoption process, starting with awareness of a problem or opportunity, then canvassing of options, then trial and further evaluation, then large scale adoption.<sup>67</sup>, strengthening the association between knowledge and adoption. It may be that strength of motivation to change practices, or a landholder deciding a new practice has a positive cost/benefit ratio, are more sensitive indicators of eventual adoption than a landholder's current knowledge of sustainable practices.<sup>68</sup>

Models of adoption are well-developed for sustainable practices in agriculture, but there is very little developed in relation to urban household sustainability or small lot holder sustainability. It would be useful to understand, for instance, the cluster of factors that predispose small lot landholders in the peri-urban fringe to adopt weed management practices, or urban residents to adopt sustainable water use practices.

Level of knowledge may not figure as a definitive indicator of likely adoption of household sustainability practices. The precursors of adoption include factors other than knowledge, for example:

- small incentives and rewards, when given to the householder in return for data or participation at an event/forum;
- learning from and being inspired by other households, with household visits to view the real thing;
- the presence of local and convenient products or services;
- rationalising arguments people can use to justify a change to themselves and others (eg. this will save me money ... make me healthier etc..).

measures of individuals' knowledge

Despite the limitations of using knowledge as an indicator of likely adoption, it is the best available indicator for rural landholders: it has the advantage of being a matter that NRM organisations have a commitment to improving, that can be readily measured, where there is already data collected, and for which targets can be set.

In relation to household sustainability, there needs to be agreement on recommended practices. The Australian Greenhouse Office recommends:

1. Walk, cycle or use public transport
2. Use compact fluorescent lights
3. Choose Greenhouse Friendly products and services to help minimise the impact of consumer goods and services on global warming.
4. Purchase the highest energy efficiency star rating appliances
5. Insulate your home and save on heating and cooling costs
6. Cut hot water consumption by washing clothes in cold water and by fitting a water-efficient shower head. Add insulation to indoor electric hot water units.
7. Replace an electric hot water service with solar or high efficiency gas
8. Support renewable energy
9. When buying a car, choose a fuel-efficient one
10. For packing and materials (especially building materials) apply the rules: Refuse – Reduce – Re-use – Recycle
11. Plant, protect and conserve existing trees and shrubs

Many of these items are broad and no-specific. Geoff Brown, a consultant specialising in household sustainability, identifies 30 low cost/high benefit practices across the following aspects of households and behaviour:<sup>69</sup>

Energy use  
 Building Shell  
 Appliances  
 Use of appliances

## Water

- Garden
- Bathroom
- Toilet
- Kitchen
- Laundry

## Transport

- Behaviour
- Purchasing

## Waste

- Purchasing behaviour

**participation in environmental programs**

the impact of participation in environmental programs

By “environmental programs,” we mean on-ground work for protection and restoration (for example, replanting, fencing), and monitoring (for example, species counts or water quality monitoring), where the program has primarily a public benefit.

If more people are involved in these activities, an assumption can be made that more protection and restoration will take place, and that resource condition will improve. However, there is we have not yet found research that separates out participation in environmental programs and their impact on resource condition, from the influence of adoption of practices on private landholdings, and government-managed environmental works.

measures of participation

Membership of community Landcare groups could be a surrogate measure of participation: There is good evidence that the higher the membership of Landcare groups and the more active the group, the greater the participation in on-ground works.<sup>70</sup>

However, Landcare groups are not the only community groups active in NRM issues. “Friends of ...” groups, NGO conservation groups, Foreshore Committees, urban sustainability groups and farmer commodity groups with a sustainability focus engage in similar activities. The number of community NRM groups and their membership seems at first sight a simple measure to collect, but turns out to be difficult.

Landcare Networks know the number of groups they support, but not necessarily the number of members of these groups, and membership and active membership are different things. DSE Standard Outputs ask for numbers of groups supported by funding, and numbers of Water Watch participants, but provision of this information is optional, and leaves out unfunded groups. Local Governments develop lists of community groups, but these are not necessarily complete, and they don’t gather information on membership. Farmer groups with a sustainable production focus ought to be counted in, but this means accessing this through DPI regional staff.

The number of community groups seeking funding is easier to count, since CMAs have records of funding applications for most sources, but this doesn’t account for those which do not seek funds, but nonetheless take action. Groups seeking funding will likely rise when more funding is available, and fall when less is available.

The more direct path is to ask a representative sample of the population about their knowledge and participation. For rural landholders, many CMAs have done research on attitudes and behaviours. Because of the history of research on adoption of new practices in

agriculture, the conceptual models underpinning such surveys are strong, and sustainable practices are clear.<sup>71</sup>

For the general public, many CMAs conduct market research to assess people's views of the most important NRM issues, assets and threats, and their knowledge of NRM agencies.<sup>72</sup> Some surveys ask about participation in environmental activities.<sup>73</sup>

The next step is to ask about sustainable practices relevant to urban, peri-urban and rural residents. Sustainable practices for households is of interest to many organisations: water and energy providers, transport agencies, Local Government, NGOs and community groups. Just what actions make a difference to sustainability is a critical issue, but practices would need to cover energy use, water use, transport use, water management purchasing, backyard biodiversity, and in some places, fire management.<sup>74</sup>

### next steps

trial of the measures

Ways to use the six measures within regional NRM planning have been trialed by the Community Strategies Project with the Corangamite CMA:

- Staff of 16 Programs have identified and rated current and desired future relationships with stakeholders critical to driving improvements in practices and resource condition in their area of responsibility;
- Program stakeholders have been surveyed for their assessment of the relationships with Corangamite CMA programs, and their assessment of their organisation's capacity in NRM, their networks in NRM, and their satisfaction with regional NRM planning;
- Landcare Networks have identified and rated current and desired future relationships with their stakeholders, and set goals for their engagement.

This material has allowed Corangamite CMA to set targets for engagement and social capacity building:

- Management Action Targets (MATs) for programs, with quantitative targets for engagement measured by strength of relationships, and qualitative targets for social capacity building;
- Programs with a strong engagement with a stakeholder type have set MATs for that stakeholder, with quantitative targets for engagement measured by strength of relationships, and qualitative targets for social capacity building;
- A working group has recommended MATs for improvements in the CMA's internal processes for managing engagement and social capacity building;
- Resource Condition Targets to 2018 have been set for social capacity, including quantitative targets for organisational capacity, networks in NRM, satisfaction with regional NRM planning. When data has been collected, targets will be set for individual's knowledge of sustainable practices and participation in environmental programs.

feedback on the indicators and measures from other CMAs

The Project manager and consultant have taken the measures to all CMAs for face-to-face discussion and feedback. Opinions were as follows:

- All CMAs welcomed the indicators and measures, and the underpinning program logic, as a way to integrate social dimensions of NRM action into biophysical programs and geographic areas, leading to specific targets;
- Many CMAs believed that, to monitor progress on targets, measures would need to become part of project planning and formal monitoring and evaluation requirements;
- About half the CMAs saw the indicators and measures as a way to set Resource Condition Targets for the social asset, as a distinct asset alongside biophysical assets.
- About half the CMAs were opposed to setting RCTs for the social asset, seeing biophysical assets as their primary goal, for which they are resourced, and social dimensions as instrumental to improve those assets and therefore best integrated into program and project logic.
- Most CMAs believed that integrating the indicators and measures into their planning processes would require greater understanding of the social dimensions of NRM by staff, managers and Board, greater communication between programs, and specific planning arrangements to integrate engagement across programs.

the need for application of indicators and measures in different regional settings

Application of this report's indicators and measures in differing planning contexts, and systematic communication of progress across CMAs, will speed up and strengthen the use of targets and measures for the social asset.

The draft Guidelines for Community Strategies, which DSE proposes to incorporate into requirements for the next round of Regional Catchment Strategies, allow for regions to apply the indicators for the social asset *in a way that fits their planning context*. Each CMA has evolved a distinctive planning process, and investors' requirements have been just one factor in shaping planning, alongside the history of NRM in a region, and the social, economic and physical landscapes being managed.

The relationship and social capacity metrics described in this report need to be trialled in three settings:

1. project and program planning in biophysical asset programs;
2. planning for multiple outcomes projects within sub-catchments;
3. planning by several partners for action on either a biophysical asset or in a sub-catchment.

In each of these settings, work is needed to:

- integrate the generic logic for engagement and social capacity building into project and program logic, so that the social is integrated with the biophysical;
- monitor targeted aspects of social capacity;
- integrate qualitative evaluation of engagement processes into the project and program work cycle;
- develop arrangements for sharing information and integrating actions for engagement and social capacity across related projects and programs.

The preferred research mode for working with regions as they innovate on these matters is action research, in which a cycle of planning, action and review generates, simultaneously, conclusions that shape the next cycle, and lessons of value to NRM staff in other regions, working with a similar intent in somewhat different planning contexts.

The outlines of this R&D program are readily sketched: finding the organisation well placed and able to sponsor such R&D is not as easy. Land and Water Australia's Social and Institutional Program is one possibility. The Commonwealth NRM Capacity Building Team is another.

At State level, Landcare and Community Engagement within the Land Management Branch DSE Victoria, is a possibility. It has access to Regional Landcare Coordinators, who are a key source point for ideas and action on community engagement in most CMAs.

the need for research on the link between the indicators and improvements in practice change and resource condition

Indicators for the social asset in NRM have been chosen because there is evidence or a strong case for their beneficial impact on practices and resource condition. The processes by which this impact takes place, and indeed the extent of impact, need to be better understood, so that engagement and social capacity building activity delivers maximum improvement in the condition of the social asset, NRM practices and resource condition. Beginning assumptions and next steps for this research are as follows:

1. *Research on social networks in NRM.* It is assumed that more extensive social networks make working relationships between organisations more effective, by enabling people to get and share ideas, information and support. As stakeholders understand how their specific issues are interconnected with other issues, and those leading strategic planning and project implementation create opportunities for people to interact constructively across areas of interest, stakeholders make more connections and broaden their networks.

Research on *networks around specific NRM issues* would describe network structure and dynamics in a way that enable participants in the networks to take action to make networks stronger. It would test the relative impact of network size compared to density, diversity and the frequency, intensity and proximity of connections, and test the merits of using network size as an indicator of network strength. It would reveal how big a network needs to be to be big enough. Case studies of *how people use their social networks* to support working relationships around current NRM priorities will help sponsors of collaborative action understand what they can do to strengthen and harness social networks. Research on *governance networks as they develop over time* will reveal how interventions in informal social networks and formal relationships can strengthen effectiveness of these networks.

2. *Research on organisational capacity for NRM.* It is assumed that the capacity of organisations constrains the effectiveness of individual members in planning and taking action on NRM issues. Clarity about regional priorities enables individuals to ask for and guide capacity building within their respective organisations. As stakeholders work together on projects, they develop a better understanding of how their respective capacities can and need to fit together around particular priorities and projects, and this guides them in working together to build inter-organisational capacity.

Case studies of *the way in which organisational capacity develops*, particularly in organisations like Local Government which are taking on new roles in NRM, will guide those sponsoring capacity building from inside organisations, and supporting it from outside. Ways to *identify and assess capacities needed for NRM priorities*, particularly ways for project partners to decide who will bring what specific capacities, will help individual organisations build capacity. Case studies of the *development of inter-organisational capacity* will support landscape scale project that require contributions from several private and public organisations.

3. *Satisfaction with regional NRM planning.* It is assumed that if stakeholders are satisfied that regional planning results in appropriate priorities and investment allocation, implementation of action will be more effective, and setting new priorities and investment allocation will take less time. The *causes of dissatisfaction* need to be understood, in particular how much lack of knowledge about planning processes contributes to dissatisfaction, compared to dissatisfaction with the process themselves. The *impacts of higher levels of satisfaction* need to be assessed – does greater satisfaction actually improve planning and its implementation?
4. *Knowledge of sustainable practices.* It is assumed that people who know about sustainable practices are more likely to implement them. But knowledge is only one of a number of factors influencing adoption, and may not be the critical limiting factor. *On-going research on adoption needs to be more closely monitored* by those building social capacity in NRM. Sustainable practices for households need to be described, and indicators of adoption identified and measured. What practices households adopt that lead to other sustainable practices?
5. *Participation in environmental programs.* It is assumed that participation by individuals in action to improve the environment beyond their own property line has multiple benefits: more hands to do the work, more understanding of environmental systems, more extensive social networks around NRM, and stronger commitment to sustainable practices. Research on *volunteerism in NRM* should test these assumptions.



## Endnotes

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<sup>1</sup> Colliver, R., 2005, *A logic for engagement and social capacity building in NRM*. Community Strategies Project report, Corangamite CMA.

<sup>2</sup> Rowley, E.E., 2004, "*Community capacity building or social assets in natural resource management*" Self-published.

<sup>3</sup> Macadam et al, op. cit., pp 19-20.

There have been no descriptive studies that highlight features of these communities in NRM, and the concept has at present little currency in NRM. For now, less direct measures will have to be used.

<sup>4</sup> NNRMTF, 1999, *Managing natural resources in Australia for a sustainable future*, Agriculture, Fisheries and Forestry, Canberra, p. 9.

<sup>5</sup> Environment Australia, 2000, *Mid-term review of the Natural Heritage Trust*, Environment Australia, Canberra.

<sup>6</sup> Whelan, J. and Oliver, p., 2005, *The place, limits and practice of collaboration*, CRC for Coastal Zone, Estuary and Waterway management, Griffith University, Indooroopilly Queensland, pp 44-45.

<sup>7</sup> Macadam defines institutional arrangements as "the complex of laws, customs, markets, norms and associated organisations that channel our energy towards social goals and the way we relate to others." See Macadam, R., Drinan, J., Inall, N., McKenzie, B., 2004, *Growing the Capital of Rural Australia – the task of capacity building*, RIRDC Publication No 04/034, p 22.

Fenton says institutions are not specific social entities such as a regional bodies or government agencies, but "an underlying, durable pattern of rules and behaviour" both formal and informal. See Fenton, M., (2004) *Socio-Economic Indicators for NRM: Indicators of Capacity, Performance and Change in Regional NRM Bodies*, National Land and Water Resources Audit, Canberra.

<sup>8</sup> Lyn Aitken reviewed indicators of local community strength relevant to NRM, and researched possible indicators with NRM groups. Themes across these sources were: attachment to place and community, diversity of community membership, inclusion of less powerful members, shared aspirations for the environment, social networks and supportive government institutions. She argues that having local people work out social indicators at local level is empowering, because it helps people appreciate their community's strengths and weakness, and clarifies the ways in which community interest leads to action and improvement in environmental condition. At the same time, she reports that little assistance is available for local communities wanting to develop such indicators. See Aitken, L., 2000, *Identifying community features and processes in sustainable natural resource management*, CEES, Natural Sciences Precinct, Indooroopilly.

<sup>9</sup> The Victorian Community Indicators Project is working with local government and VicHealth to introduce indicators of community well being. The Shire of Colac-Otway now has a set of such indicators. To measure social capital, it asked respondents:

- Are you presently doing any volunteer or unpaid work in the community?
- Do you think that people in your community would be willing to give you a hand or assist you if needed?
- In the last 12 months, have you attended a local community event?
- Do you feel lonely most of the time?

See *Development of Community Health, Well-Being and Social Capital Indicators*, Colac Otway Shire, draft, 20/01/05.

The Australian Bureau of Statistics is developing a measure of social capital using six measures: social networks; participation in community groups; civil and political involvement; trust in people and social institutions; tolerance of diversity; philanthropy and voluntary work. See its discussion paper *Social capital and social wellbeing*, August 2002.

Sharon Pepperdine developed 15 indicators of community well being, and asked citizens in the Woody Yolack catchment to rate their local community using these. See Pepperdine, S., *Social Indicators of*

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Rural Community Sustainability: An Example from the Woody Yaloak Catchment, National Conference on the Future of Australia's Country Towns, The Regional Institute.

Bullen and Onyx develop a methodology for measuring social capital and applied it to 5 NSW communities. They measured

- A. Participation in local community
- B. Proactivity in a social context
- C. Feelings of Trust and Safety
- D. Neighbourhood Connections
- E. Family and Friends Connections
- F. Tolerance of Diversity
- G. Value of Life
- H. Work Connections

See Bullen, P., and Onyx, J., (1998) Measuring Social Capital in Five Communities in NSW, A. Participation in the Local Community, Management Alternatives.

10 South East Queensland NRM, with James Whelan, Griffith University, has begun working on a geographically-based snapshot of community-based groups involvement in NRM policy, planning and projects, as measured through membership, volunteerism, networks and history. They are using this alongside biophysical data to inform decision-making and investment decisions. A second phase of this work is mooted, to develop a broader range of social capital indicators, with possible collaboration with other regional NRM groups and social science researchers.

Glenelg-Hopkins CMA has researched social data (see Byron, Curtis and MacKay, 2004, *Providing social data to underpin catchment planning in the Glenelg Hopkins region*), and Curtis has done similar work in other regions.

<sup>11</sup> Lockie and Rockloff propose that the familiar Pressure-State-Response model used in environmental reporting be varied to include the impacts of the state of the environment on the social environment. The model in its current form asks the questions: What are the key features of this ecosystem? What causes change in those features? What should we do about it? They suggest a Pressure-State-**Impact**-Response model that also asks – What are the impacts of changes in State variables on human communities? – allowing for better designed responses. See Lockie, S. and Rockloff, S., 2005, *Decision Frameworks: Assessment of the Social Aspects of Decision Frameworks & Development of a Conceptual Model*, Coastal CRC, Indooroopilly.

<sup>12</sup> Community well-being can also be improved by the conscious attention by the community to its own differences, its resources and ways of interacting to use these resources. Community members might happily accept that they building local community connections and getting NRM work go hand in hand, but NRM agencies and regional bodies are much less happy to sign on for community building as part of their brief.

<sup>13</sup> In mapping stakeholders for programs at the Corangamite CMA, each program identified 20-30 organisations with whom the program needed an active relationship, to achieve the improvements in practices and resource condition for which it was responsible over the coming three years. See Colliver, R., 2006, *Relationship Assessment Process*. Community Strategies Project, Corangamite CMA.

<sup>14</sup> Like the wave and particle properties of light, knowledge is both an object that manifests understanding, and the social processes by which that object is confirmed, challenged and rebuilt. Wenger widens the scope of knowledge to include not just propositions about cause and effect, but the embodiment of understandings in procedures and the tacit understandings from which new knowledge objects arise. Wenger's scope for practices includes "... the language, tools, documents, images, symbols, well-defined roles, specified criteria, codified procedures, regulations, and contracts that various practices make explicit .. but it also includes the implicit relations, tacit conventions, subtle cues, untold rules of thumb, recognizable intuitions, specific perceptions, well-tuned sensitivities, embodied understandings, underlying assumptions and shared world views." E. Wenger, *Communities of Practice*, 1998, Cambridge: Cambridge University Press, p. 47.

- <sup>15</sup> Webb, T.J. & Curtis, A., 2002, Mapping regional capacity: A method to map regional capacity to adopt more sustainable natural resource management practices. LWA, Canberra.
- <sup>16</sup> Lockie and Rockloff, in a recent review of social and community health indicators in natural resource management, say that NRM needs social indicators that are "related in demonstrable ways to changes in resource condition and use and that are responsive to changes in management." These indicators fit that prescription. See Lockie, S., Rockloff, S., Helbers, D., Lawrence, K., and Gorospe-Lockie, M., 2005, *A conceptual framework for selecting and testing potential social and community health indicators linked to changes in coastal resource management or condition*, Coastal CRC, Indooroopilly, pp 8-11.
- <sup>17</sup> Morrison; T. H. , McDonald; G. T. , and Lane, M., 2004, Integrating Natural Resource Management for Better Environmental Outcomes. *Australian Geographer*, vol. 35, no. 3, pp. 243-258.
- <sup>18</sup> Colliver, R., 2005, op. cit., pp 6-10.
- <sup>19</sup> Bierle, T.C. 2000. *The Quality of Stakeholder-Based Decisions: Lessons from the Case Study Record*. Resources for the Future, Disc. Paper 00-56. Washington D.C.
- <sup>20</sup> Oliver, P., 2004, *Developing effective partnerships in natural resource management*, PhD thesis, Griffith University.
- <sup>21</sup> Gusteyer, S.; Flora, C.; Fernandez-Baca, E.; Bannered, D.; Bastian, S. & Apeman, S. (2002) 'Community Participation for Conservation and Development of Natural Resources: A Summary of Literature and Report of Research Findings', *Delta Development Journal*, 1:2, 57-84.
- <sup>22</sup> Imperial, M., 1999, "Institutional Analysis and Ecosystem-Based Management: The Institutional Analysis and Development Framework," *Environmental Management*, Vol. 24, p 451.
- <sup>23</sup> For example, a case study of network building around the management of Sydney Harbour reported success in establishing networks around different interests (central agencies, local government, harbour users, environmental interests), with forums that allowed collaborative relationships to form within networks and supported people in negotiating harbour management arrangements between different interests. See Colebatch, H., and Dawkins, J., 2003, *Network-building as institutional change: the management of Sydney Harbour*, Paper at conference, Centre for Public Policy, University of Melbourne.
- <sup>24</sup> Curtis, A., 2003, *Reflecting on the Landcare experience: A report based on information held within ABARE and BRS*, Bureau of Rural Sciences.
- <sup>25</sup> Syme, G. J., Nancarrow, B. E. and McCreddin, J. A., 1999, Defining the components of fairness in the allocation of water to environmental and human uses, *Journal of Environmental Management*, 57, 51-70.
- <sup>26</sup> Macadam, R., Drinan, J., Inall, N., McKenzie, B., 2004, *Growing the Capital of Rural Australia – the task of capacity building*, RIRDC Publication No 04/034.
- <sup>27</sup> MRAP & CRLRA, 2001, *Social capability in rural Victoria: The food & agriculture and natural resource management sectors*. Melbourne: MRAP.
- <sup>28</sup> Hendricks, C., 2004, *Engaging with different publics*, ANU thesis.
- <sup>29</sup> Craig, A., and Vanclay, F., 2005, "Questioning the potential of deliberativeness to achieve 'acceptable' natural resource management decisions," in Eversole, R. and Martin, J., (eds.), *Participation and governance in regional development*. Aldershot, UK: Ashgate, pp 137-154.
- <sup>30</sup> Imperial, M., 1999, "Institutional Analysis and Ecosystem-Based Management: The Institutional Analysis and Development Framework," *Environmental Management*, Vol. 24, pp 449-465.
- <sup>31</sup> A study of perceptions of community groups of regional NRM processes found that "industry groups and NRM networks are finding it easier to claim their place compared to local community groups and conservation groups. Legitimacy will only come as paternalism is gradually replaced by trust and respect in the partnerships between each of the stakeholders." See Working with People and Holm, A. 2004, *Case Studies on Community Group and Volunteer Engagement in Natural Resource Management*, Capacity Building Unit, Australian Government Natural Resource Management Team.
- <sup>32</sup> The distinction between collaboration and partnership is central to Peter Oliver's review of these concepts, and to his subsequent conclusions about effective partnerships, based on 19 case studies of NRM partnership. See Oliver, P., 2004, *Developing effective partnerships in natural resource management*, PhD thesis, Griffith University, p. 176. For the importance of power sharing, see Hoppe, P., 2004, *Toward a collaborative model of industry/community relationships in environmental management*,

Coastal CRC. pp 29-39, 155-219. Charbonneau, in a study of networks between community groups working toward common goals, points out that what he calls “joint action” precedes partnership. In an egalitarian relationship among participants, where parties have different strengths and often diverging interests, the intent to align action across independent parties forces groups to negotiate differences and develop consensus. See Charbonneau, J. 2005, *Networks of Associations and Community Social Capital: A Review of Analyses and Experiences*. Social Capital in Action: Thematic Policy Studies. Ottawa: Policy Research Initiative, pp 154-182. For other case studies of recent regional NRM governance, see Hoverman, S. and Walker, M., 2005. “The far end of the Engagement Ladder,” International Conference on Engaging Communities, [www.engagingcommunities2005.org](http://www.engagingcommunities2005.org).

<sup>33</sup> Oliver op. cit., pp 165-172.

<sup>34</sup> Program staff rate on a scale of 0 (not at all) to 10 (all the time). Criteria at five points on this scale have been developed, based on analysis of respondents’ reasons for high and low ratings.

<sup>35</sup> For example, in the Corangamite Region these are secondary industries, education and research organisations, regional NRM agencies, agribusiness and commodity groups, rural landholders and communities, community NRM groups, peak bodies, forestry, peri-urban communities, urban and coastal communities, tourism, Indigenous Australians.

<sup>36</sup> The CCMA’s Programs deal with Water Quality, River Health, Environmental Water Reserve, Floodplain, Drainage, Wetlands, Biodiversity, Pest Plants and Animals, Salinity, Local Government, Landcare, Indigenous Australians, Research and Development, Communications and Community Education and Investment.

<sup>37</sup> Curtis, A., and Cooke, P., 2005, *Landcare in Victoria: approaching twenty years*. CSU Institute for Land, Water and Society.

<sup>38</sup> Fenton, M., 2005, *Indicators of capacity, performance and change in regional NRM bodies*, National Land and Water Resources Audit, Canberra, pp 10-

<sup>39</sup> Levinger, B., and Bloom, E., 1998, *Participatory Organizational Evaluation Tool*, United Nations Development Programme, <http://www.undp.org/cso/resource/toolkits/poet/ch1.html> accessed 11/03/06

<sup>40</sup> McKinsey Capacity Assessment Grid, <http://www.vppartners.org/learning/reports/capacity/assessment.pdf> accessed 11/03/06

<sup>41</sup> Lane, M., McDonald, G. and Morrison, T., 2004, *Decentralisation and environmental management in Australia: a comment on the prescriptions of the Wentworth Group*, *Australian Geographical Studies*, 42 (1), p 106.

<sup>42</sup> Morrison, T.H., 2004, *Institutional integration in complex environments: pursuing rural sustainability at the regional level in Australia and the USA*, unpublished PhD thesis, School of Geography, Planning and Architecture, University of Queensland, St Lucia.

<sup>43</sup> Diamond, quoted in Lane et al, op cit, p 106.

<sup>44</sup> The focus on network structure and network dynamics is the approach to social capital developed by the Canadian Policy Research Initiative (Franke, S., 2005, *Measurement of Social Capital*, Policy Research Initiative, Canada) and aligns with the conceptual models of social capital developed by the Australian Bureau of Statistics and the Australian Institute for Family Studies (Stone, W., 2001, *Measuring social capital : towards a theoretically informed measurement framework for researching social capital in family and community life*, Australian Institute of Family Studies – Commonwealth of Australia.) and the World Bank’s work on what they call the structural and cognitive dimensions of social capital.

<sup>45</sup> van Bueren, E.M., Klijn, E-H., and Koppenjan, J.F.M., 2003, 'Dealing with Wicked Problems in Networks: Analysing an Environmental Debate from a Network Perspective', *Journal of Public Administration Research and Theory*, vol. 13, no. 2, pp. 193-212. Agranoff and McGuire claim that the only organisational form that can handle this complexity are “governance networks.” See Agranoff, R., and McGuire, M., 2001, 'Big Questions in Public Network Management Research', *Journal of Public Administration Research and Theory*, vol. 11, no. 3, pp. 295-326.

<sup>46</sup> Managed networks are constructions within social networks, but do not encompass those networks. Howden, for example, uses the term “governance networks” to mean “a public policy making and implementation (social) system involving multiple nodes (individuals, agencies and organisations)

with multiple linkages – not just informal patterns of interaction, but also structures through which public goods and services are planned, designed and produced and delivered.” Our focus has been on the social networks themselves, not on any facilitation or management applied to them. See Howden, P., 2006, *Understanding and operating in complex networks: a focus on the role of the ‘networker.’* DPI Practice Change Research, Working Paper 05/06, p 6.

<sup>47</sup> For a concise review of benefits of networks, see Pope, J., 2006, *Indicators of community Strengths: a framework and evidence*, Melbourne, Department of Victorian Communities; Johnson, D, Headey, B, and Jensen, B, 2005, *Communities, social capital and public policy: literature review*, Australian Government Department of Family and Community Services Policy Research Paper No. 26, pp 29-35. For research on networks in the developing world, see the World Bank’s repository at <http://www.irisprojects.umd.edu/socat/papers/papers.htm>

<sup>48</sup> Productivity Commission 2003, *Social Capital: Reviewing the Concept and its Policy Implications*, Research Paper, AusInfo, Canberra; Johnson et. al., op. cit.

<sup>49</sup> Oliver, P. and Whelan, J., 2003, *Coastal Network Report (A) Literature Review: Regional Natural Resource Governance, collaboration and partnerships*, Project UG: Dialogue and Knowledge Exchange (South East Queensland) Milestone 4 Report, October 2003, Coastal CRC, Indooroopilly, pp. 67-70; Pretty and Ward, 2001, Social Capital and the Environment, *World Development*, 29 (2), 209-227.

<sup>50</sup> Franke, op cit, pp 39-40.

<sup>51</sup> Sobels, J., Curtis, A., and Lockie, S., (2001) The role of Landcare group networks in rural Australia: exploring the contribution of social capital, *Journal of Rural Society*, 17 (3) 265-276.

<sup>52</sup> Kington and Pannell, cited in Pannell et al , D.J., Marshall, G.R., Barr, N., Curtis, A. Vanclay, F. and Wilkinson, R., 2005, *Understanding and promoting adoption of conservation technologies by rural landholders*, Land and Water Australia, Canberra, p 6.

<sup>53</sup> Curtis, op. cit., p. 6.

<sup>54</sup> In a study of two successful landcare networks, members’ sense of empowerment enabled strong networks to pull in resources. See Sobels et al, op. cit.

<sup>55</sup> Commitment to shared goals, not just private goals, drives sharing in networks, observes Kilpatrick. There is no benefit in someone knowing how to get a grant or who to ask about soil erosion if that person is not prepared to act on or share this knowledge. See Falk, I. and Kilpatrick, S., 2000, What is social capital? A study of rural communities, *Sociologia Ruralis*, vol.40, no.1, pp. 87-110.

<sup>56</sup> Charbonneau, studying factors associated with successful attempts to develop networks, found that when a group network is formed on the basis of pre-existing informal relations, projects have a greater chance of success. Moreover, a relational history helped to prevent interpersonal conflicts, which are a major cause of network failure. See Charbonneau, J. 2005, *op. cit.*, p 162.

<sup>57</sup> Stone and Hughes calls these three types of network informal ties, generalised relationships and institutional relationships (Stone, W., and Hughes, J., 2002, *Social Capital: empirical meaning and measurement validity*, Australian Institute of Family Studies, Research paper No. 27); Black and Hughes call the first two social participation and civic participation. (Black, A. & Hughes, P., 2001, *The identification and analysis of indicators of community strength and outcomes*. Canberra: FaCS); Pope and Warr call the three types of network close personal networks, associational and community networks, and governance networks (Pope, J. and Warr, D., 2005, *Strengthening Local communities: an overview of research examining the benefits of Neighbourhood Houses*. DVC: Melbourne).

<sup>58</sup> Franke, op cit, p 15. Dense ties can also stifle innovation, binding members to established ways of behaving.

<sup>59</sup> The distinctive value of linking ties is drawn out by Woolcock’s distinction between horizontal and vertical ties (Woolcock, M., 1998, “Social capital and economic development: Towards a theoretical synthesis and policy framework,” *theory and Society*, 27, pp 151-208).

<sup>60</sup> Howden, P., op. cit., pp 16-17.

<sup>61</sup> In *Cooperation Without Trust?* (Sage, 2005) Karen Cook, Russell Hardin, and Margaret Levi argue that in societies with high mobility, where people may not know each other well, people must and can cooperate effectively, and develop many mechanisms to reduce risks.

<sup>62</sup> Australian research found that personal trust in neighbours is most associated with community belongingness, not membership of community associations, that generalised trust in others is most associated with confidence in public institutions and affirmative attitudes to welfare, not with participation in community life, and that trust in government is best explained by a person's confidence in public institutions and a view the world treats people fairly. See Fattore, T., Turnbull, N., and Wilson, S., "'More Community!' Does the Social Capital Hypothesis Offer Hope for Untrusting Societies?" *The Drawing Board: An Australian Review of Public Affairs* Volume 3, Number 3: March 2003, 165-179

<sup>63</sup> Stone suggests that the weakness in measures of generalised trust, such as the World Values survey question "Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?" is that the specifics of trustworthy behaviour in the particular context are not being probed. See Stone, op cit, pp 33-35. For instance, respondents might be asked how commonly people in the network "do what they say they'll do" or "give each other a hand when needed."

<sup>64</sup> Charbonneau, J., op. cit., p 155.

<sup>65</sup> "There is credible evidence that .... increased awareness and understanding ... enhance landholder capacity to adopt recommended practices." In Byron, I., Curtis, A. and McKay, J., 2004, *Providing social data to underpin catchment planning in the Glenelg Hopkins region*, Glenelg Hopkins CMA, p. 6.

<sup>66</sup> Nelson, R., Webb, T. and Byron, I. 2005, *A conceptual framework for coordinating the integration of socio-economic information for NRM decision makers*, NLWRA. See also See Cary, J., Webb, T.J. & Barr, N.F. (2002). *Understanding landholders capacity to change to sustainable practices*. Canberra: BRS.

<sup>67</sup> Pannell et al, op. cit., p. 3.

<sup>68</sup> Ian Byron, May 2006, personal communication.

<sup>69</sup> Geoff Brown, May 2006, personal communication.

<sup>70</sup> For a complete review of research of the impact of Landcare groups on practices, see Curtis, A., 2003, *Reflecting on the Landcare experience*, BRS and ABARE.

<sup>71</sup> See, for example, the Glenelg Hopkins CMA's survey of landholders, Byron, I., Curtis, A. and McKay, J., op cit, p. 69.

<sup>72</sup> People are asked what issues they are most concerned about, or what issues are most important to them. This information is used to target communication with stakeholders. See for example, Scarlett Consulting and TNS, 2001, *Benchmarking community attitudes*, VCMC.

<sup>73</sup> For example, in market research in the Corangamite region, respondents were asked to describe their participation in activities concerned with the environment and waterways using 4 statements: I actively participate now; I have taken part in the past but I am not involved now; I have never taken part but would really like to; I have no real interest in taking part. Nexus, 2004, *Awareness and Perceptions of the Corangamite CMA*, Corangamite CMA.

<sup>74</sup> Sustainability Victoria is the agency with most interest in region scale measures of sustainable practices, and might be interested in partnering with a CMA to develop these measures.