



Environment,
Climate Change
& Water



Assessing natural resource manager capacity

A best practice guide

Natural resource managers are continually inventing, adapting and adopting more sustainable management practices to anticipate and respond to change. They do this by drawing on the resources available to them as individuals, as members of families (in the case of most NSW farmers) and as members of communities. The availability of these resources, which can be defined as human, social, natural, physical and financial capital, determines the capacity of natural resource managers to achieve sustainable natural resource management (NRM) outcomes.

Assessing natural resource manager capacity provides an understanding of the values, interests and priorities of key stakeholders in NRM. It also reveals the capacity of these stakeholders to adopt more sustainable NRM practices and to understand capacity-building priorities.

Why do we need to assess capacity?

Land managers play important roles in NRM and directly influence NRM outcomes. Therefore, it is important to understand:

- what enables and constrains community and natural resource manager participation in sustainable NRM
- how and why community and natural resource manager capacity may vary across a region
- the links between broader policy and institutional issues and day-to-day decision-making by natural resource managers
- how these enabling and constraining factors may affect the results of investment in improved NRM by government and other organisations
- how to build this knowledge into planning processes.

More generally, assessing natural resource manager capacity provides information that helps with planning and implementation and contributes specifically to:

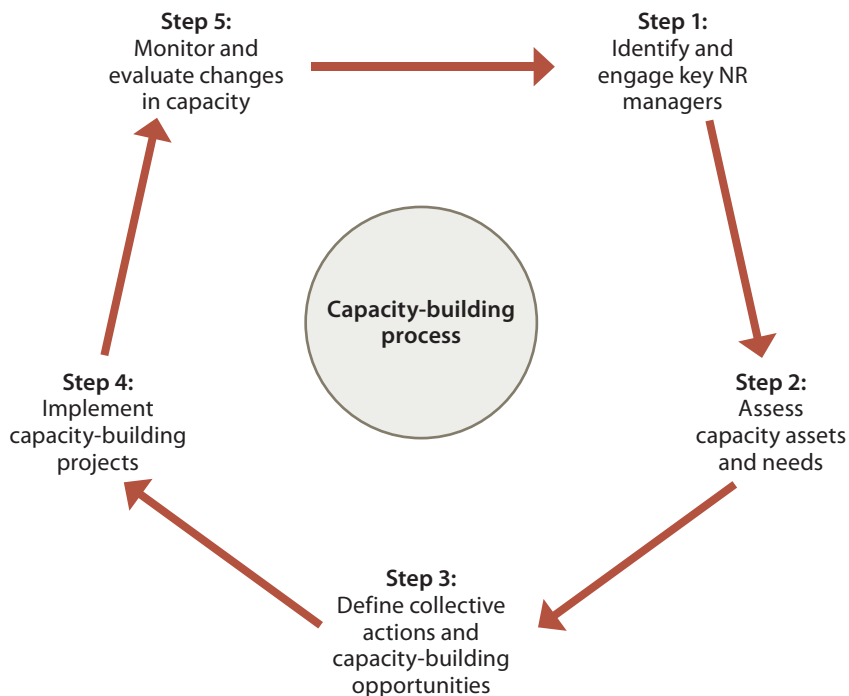
- monitoring and evaluation of community engagement and capacity building
- the collection of evidence of success
- knowledge of barriers to practice change in the region
- prioritisation of investment to build the capacity of natural resource managers.

The important role of land managers in meeting environmental outcomes has been identified in state-wide NRM Target 13. Target 13, one of two 'community' targets, has as its objective that:

There is an increase in the capacity of natural resource managers to contribute to regionally relevant natural resource management.

Given the amount of land that is privately owned, the capacity of natural resource managers is critical to NRM and to the achievement of improved environmental outcomes. Assessing the capacity of natural resource managers forms the first three steps of the capacity-building process (Figure 1) and is important for targeting capacity-building activities and investment (see Step 4 in Figure 1). It also enables monitoring and evaluation of changes in capacity (Step 5) to report on state-wide Target 13.

Figure 1. The capacity-building process

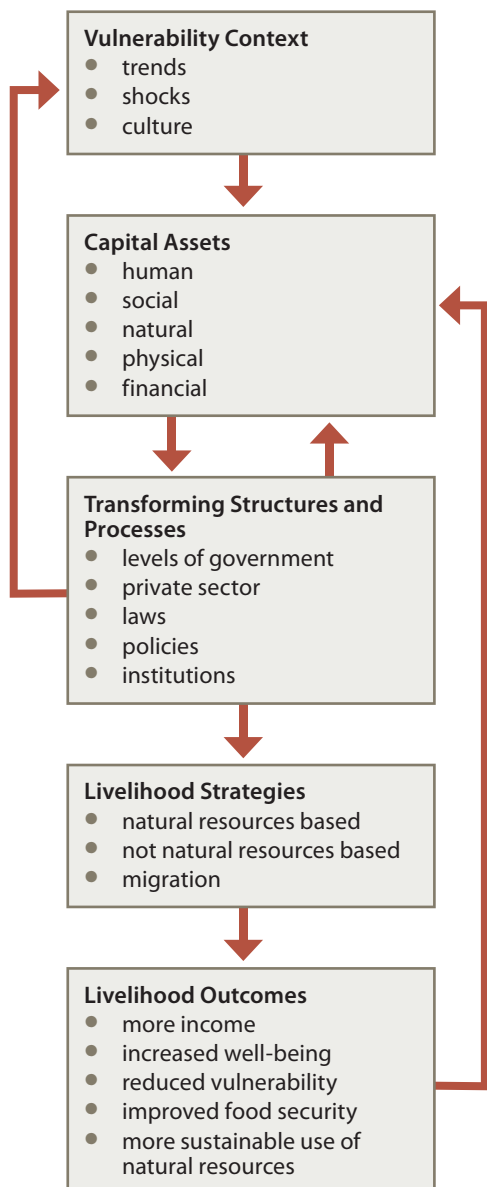


Source: Adapted from UNDP (2008)

The approach developed to assess capacity is based on the sustainable livelihoods framework (Figure 2) and uses the five capitals as a basis for discussion and assessment.

What is the sustainable livelihoods framework for capacity assessment?

Figure 2. Sustainable livelihoods framework



Natural resource managers have experience in adapting their management practices to better meet the expectations of the broader community for improved environmental outcomes. The sustainable livelihoods analysis (Ellis 2000) provides a framework for understanding capacity. The framework aims not to present a model of reality but to help stakeholders, with their different perspectives, engage in structured and coherent debate of the many factors affecting livelihoods, their relative importance, and the way in which they interact.

The framework shows people as pursuing their livelihoods in a *context of vulnerability*, including *shocks* (e.g. climatic variations such as drought) and *trends* (e.g. underlying structural adjustments in the economy, or climate change). Within this context, people draw upon their portfolios of *livelihood assets* to make a living. These assets are categorised into five types of ‘capital’ – **human, social, natural, physical and financial** – that enable natural resource management. These five capitals are explained in Table 1.

Both the amount of each capital and the balance among capitals are important in building a livelihood, and those with larger asset portfolios are considered to have a greater range of options available for adopting improved NRM practices.

Source: DFID 1999

Table 1. The five capitals used in the livelihoods framework

Capital	Description
Human	The skills, health and education that contribute to the productivity of labour and capacity to manage land and other natural resources
Social	The family and community support available, and the networks through which ideas and opportunities are accessed
Natural	The productivity of land, and actions to sustain productivity, as well as the water and biological resources from which livelihoods are derived.
Physical	The infrastructure and equipment, and breeding improvements in crops and livestock, that contribute to rural livelihoods
Financial	The level, variability and diversity of sources of income, and access to other financial resources such as credit and savings, that are available to support rural livelihoods

Source: Adapted from Ellis (2000)

Assessing adaptive capacity of natural resource managers in NRM

A systematic process has been developed for using the sustainable livelihood framework to assess the current capacity of key natural resource managers to manage natural resources and to identify priorities for capacity building.

Key natural resource managers are brought together to work through a 'self-assessment' process based on the five capitals. The workshop is a monitoring and evaluation process that enables regional- and State-level reporting on natural resource manager capacity. The aim is to assess the managers' NRM capacity and identify gaps in capacity and the potential for development of capacity. The discussion during the workshop centres on identifying what enables and constrains sustainable NRM in a region.

There are three key steps in the workshop process:

- identifying key natural resource managers to attend the workshop
- identifying two facilitators to lead the group through the self-assessment, and organising the practical aspects of the workshop
- conducting the workshop, including analysing and reporting results by using the Excel® template and spider-web plot.

Identifying key natural resource managers

Although the focus in most regions will be on agricultural land managers or groups, other natural resource managers may have a significant impact on, or investment in, regional NRM outcomes, and these other managers will need to be targeted for capacity assessment. Table 2 gives some examples of types of natural resource managers.

The steps in identifying key natural resource managers are to (Brown et al. 2010):

- list the types of natural resource managers across the region and/or in the agro-ecological zones within the region
- If necessary, prioritise the types of managers to be assessed by examining natural resource or regional planning priorities, such as NRM targets. The managers chosen should be those that can best influence the required outcomes of these targets
- approach these natural resource managers, through existing reference groups and facilitation networks where possible.

The aim is to have workshop participants that:

- include regional planning staff so that the process can be aligned with other reporting and planning processes
- are interested, willing to participate and able to understand the process
- are well informed and, on behalf of the community that they represent, are able to make judgements about their capacity to manage natural resources
- are long-term members of the community with a reasonable likelihood of being available to participate in future workshops to monitor change in capacity.

To encourage attendance, consider strategies such as night meetings at social venues (Brown et al. 2010) and reimbursement of reasonable costs incurred (for travel and childcare) (Bolitho and Garrow 2003).

Table 2. Natural resource manager types

Type of manager	Areas managed
Public NR managers responsible to community, including traditional owners	<ul style="list-style-type: none">• national parks• State forests• Crown reserves• waters and catchments• local government parks and reserves• marine reserves and submerged lands
Private NR managers whose business unit is a farm or farm analogue; includes indigenous land managers	<ul style="list-style-type: none">• agriculture• aquaculture• private native forests• boat-based commercial fishing• mining
Public company NR managers responsible to shareholders	<ul style="list-style-type: none">• mining• power generation• plantation forests• agriculture
Others: urban developers, youth, volunteer groups working in NRM	<ul style="list-style-type: none">• urban development• future cross-tenure managers• cross-tenure volunteer work

Source: Adapted from Jacobs et al. (2011)

Identifying workshop facilitators

The facilitator is the key to a successful workshop and the collection of useful data. The facilitator needs to:

- be experienced in facilitating group discussions or focus groups, ideally in a natural resource management context
- understand the five capitals, and the rationale behind them, and able to explain this rationale to workshop participants and apply it during the workshop
- understand the factors that enable or constrain capacity and be able to help participants to use a numerical scale to rate these factors
- be able to separate production or other issues from NRM issues during discussions.

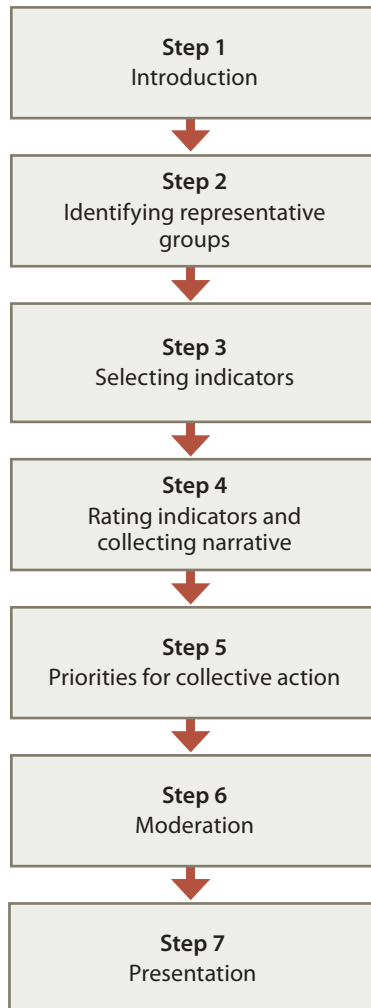
The focus is on NRM issues, but it is natural for participants to want to discuss issues of concern to them (e.g. farmers may want to talk about agricultural production). There will be cases where these issues affect NRM, but the facilitator needs to keep the focus on NRM.

Conducting the workshop

The workshop structure

The workshop is structured around a seven-step process (see Figure 3). Although these steps are listed sequentially, the inputs of participants often jump around and do not necessarily follow this order. The best approach is to modify the process to suit the group, as long as the outcomes are achieved. Active listening skills are critical.

Figure 3. The seven-step workshop process



Step 1: Introduction

The facilitator begins the workshop by explaining:

- what a sustainable livelihoods analysis is, and how it can be used to monitor the capacity of natural resource managers
- where this technique has been used before
- how the resulting information was used.

The facilitator introduces the five capitals and provides examples of indicators for each capital.

Note on recording results

The results of the discussion are recorded as the workshop proceeds by using a specially designed template, including a spider-web plot, which enables the results to be displayed at the conclusion of the workshop (see Example 4). The spider-web plot is used to illustrate the capacities of different types of natural resource managers. The capacities of these groups can be compared and contrasted and factors leading to high or low capacity identified (Brown et al. 2010). This can lead to a discussion of priorities for building capacity (see Step 5).

To ensure that the notes capture the important points raised during the discussion, discussions should be recorded by using a digital audio recorder. If discussions are recorded the facilitator must seek permission from the participants at the beginning of the workshop.

For further details on recording and presenting results see Step 7.

Step 2: Identifying representative groups

This step identifies which natural resource and land management sectors and areas of the region are represented by the participants, providing a context for the outcomes of the workshop.

All participants introduce themselves and identify:

- their natural resource and/or land management sector (e.g. broadacre farming, Landcare)
- the location of their property or where they implement NRM within the region. (A map is often displayed for participants to point out where their property is in the region.)
- any other groups they are actively involved with, including groups with non-NRM focuses such as rural counselling.

When there are more than eight participants, the group is divided into breakout groups. There are two approaches to the composition of the breakout groups.

The first is a mix of sectors or regions of origin in each group so that they are representative of the different perspectives in the wider group. One group works through two of the capitals and the other the remaining three. The human and social capitals are considered by one group and natural and physical capitals by the other. The financial capital is considered by either group.

The other approach is to divide the group by agro-ecological zones, with each group considering all the capitals and the results being combined during the moderation session of the workshop. This approach is more time consuming.

Step 3: Selecting indicators

The first task for the groups is to identify three to five indicators for each capital that are relevant to them and their natural resource and land management sectors and/or the region. They need to be able to assess their capacity to implement NRM against each indicator. Justification for why the indicator was chosen is also discussed and recorded.

The number of indicators is usually limited to no more than five. Any more than this will mean that the average rating for each capital will trend towards the middle of the scale, potentially masking any real differences.

The group works through the capitals in the order provided in Table 1, starting with human capital, as it usually generates broad discussion. It is both an 'icebreaker' and a topic that can highlight potential indicators for the other capitals.

This process is repeated with each capital until the group has at least three indicators per capital. The workshop process can be adapted to the particular group: some groups prefer to complete Steps 3 and 4 for one capital before moving on to the next capital.

Throughout the process, participants are reminded that they are doing this as representatives of their manager types (see Table 2) within the region.

'Natural' capital is often the hardest to consider. The group is encouraged to think about aspects of the environment that affect NRM. For example, in the Western region, graziers to the west of Bourke have access to plentiful artesian water for stock requirements. This takes away the pressure on the use of surface water sources and usually allows good management of stock movement and grazing pressure, with positive benefits for vegetation and soil management. These farmers might therefore rate access to artesian water as something that enables NRM. Alternatively, farmers to the east of Bourke might rate lack of access to artesian water as a constraint. In this case, a common indicator might be used by two different groups, but its effect on capacity is quite different.

The results are recorded in a spreadsheet as the discussion progresses.

Example 1: Selecting indicators

The table below gives examples of the information recorded about the indicators selected in a workshop conducted in Central West NSW.

Human capital

Indicator	Why was this indicator chosen?
Enthusiasm and optimism <i>Enthusiasm and optimism increase the capacity of land managers to manage natural resources.</i>	This indicator was chosen because enthusiasm and optimism contribute significantly to the awareness and management of NRM issues, and also to the willingness, cooperation and volunteerism needed to support collective action to improve NRM (see 'social capital').
Aging farm managers <i>An aging (younger) farm population reduces (increases) the capacity of land managers to manage natural resources.</i>	<p>This indicator was chosen because younger people recruited to the region, including both farmers and professionals, can be more willing to innovate, change and take considered risks.</p> <p>Planned succession is necessary to ensure that younger farmers recruited to the region have the necessary skills and experience to manage natural resources.</p>
Willingness to take risks and change <i>Willingness to change, innovate and take considered risks increases the capacity of land managers to manage natural resources.</i>	This indicator was chosen because willingness to change, innovate and take considered risks was considered an essential element of an aptitude for agriculture that builds on, but transcends, formal agricultural training.
Resilience and mental health <i>Improvements in mental health increase the capacity of land managers to manage natural resources.</i>	This indicator was chosen because mental health affects the ability of land managers to recover from stresses such as drought.
NRM training and education <i>NRM training and education increase the capacity of land managers to manage natural resources.</i>	This indicator was chosen because levels of NRM training and education are fragmented and uncertain and are generally poor among land managers in remote areas of the Western Plains. This indicator was referred to Catchment Management Authority staff for assessment because of their knowledge of recent NRM training activities in the region.

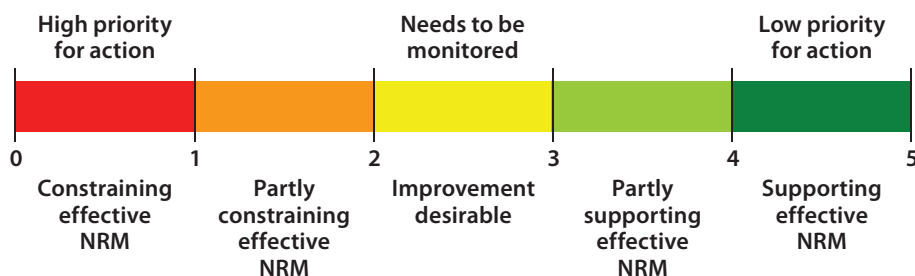
Step 4: Rating indicators and collecting narrative

Once indicators have been selected, the group uses the scale provided in Figure 4 to rate the degree to which the indicator enables or constrains NRM. By using the scale, a value between 0 and 5 is assigned for each indicator, representing the degree to which the indicator enables or constrains current NRM.

A low score shows indicators that are constraining effective NRM and are a high priority for action, whereas a high score means that the indicator was judged to be supporting NRM effectively, so this area is not a high priority. It is also important to identify indicators that are ranked highly, because they show what is working in specific areas and what areas of NRM require continued support; such actions may therefore enable capacity elsewhere.

The scale provides a quantitative measure that can be used to summarise both the capacity of natural resource managers to implement NRM and the priorities for capacity-building action.

Figure 4. Scale used to score each indicator in terms of the extent to which it enables or constrains natural resource management.



Source: Adapted from Jacobs et al. (2011)

The group also indicates whether the rating is improving, deteriorating or stable.

The group is provided with a handout, which includes definitions of the five capitals and the scale, and is prompted to discuss the reasons for allocating a value to the indicator. Examples of prompts at this stage of the workshop could include:

- What is the rationale for using these indicators?
- Why are they high or low in each region?
 - What are the important differences between regions?
 - Is the indicator going up/down/the same/don't know?

The discussion is recorded on the spreadsheet (see Example 2).

Example 2: Rating indicators and collecting narrative

The table below is an example of a completed self-assessment for human capital and the rating of each indicator by using the scale recorded in the spreadsheet template. In this example, the region has been divided into agro-ecological zones.

Indicator	Agro-ecological zone				Pressures / Importance of indicator
	Flood	Middle	Upper	Trend	
Human capital (the skills, health and education that contribute to the capacity to manage natural resources)					
Age of farmers	1	1	3	↓	Aging of the population of land managers affects ability to do NRM work
Skilled labour	2	2	2	↓	There is a shortage of skilled labour, including tradespeople.
Succession	1	1	1	↓	The demise of family farms was described as resulting in a decline in environmental stewardship.

Step 5: Priorities for collective action

Priorities for collective action are identified for each indicator for each of the capitals. The point of this step is to identify areas for action to build capacity. The question being posed here is *What can we do about it – what needs to be done?*

The responses provide details of what the community sees as capacity-building priorities that can be used to:

- provide information to refine existing policy, programs and investments
- identify gaps for new policy, programs and investments
- identify actions that are not specifically related to NRM, such as the provision of health services. These issues can affect NRM capacity.

Development of NRM policy is often contentious. The entrenched and polarised nature of community views can mean that only limited engagement with the community is possible. Having good qualitative social information collected from the community can be an invaluable input to NRM policy development. The capacity-assessment process allows information to be collected about NRM outside the conflict over management of specific resources (e.g. conflict with mining; private native forestry regulation).

Participants are encouraged to think about practical strategies for collective action among the different agencies and industries involved in NRM and their community. The discussion centres on getting the natural resource managers to take some ownership of the 'action' and to see that they have a role in improving outcomes in the identified area.

The discussion focuses on the areas where action is required, i.e. those that were identified as being of high priority during the rating process (rated low on the scale).

Prompts at this stage of the process could include:

- What are the priorities for building adaptive capacity?
- *Who* needs to do *what*?

The details collected in this part of the process provide specific information about what natural resource managers in the region see as priorities for capacity building, along with suggestions for what can be done (see Example 3). This can feed directly into planning and provides evidence of community consultation.

For some indicators, collective actions may be difficult to identify if the constraint to NRM is outside the control of regional communities or organisations. For example, NRM activities on farms are often constrained by poor profitability of agricultural production. Declining international prices for agricultural products and rising prices for farm inputs (herbicides, fertilisers, fuel) are long-term trends that farmers must cope with, but they may be beyond the control of regional communities.

Example 3: Priorities for collective action

The table below gives examples of some of the identified collective actions that could be taken by natural resource managers and governments to enhance the capacity of natural resource managers within the region.

Capital	Enhance capital by supporting:
Human	<ul style="list-style-type: none"> • the availability of mental health services, particularly in the more remote western regions
Social	<ul style="list-style-type: none"> • regional NRM teachers and/or facilitators to resource NRM education and the recruitment of young people into NRM activities across the region
Natural	<ul style="list-style-type: none"> • a focus on improving water resources in the upper catchment, with a view to providing benefits throughout the catchment
Physical	<ul style="list-style-type: none"> • adoption of the use of conservation farming equipment in the Tablelands to improve outcomes throughout the catchment
Financial	<ul style="list-style-type: none"> • better understanding of the connections between farm financial indicators and regional NRM

Source: Brown et al. 2010

Step 6: Moderation

The moderation session is the conclusion of the workshop. If the group has been split into breakout groups, moderation becomes a very important process to gain consensus among the broader group about the indicators and rankings given to each capital. The process of each group having to explain and justify decisions and rankings helps to confirm and validate the results.

To run this session, the spreadsheet in which the results have been collected is displayed, showing the rating of each indicator. Each capital is discussed in order, looking at:

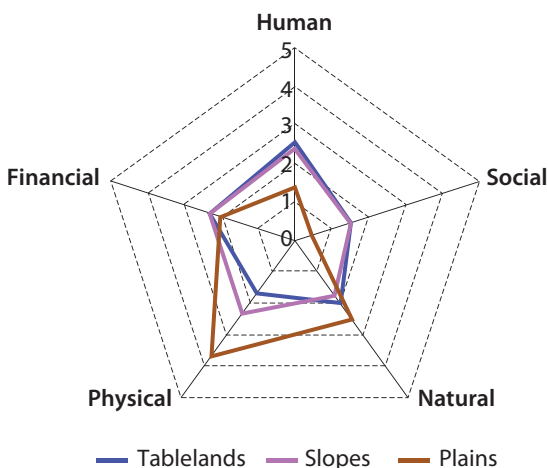
- the indicators selected and why
- the trend applied
- the rating of each indicator, and why
- collective actions.

This session is an opportunity for the group to agree on the indicators and their numerical ratings, and on actions to build capacity.

If participants have not been divided into breakout groups, this session becomes a wrap-up session, where the results are shown on the spider-web plot (see Example 4) for discussion and final changes to reach agreement.

Either way, this process confirms what has been discussed, provides feedback to the group, and is an opportunity to show the results for the day. Drawing a spider-web plot summarising the numerical rating of each capital is a good way to close the discussion.

Example 4: Spider-web plot showing ratings for each capital



The spider-web plot shows the rating of each capital by sub-region. High-priority areas for capacity building are closer to the centre (low rating); the farther away from the centre, the more this capital supports NRM. The graph shows that there are differences between sub-regions; this is important information for planning and implementing NRM projects.

Step 7: Presentation

The results of the workshops are combined into a comprehensive report capturing the detailed contextual information from the workshops as well as the quantitative information from the rating process. The detailed report includes:

- an understanding of the regionally relevant components of capacity and how these were rated by each key group of natural resource managers across the region
- the self-assessed capacity of each group of natural resource managers (in each agro-ecological zone (in cases where they were delineated) across the region.

The report meets State reporting requirements for Target 13 and provides information relevant to planning and investment. In particular, it provides information about the natural resource managers in the region and their capacity-development priorities.

Some of the key applications of the capacity assessment are outlined below.

Reporting

- Provides regional information for state-wide reporting on the condition of natural resource manager capacity.
- Provides regional information for regional reporting on the condition of natural resource manager capacity.
- Enables reporting to board or staff members on the capacities of particular groups of natural resource managers and/or sub-regions.

Policy development

- Enables input into policy development processes in national and State policy forums. The process provides legitimacy to representations.
- Provides an information base for policy-makers on the potential impacts of changes to access to natural resources (through regulation) before implementation, and helps in the design of novel adjustment strategies.
- Demonstrates the dependence of NRM outcomes and adoption of improved natural resource practices on the broader community structure and on health and wellbeing in regional areas; these issues are often overlooked by decision-makers.

Program planning and evaluation

- Contributes to program planning and evaluation by adding to multiple lines of evidence to demonstrate program effectiveness, and provides a community-based perspective of the success of NRM programs by:
 - identifying gaps and justifying new strategies to address gaps
 - providing opportunities for improving existing policies and programs to better match needs
 - targeting investment in capacity-building activities to best address the capacity needs of key natural resource managers
 - providing evidence of the need for further community engagement and awareness raising where community perceptions don't match government or organisational priorities.
- Supports resilience thinking and provides evidence that is central to planning: resilience, vulnerability and adaptive capacity are closely related conceptually and in practice.
- Helps to explain and promote practice change by natural resource managers.
- Allows information to be fed into other planning tools such as INFFER (Strang et al. 2010), which requires an assessment of likelihood of adoption as part of the benefit–cost index.
- Can be broadly applied to climate change in integrated assessments of regional vulnerability (Jacobs and Leith 2010).

Using the self-assessment process to monitor changes in capacity

By repeating the workshop with the same (or similar) groups of natural resource managers, the self-assessment process can be used to monitor change in natural resource manager capacity. The process in the repeat workshop is essentially the same, except that the participants evaluate the current situation against the indicators selected in the initial workshop. Because many of the indicators are relatively slow to change, the interval between the initial and subsequent assessments should be about 2 to 3 years.

The workshop participants review the score and trend allocated previously for each indicator, identifying whether they are the same or have increased or decreased. The reason for the change is recorded. Indicators that are no longer relevant are identified, and new indicators can also be considered by using the original process.

During the course of the workshop, consideration is given to key drivers that have enabled or constrained change in capacity. Spider-web diagrams of the scores from the five capitals can be compared to examine changes over time.

A simple table can be used to record the discussions (see Table 3).

Table 3. Recording the results of a repeat workshop

Indicator	Why chosen	Initial rating	Initial trend	What has changed?	Current rating	Current trend

Further information

For more detailed information on how to conduct a capacity assessment workshop contact the NRM T13 Theme Team Leader on capacity.evaluation@environment.nsw.gov.au.

References

- Brown, P. R., Nelson, R., Jacobs, B., Kokic, P., Tracey, J., Ahmed, M. and DeVoil, P. (2010). Enabling natural resource managers to self-assess their adaptive capacity. *Agricultural Systems* 103, 562–568.
- Bolitho, J. and Garrow, A. (2003). Reflections on being a community representative. *Stronger Families Learning Exchange Bulletin* 3 (Winter), 9–10. Available on the Internet at: www.aifs.gov.au/sf/pubs/bull3/jb.html [Accessed 9 December 2010].
- DFID (1999). Sustainable livelihoods guidance sheets. London, Department for International Development. Available on the Internet at: www.livelihoods.org/info/info_guidancesheets.html [Accessed 11 January 2011].
- Ellis, F. (2000). *Rural Livelihoods and Diversity in Developing Countries*. Oxford University Press: Oxford, UK.
- Jacobs, B. and Leith, P. (2010) Adaptive capacity for climate change: some principles for public sector managers. *Public Administration Today* July–September, 49–57.
- Jacobs, B., Brown, P. R., Nelson, R., Leith, P., Tracey, J., McNamara, L., Ahmed, M. and Mitchell, S. (2011). *Monitoring, Evaluation and Reporting Natural Resource Manager Capacity for NSW Catchments*. Final Technical Report to NSW Department of Environment, Climate Change and Water. NSW Government, Sydney. pp. 76.

Strang, M., Pannell, D., Roberts, A., Park, G., Alexander, J. and Marsh, S. (2010). *Introduction to INFFER*. INFFER Working Paper 1004, University of Western Australia, Perth.

UNDP (2008). 'UNDP Practice Note: Capacity Development'. UNDP: New York, USA. United Nations Development Programme Available on the Internet at: http://content.undp.org/go/cms-service/download/asset/?asset_id=1654154 [Accessed 9 December 2010].

Cover photograph: Hawkesbury Nepean-Catchment Management Authority.

© Copyright State of NSW and the Department of Environment, Climate Change and Water NSW

With the exception of photographs, the Department of Environment, Climate Change and Water NSW and State of NSW are pleased to allow this material to be reproduced in whole or in part for educational and non-commercial use, provided the meaning is unchanged and its source, publisher and authorship are acknowledged. Specific permission is required for the reproduction of photographs.

Published by:
Department of Environment, Climate Change and Water NSW
59–61 Goulburn Street
PO Box A290
Sydney South 1232

Report pollution and environmental incidents

Environment Line: 131 555 (NSW only) or info@environment.nsw.gov.au

See also www.environment.nsw.gov.au

Phone: (02) 9995 5000 (switchboard)

Phone: 131 555 (environment information and publications requests)

Phone: 1300 361 967 (national parks, climate change and energy efficiency information and publications requests)

Fax: (02) 9995 5999

TTY: (02) 9211 4723

Email: info@environment.nsw.gov.au

Website: www.environment.nsw.gov.au

ISBN 978-1-74293-162-3

DECCW 2011/0148

March 2010

Printed on recycled paper

www.environment.nsw.gov.au