



SESSION 4 Decision support tools

At the end of this session, you will be able to:

- > Understand the need and use of decision support tools in regional NRM
- > Incorporate meaningful social and economic criteria in decision support tools
- > Develop a relevant and practical decision support tool to use in your role.



1. Why are decision-support tools relevant?

Regional NRM bodies constantly make important strategic and operational decisions. Most decisions involve **prioritising** natural assets and their threats, geographic areas, 'packages' of activity or actions, or individual project proposals.

The resources available for protecting, managing and rehabilitating our natural assets fall far short of what is required. Identifying priorities to allocate resources for investment and action is therefore part of regional bodies' 'core business'.

NRM decisions in particular require decision support tools as they frequently involve:

- Uncertainty
- Multiple stakeholders and objectives, and
- Intangible outcomes that are difficult to see demonstrated 'on the ground'.

Decision support tools are therefore relevant to all stages of regional NRM, from regional plan development (priority assets); investment strategy (investment decisions), individual project implementation (competing proposals), and assessing impacts of projects or actions.

What is Multi - Criteria Analysis (MCA)?

There are a range of decision-support tools, as shown below. This session deals with one; **multi-criteria analysis**.

Delphi technique

Risk assessment

Environmental impact assessment

Citizens juries

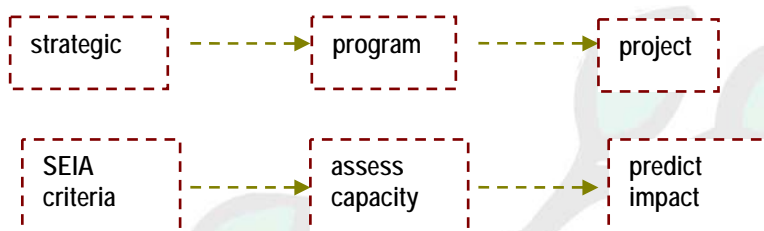
Environmental threshold analysis

Multi criteria analysis

Benefit cost analysis

An MCA can be structured around environmental, social and economic elements, ensuring options are assessed against a broad suite of criteria. This ensures social and economic dimensions become an intrinsic part of decisions, and are not addressed superficially or as an afterthought.

Actions directed at improving the condition of our natural resources are more likely to be effective if the relevant social and economic factors are considered. The scale for applying decision support tools is important; whether at the strategic, program or project level. An important benefit is it gives you a starting point to assess community capacity, and then to predict impact.





2. The Basics

Key Elements of MCA

- Assessment criteria are developed that reflect the objectives
- Criteria can be given weightings if some are considered to be more important than others
- Criteria and weightings can be applied by an individual, a small group, or a larger 'panel' with community or wider stakeholder representation.
- It can be done as a desk top assessment by a few individuals, by a selected panel having various technical expertise, or involve more representative community input.

Information, Data and Expertise needs:

- Assessment criteria can require quantitative or qualitative information, or a mix of both.
- People with expertise or experience can make an assessment where 'hard' information is lacking
- Information need not be expressed in dollars. Often a rating scale of, say, 1-5 is used.
- Rating the accuracy, currency and reliability of information can form part of the assessment
- Most regional bodies have developed various forms of MCA in-house, without involving external expertise. External expertise is not essential, but may be useful when constructing criteria for the analysis and advice on merits of weightings.

Possible Applications:

- At all levels of decision making from higher level prioritisation of NRM assets and threats, to deciding against competing project proposals, and assessing impacts from various projects or actions.
- Ranking in priority order 'packages' of actions (eg grazing land management, wetland protection and management, education and awareness raising for pest and weed management) to determine relative outcomes from previous projects, and/or priorities for future investment
- To decide the highest priority proposals of those submitted to the regional body.

Strengths and Limitations:

- It is repeatable, logical and structured. Decisions are more transparent and fair.
- The avoidance of \$ units lends itself to NRM issues (compared with a detailed benefit-cost analysis)
- It can include the community in decisions, and encourage more collaborative decision-making
- It is not costly or overly complex to apply
- A weakness is that weightings can be assigned to criteria arbitrarily, and without sufficient thought of the objectives. This can create problems as weightings can substantially affect the results.
- Flexibility as to how it is undertaken – by a few people, with a selected panel, or involving wider community input.



Decision support tools are just that: they provide support, but not the definitive answer. No one tool can do this. There are always some 'fuzzy' areas of NRM decisions that defy quantification or fitting into tightly defined structures.



3. Out in the Real World

(a) Strategic level application of decision criteria to 'programs of NRM activity'

Both the *positive and negative impacts* for NRM programs of activities could be assessed against economic, social, environmental and general criteria to predict their social and economic impacts. Examples of the results against 17 'programs' of activity for one assessment are in the diagram over the page.

Possible positive impacts	Possible negative impacts
Economy	
Will facilitate economic growth in regional industries and enterprises (eg agriculture, tourism). Actions taken now are likely to result in long term savings.	Unlikely to yield a financial return within investment / planning period. Program costs (on-ground works, incentives, monitoring, capacity, education), will be higher than the returns
Social	
Program will contribute to increased knowledge, skills and facilitate higher levels of NRM participation. Program will have positive flow-on benefits to the local and regional community (e.g. increased employment, improved amenity). Engages key stakeholders and built partnerships essential for long-term effectiveness. Builds capacity of the community (better informed, resourced and networked). Assists in breaking down institutional barriers and fostered cooperation amongst stakeholders.	Community resources will be reduced or less effective Potential to build greater community resistance or mistrust. Stakeholders likely to be engaged for short term self-interest. Existing capacity and community drivers or motivations are not known or are poorly understood. Lacks technical and professional resources to facilitate change.
Environment	
Contributes to maintaining or achieving sustainable uses of land and water. Maintains, restores or enhances the health and function of natural ecosystems.	Implementation of the program will not produce environmental change within a generation. Causes of the problem are not sufficiently understood to effectively target action.
General	
Links effectively to other programs to achieve greater impact. Will generate leverage from other investors.	Related programs could well be delayed, or not deliver expected outcomes. Program is not sufficiently aligned with investor priorities.

Learnings and key points

If objective or quantitative information was not available, how would you assess the various NRM packages against these criteria?

Could the social and economic regional profile assist in assessing any of these criteria?

If the ratings were high against the two negative social criteria, how could you make future actions or projects more effective?



Better to have fewer criteria that highlight key outcomes, than a long list that attempts to include everything. Avoid unnecessary complexity. The Keep it Simple principle is relevant.

The people impacts of NRM



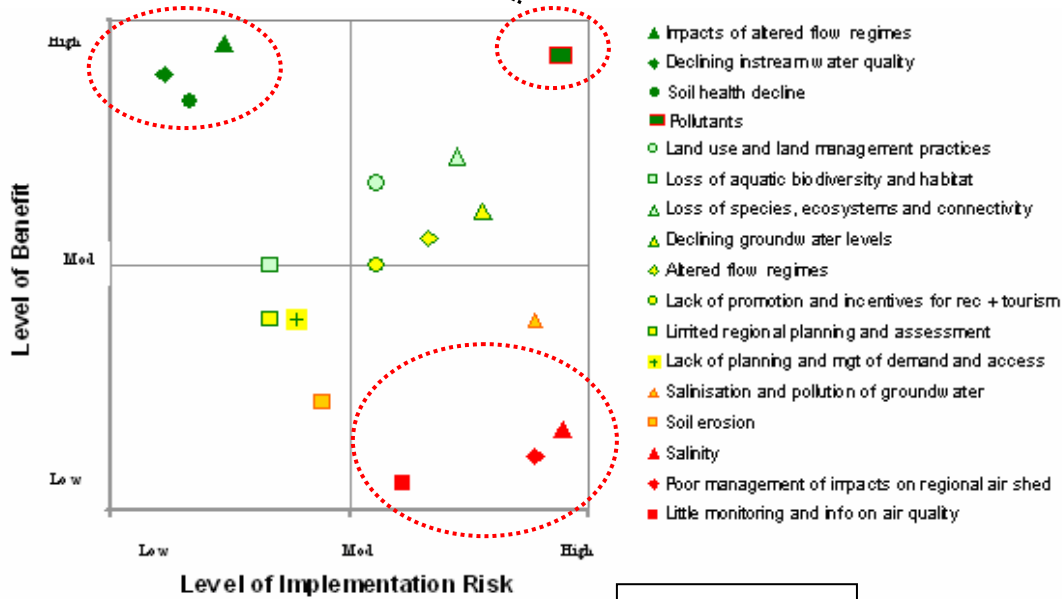
How relevant are these criteria to your region? **Highlight** those criteria that would add value to your region's decisions at a program level.

Would you consider weighting some above others?

Scores were assigned to each program against each criterion. The totalled scores were then used to rank the programs in terms of their benefits and negative impacts. The relative impacts of the programs clearly emerged, illustrated in the following diagram.

This program on riparian rehabilitation will initially involve a few landholders. After applying the previous criteria It has a high positive impact against environmental criteria, but negative impacts against social criteria. You would like to implement and gradually expand this program.

High priority = high positive, low negative



Low priority = low positive, high negative



Are there advantages of assessing *both* positive and negative impacts (as above)?



(b) Project level application

The MCA prioritisation and decision process can be used to decide whether to continue funding to existing projects. One process uses four filters, applied sequentially. Projects outcomes are scored against each of the following criteria. Filters #3 and #4 outline the social and economic criteria.

Your task is to assess the possible use of these criteria to assess the impacts of projects to inform future allocation of limited resources – whether to continue, expand or discontinue project activities. This would require both tracking impacts to date, as well as predicting impacts from future activities. The following criteria could be a basis for predicting impacts at the project level.

Filter #1: Appropriate project goals, activities and costs

- Aligns with NRM targets
- Extent to which the proponent is likely to deliver the project requirements

Filter #2: Environmental outcomes and appropriate project location

- Addresses the symptom or cause of the issue
- Addresses more than one issue (value added)
- Application of a landscape approach
- Builds on past work
- Additional elements for water, salinity, land and biodiversity projects

Filter #3: Capacity/willingness of landholders to engage, up-skill and manage for long term change

- Is the project driven by the landholders?
- Will the landholders develop the appropriate knowledge or skills?
- Is there commitment by landholders to continue and for long-term change?
- Are long term networks developing to support this landholder commitment to change?
- Will the project link with other groups/partners?

Filter #4: Availability of funds, value of money, financial leverage

- Likely level of in-kind support required
- Potential to generate financial leverage

Learnings and key points

Are the social and economic criteria appropriate (filters #3 and #4)? What changes would you make?

How should the criteria address Aboriginal issues and interests?

(refer criteria on next page for suggestions and discussion)

Source: adapted from Condamine Alliance



How useful are the criteria in identifying positive and negative outcomes or impacts of the projects?

What process do you use in your region to predict impacts from programs of activity, and then to develop strategies to mitigate them?



Criteria should be relevant to the project's objectives, and assist in differentiating between options. Excessively broad criteria may not be helpful here.

(c) Sample Aboriginal criteria

Specific assessment criteria for Aboriginal projects may need to be considered, to reflect the particular social and economic context of these communities. The following criteria are a sample of those that have been used to assess projects for Aboriginal communities, some of which are in remote locations. Are they useful in deciding both priority project proposals and impacts of projects for Aboriginal communities and interests?



Record your observations and comments against the adequacy and appropriateness of the criteria

Criteria	Useful? (Y/N)	Suggested Change or Comment
Level and complexity of community conflict that may affect the project's effectiveness		
Appropriate community governance structures in place		
Approach demonstrates support and involvement of local Aboriginal landowners		
Evidence of local planning including awareness of local Aboriginal networks and target groups		
Capacity to develop partnerships with Aboriginal organisations and work within the Aboriginal community		
Suitable infrastructure for the project's requirements, including information technology		
Local communities or organisations have a track record of interest in managing their land sustainably		



Could the criteria above be used to assess both projects proposals and project impacts across a suite of NRM programs (eg biodiversity, land management, water)?

A project involving Aboriginal communities to manage significant biodiversity habitat rated poorly against the criteria above. You would like to continue the project, but need to increase its effectiveness. What are possible options?



What criteria may be appropriate for your region and projects? How effectively has your region has assessed the social and economic impact of Aboriginal actions and projects to date?



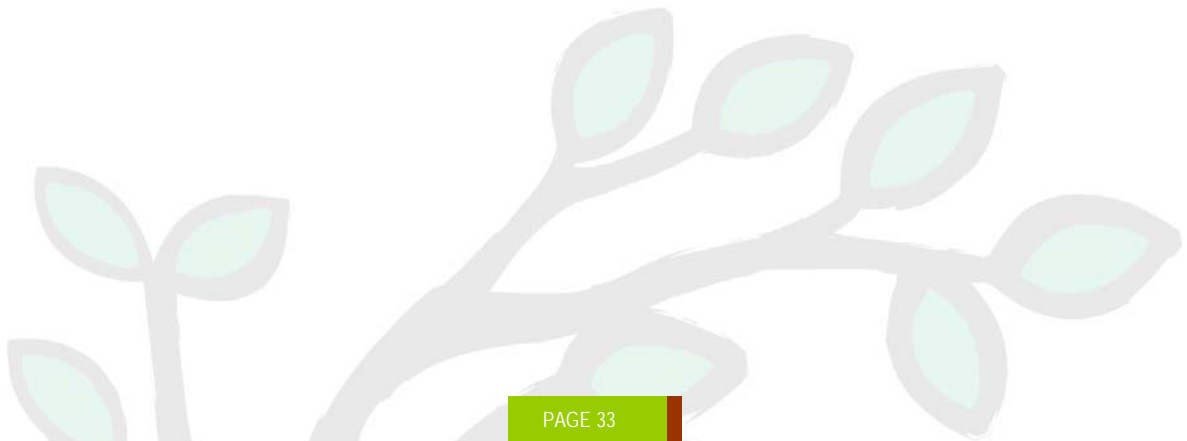
4. Your region, your projects and this tool

Questions to Consider:

- What are the frameworks, methods or criteria you currently use to prioritise and make decisions – for individual projects and for more strategic decisions? Are social and economic factors adequately assessed in these decisions? Identify 2 changes that would improve their effectiveness.

- There are various processes to undertake a decision-support exercise, including a small group of 3-4 people 'in house', an external 'technical reference panel' approach, or a larger, representative community based panel. They could do one or all of: develop criteria and weightings, score and rate the options, make final decisions.
- Which approach would be most appropriate in your region? Consider the issues of time, cost and complexity which increase for each of the three options listed about.

Could stakeholder analysis or the regional profile be used to assist in applying decision-making support tools?





5. Summing up

List two insights you have gained from the session

1

2

List two actions to kick-start a MCA type decision support tool for an NRM initiative

1

2



Further Information

Hajkowicz, S. Young, M. Wheeler, S. MacDonald, DH., Young, D. (2000) Supporting Decisions. Understanding Natural Resources Management Assessment Techniques. CSIRO Land and Water. A report to Land and Water Australia.

