

ing for sustainability -research on the wider meaning of hunting



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Best practice recommendation: Participatory multi-criteria decision analysis

Context and challenges

To meet competing demands from natural resources on a global scale, more integrated, ecosystem-based approaches to management are required. This involves recognising and managing trade-offs in order to avoid conflict. Multi-criteria Decision Analysis (MCDA) is a structured and transparent method of breaking down complex problems which, alongside facilitated deliberation, can produce a systematic and visual representation of diverse stakeholder perspectives. This approach can be used to evaluate how well alternative management options fulfil a range of criteria that reflect the values and objectives of stakeholders. The process helps structure complex datasets and management decisions to define the issues, represent the interests of stakeholders, determine their relative priorities, and quantify the effects of those priorities on the suitability of alternative management options in a transparent manner. The method can be flexibly used within a range of participatory approaches and adapted to form an important step in environmental decision making and conflict resolution.

Best practice approaches - our experience

MCDA was used as a framework for exploring contrasting land management objectives to inform the transition to an Ecosystem Approach in Scotland. It was applied as part of a participatory process with land managers to assess what environmental, social and economic benefits are delivered by a range of current management types (Fig. 1). This provided a systematic approach for eliciting and discussing different values, management priorities and trade-offs amongst private, state and NGO landowners and managers. For example, it indicated the trade-offs and synergies between sporting, biodiversity, carbon and renewable energy priorities in upland Scotland. The following recommendations reflect researcher and participant evaluation of the process.

Establishing context and selecting stakeholders

 MCDA is best applied as part of a larger conflict resolution or management planning process. By providing evidence for how different management types deliver stated criteria/ priorities, policy makers or managers may be made more aware of shortcomings in existing management effectiveness, trade-offs and how conflicts may be avoided.

- For MCDA outcomes to be useful there should be an appetite for change, a willingness to act on the results and opportunity for constructive dialogue. Stakeholders must also be receptive to the structured nature of MCDA as part of a decision-making process, so time needs to be spent explaining the process at the outset.
- Appropriate and thorough stakeholder selection procedures should be carried out to ensure fair and balanced representation of individuals, groups and organisations.

Defining and weighting criteria

- Sets of criteria that reflect the diversity of views and values amongst stakeholders can be elicited through facilitated discussion and drawn from a variety of other sources including research and policy documentation.
- Each criterion should be clearly defined to avoid ambiguity in understanding the differing views, including recognition that criteria can be either positive (e.g. maximising game numbers for harvest) or negative (e.g. minimal predator numbers).
- Where criteria are grouped into economic, environmental and social values, numbers should be balanced between these groups to avoid bias towards a set of values.
- Criteria are rarely of equal importance to stakeholders or decision makers. To reflect differing values, they should be ranked by participants to indicate their level of importance relative to the objective of the process.

Defining management options

- Management options can be defined qualitatively or quantitatively. They can represent current management types, possible future scenarios or a gradient of management activity. They may be developed with stakeholders or independent experts, depending on the context.
- Alternative options should account for all interests involved without bias towards the preferences of certain stakeholder groups.

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Multi-criteria evaluation

- Scoring the performance of management options against criteria requires stakeholders to make trade-offs between multiple values. It is critical that the questions put to stakeholders about how each management option contributes to each criterion are clearly defined and unambiguous in terms of context and scale.
- The scoring scale can be adapted to meet the needs of stakeholders and to manage uncertainty. It is generally easier for stakeholders to express ordinal or categorical choices on a relative scale rather than absolute preferences.
- Scoring can be carried out individually or within groups through discussion. The process should be designed by weighing up the level of conflict or tension against opportunities for stakeholders to reassess their positions through deliberation. An iterative process with discussion and opportunities to rescore may improve the search for compromise.

Analysis and interpretation of results

 There are several methods of applying criteria weights to scores and aggregating data to assess the overall performance of management options. Transparency should be maintained and all conclusions from the combined criteria weights and scores should draw on discursive interpretation in addition to appropriate statistical analysis.

 Aggregating results may be a useful way of summarising views from groups or regions but no consensus should be inferred for individuals or groups without allowing time for further deliberation or there is a danger of generating false or unstable compromises.

Communication of results

 Visual methods are useful for representing uncertainty and managing differences of opinion and communicating the complex trade-offs required to meet policy goals. Patterns in stakeholder opinion can be displayed in several formats, including scatter, cluster, box and ordination plots. Such visualisations can form the basis for negotiating compromise, discussion about how to manage trade-offs, and help communicate the complex trade-offs required in policy making and environmental planning.

For more information contact: Justin Irvine (Justin.Irvine@hutton.ac.uk)



Fig.1. Summary of how MCDA models were used in Scotland to understand land management decision making and how that varied across stakeholder groups, between areas and from the local to the national. (Bryce et al. submitted).

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