

## Starting points for evaluating implementation of the “Ecosystem Approach”

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This brief report provides some suggestions for evaluating the implementation of the “Ecosystem Approach”, a holistic and participatory approach to natural resource management. Currently, there is no agreed guidance as to how to evaluate projects using this approach, nor are there many examples of *ex ante* attempts to implement the Ecosystem Approach, from which we can learn.

These suggestions are based on existing experiences in trying to implement the Ecosystem Approach in the UK, and the literature that focusses on evaluating natural resource management. They do not provide a complete and final guide as to how every project should be evaluated, instead they provide a check list for what might need to be considered when planning an evaluation. To help readers develop these ideas, a reading list at the back of this document provides links to further reading on these topics.

If a project has labelled itself as an example of the ecosystem approach, then it is fair to evaluate it based on how its processes and outcomes reflect the principles and goals of the Ecosystem Approach. However, it is also important to consider the specific goals that the project initially set for itself, and the views of participants within that project, on both the processes and outcomes. This leads to a multi-faceted approach, whereby multiple sources of information are needed to reflect on multiple criteria of success. This is unlikely to allow any simple judgements of success or failure, but instead will build a nuanced understanding of project performance in a range of areas that are vital for improving future resource management efforts.



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## Defining the Ecosystem Approach

Before a project can be evaluated, the criteria for evaluation have to be identified and defined. Therefore, before we consider how to evaluate projects using this Approach, we must be clear about what we mean by this term.

The Ecosystem Approach is defined by the Convention on Biological Diversity (CBD) as “*a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way*”. The CBD provides 12 principles – the ‘Malawi Principles’ – as a guide to implementing the approach (see box below). These principles reflect the need for a systems perspective on ecosystem functions and processes, and also reflect arguments for decentralisation, partnership working, stakeholder participation and empowerment in decision-making. The Malawi Principles have been supplemented by 5 points of ‘Operational Guidance’ that make explicit the need for adaptive management, and emphasise the need to focus on relationships and processes within systems; enhance benefit sharing, decentralise management actions, and ensure intersectoral cooperation.

The 12 Malawi Principles designed to guide implementation of the Ecosystem Approach (for full details see <http://www.cbd.int/ecosystem/principles.shtml>) [Emphasis in bold added]

Principle	Description
1	The objectives of management of land, water and living resources are <b>a matter of societal choice</b>
2	Management should be <b>decentralized</b> to the lowest appropriate level
3	Ecosystem managers should consider <b>the effects (actual or potential) of their activities on adjacent and other ecosystems</b>
4	Recognizing potential gains from management, there is <b>usually a need to understand and manage the ecosystem in an economic context</b> . Any such ecosystem-management programme should: a) reduce those market distortions that adversely affect biological diversity; b) align incentives to promote biodiversity conservation and sustainable use; c) internalize costs and benefits in the given ecosystem to the extent feasible
5	Conservation of <b>ecosystem structure and functioning</b> , in order to maintain ecosystem services, should be a priority target of the ecosystem approach
6	Ecosystems must be managed within the <b>limits of their functioning</b>
7	The ecosystem approach should be undertaken at the <b>appropriate spatial and temporal scales</b>
8	Recognizing the <b>varying temporal scales and lag-effects</b> that characterize ecosystem processes, objectives for ecosystem management should be set for the <b>long term</b>
9	Management must recognize that <b>change is inevitable</b>
10	The ecosystem approach should seek the appropriate <b>balance between, and integration of, conservation and use</b> of biological diversity
11	The ecosystem approach should consider <b>all forms of relevant information</b> , including scientific and indigenous and local knowledge, innovations and practices
12	The ecosystem approach should involve <b>all relevant sectors of society and scientific disciplines</b>

## Insights for evaluation from the Ecosystem Approach definition

The objectives and principles of the Ecosystem Approach indicate how it may be evaluated:

- Evaluations should take into account the goals of the Ecosystem Approach (to achieve integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way).
- The approach is about management, not just planning, so it is important to assess whether or not a project is able to implement its actions, rather than just plan.
- Evaluations should also take into account the 12 principles of the Ecosystem Approach, considering why, why not, or how they were implemented. It may be useful to identify project-specific indicators related to each of these principles.
- Projects will also have their own specific objectives which should also be used in evaluations. However, if a project labels itself as using the Ecosystem Approach, the project's own objectives should not supplant consideration of the Ecosystem Approach's goals and principles.

Evaluation using these criteria cannot be a simple tick box affair:

- The principles are abstract and may not all correspond with single or simple indicators: for example, whilst it may be easy to see whether or not stakeholders were involved in a project (principle 12), it may require a nuanced exploration of detailed evidence to judge exactly if, and how, their views were incorporated and valued (principle 11). Thus, detailed information about the processes of the project may be needed to judge whether or not a principle was considered or implemented.
- It is thought that it will often be hard, or inappropriate, to equally implement all 12 principles in one setting, but, conversely something that reflects only one or two principles is likely to be a long way from the ethos of the approach. Without careful consideration of all the principles, it can be all too easy to simply neglect or forget the principles which are hardest to operationalise. For example, if a site has never previously been managed with stakeholder involvement, then it may be challenging but particularly worthwhile to pursue principles 1, 2, 11 & 12. Therefore, it is important that when a project is planned, there is evidence of how each principle was considered, and if relevant, the justification for why particular principles were not emphasised during implementation.

In summary, an understanding of the reasons as to why some principles were or were not implemented is needed to establish a balanced and meaningful evaluation that uses these criteria.

## Insights for evaluation from Ecosystem Service Assessments

Taking account of the benefits derived from nature (ecosystem services) is central to the Ecosystem Approach. An assessment of ecosystem services is not the same as the Ecosystem Approach, but assessments can provide valuable support to implementation of the Ecosystem Approach. Carrying out an assessment can provide useful information on the links between biodiversity, ecosystem function and the benefits they provide to different social groups.

Within the UK, the National Ecosystem Assessment provides a useful framework for categorising and assessing services (other frameworks and categorisations also exist). Identifying and monitoring individual ecosystem services can be very difficult, and there are many debates about how to define and measure services and their interactions. There are gaps in information and knowledge that cannot be filled nor addressed by any individual project. Therefore, evaluations of projects should look for evidence that these issues were considered, but should not expect all of these issues to be perfectly resolved.

- Evaluations should look for evidence to show that the project took into account a wide range of ecosystem services, and considered how to describe these (i.e. whether or not to quantify services).
- Using a wide range of different forms of knowledge is integral to the Ecosystem Approach concept, but is also required to achieve a balanced understanding of ecosystem services. Therefore, evaluations should explore which forms of knowledge were used in assessments.

## Insights for evaluation from the literature on natural resource management

The wide-ranging literature on natural resource management provides a useful guide to the range of issues that need to be understood. Overall, there are two issues that evaluators need to understand: the design of the project itself, and the context in which it operates.

In relation to project design, the literature suggests a number of 'design factors' that support management of socio-ecological systems. Some of these factors are generic to any type of project management: for example, good information management and the quality of leadership. Other factors are more specific: for example, did the project build an understanding of ecological processes. Projects may use a combination of incentives, sanctions/regulations, education and collective voluntary action; and these can be assessed in terms of their efficiency and effectiveness in achieving ecological and social outcomes. Below we list some examples of relevant issues:

- Most projects have one or more individuals responsible for its management. The leadership, skills and experiences of this team will be relevant to understanding how well it was able to facilitate the process. It is also important to note whether projects had access to guidance, advisors or examples.
- Projects are more likely to be successful if they take account of, or build on, the activities and outcomes of pre-existing projects or other aspects of societal and institutional context, such as local attitudes to agencies. Evaluations should explore the extent to which this was attempted.
- Access to resources for planning and implementation (monetary and otherwise) should be assessed since these can have an important influence on how well projects achieve their goals.
- Evaluation should check how projects sought to use, and build on, existing datasets as well as other types of knowledge. There will be knowledge gaps and uncertainties and these should be noted as they can influence progress (though uncertainty should not be an excuse for inaction).
- Generally, managing ecosystems involves understanding and managing trade-offs. Evaluation should check how the main trade-offs were identified and whether any specific tools or approaches were used to explore or manage these.
- Decentralisation and empowerment of stakeholders is important to the ethos of the Ecosystem Approach, so evaluation should check whether this formed part of project planning and implementation.
- Iterative monitoring and evaluation is necessary to allow adaptive management and learning, so the project should ideally plan for monitoring, and monitor a range of social, economic and cultural issues as well as ecological issues. This may require a degree of self-reflection by the evaluators!

Some questions may depend more on the context or situation in question (e.g. water management, developing-country settings) and it may be necessary to review the literature relevant to each setting before deciding which project design factors are important in any specific situation.

Context can also shape issues and outcomes in ways that are beyond a project's control. For example, a past legacy of antagonistic relationships between an agency and stakeholders could create a significant obstacle to that agency being able to interest stakeholders in engaging in a new initiative. Or, the effects of climate change are beyond the control of an individual project, but may make it harder to achieve its goals. Thus, it is not possible to understand and fairly evaluate a project without paying attention to its setting or context.

- Evaluators need to understand the ecological factors and natural processes that could influence the system. These include, but are not limited to, climate change.
- Evaluators need to understand the social and institutional context. Social factors include things like attitudes to past projects, perceptions of organisations. Institutional factors can influence formal and informal ways of working, (mis)fit with policy drivers and mandates.

## Dealing with complexity

Because socio-ecological systems are complex, it will rarely be a simple or easy exercise to evaluate projects that seek to manage these systems. The complexities of natural systems present several challenges for evaluation:

- Since natural systems are very complex, and sometimes poorly understood, it is often hard to track or understand changes resulting from management actions.
- Ecological processes sometimes take decades to reflect the effects of changes in management practices. Thus, it can be hard to demonstrate when and why environmental or ecological objectives could or should be achieved.
- When projects are attempting to reflect ecosystem functions and processes, as in the Ecosystem Approach, it is unlikely that these can be understood or represented in terms of single target species or habitats. Single indicators or measures are unlikely to be sufficient as it becomes harder to define what 'success' is, let alone how to measure it.

Complexity also arises from involving stakeholders:

- The Ecosystem Approach has 'social goals' that are not directly about the environment: not only does it attempt to conserve resources, it is explicit that there should be equitable use and benefits from those natural resources. These social goals may be about project processes e.g. raising awareness or empowering vulnerable groups, or may be about outcomes e.g. ensuring stakeholders will receive economic benefit. Thus it is necessary for evaluators to study process as well as outcomes.
- Different goals may even be in tension: for example some environmental goals could be achieved efficiently without meeting goals for stakeholder involvement or social benefit. Thus, any single project will have more than one goal or objective to consider when evaluating the overall success of the project.
- Involving stakeholders increases the number of different points of view that need to be taken into account, in terms of whether or not a project has been a success.

Evaluation will never result in a simple objective binary distinction of 'success' or 'failure'. This is because different social and ecological goals may or may not all be achieved, for a variety of reasons, and because there will be multiple points of view as to whether success has been achieved. However, tracking multiple dimensions of project design, context, progress and outcomes can help to produce a balanced and fair understanding of what a project has achieved and why.

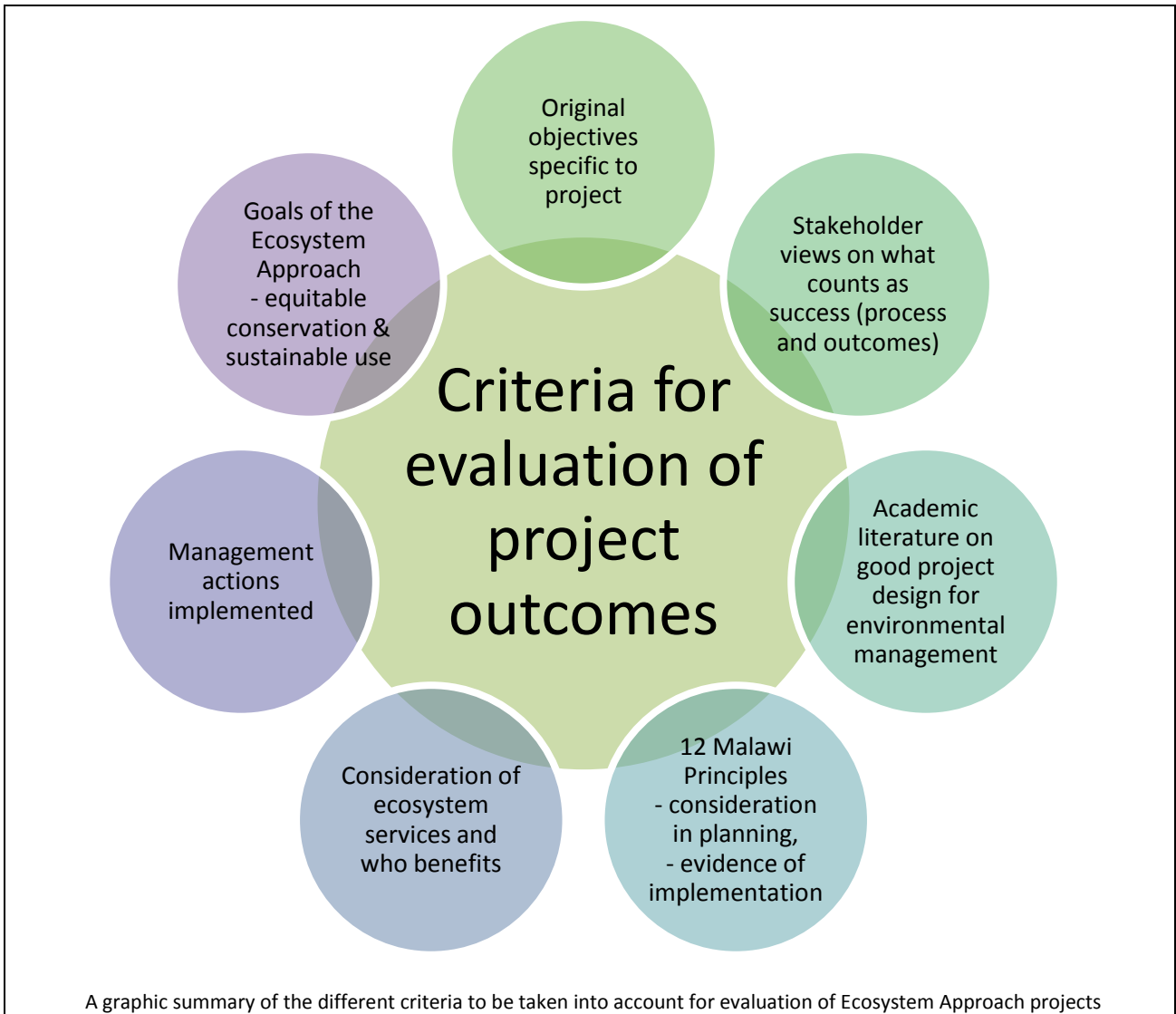
## Summarising our suggestions for evaluating Ecosystem Approach projects

The graphic on the next page summarises the different ways in which we consider it valid to 'judge' whether or not an attempt to implement the Ecosystem Approach has been successful. This diagram can help evaluators handle complexity by identifying the key issues to be considered. These criteria are starting points for evaluation, and further work will be required in order to plan evaluation of any specific project.

In order to evaluate a project by any of these criteria, evaluators will need multiple sources of information on both project process and outcomes. Both natural and social science research and data can be useful to understand pre-existing natural and social settings, and to track progress in project implementation. However, in order to produce a complete understanding of project progress and outcomes – and one that is consistent with the approach itself – the views and perspectives of stakeholders must also be accounted for. These could include the views of project partners, project staff, and local-level stakeholders.

Ideally, information should be collected before a project begins, in order to form a baseline for later monitoring. This baseline study should include a description of how the Malawi principles have been

considered in project planning. At the very least, it is essential to consider how evaluation will be carried out at the very start of a project: how the different criteria will be assessed – including what aspects or indicators of process and outcome need to be measured; and how, when and from whom information will be collected.



Thus there are multiple criteria through which projects should be understood, and multiple sources of information for each criterion. This multi-faceted approach may seem frustratingly complex and indefinite! However, complex projects need complex evaluation. If this is taken into account when evaluating attempts to implement the Ecosystem Approach then our understanding of what happened, and why, will be greatly improved. This is essential, both to inform and improve future attempts to implement the Ecosystem Approach and achieve the goals of equitable and holistic natural resource management.

### Acknowledgments

This report is based on research on the Ecosystem Approach funded by the Scottish Government (RESAS Strategic Research Programme 2011-16), which reviewed implementation of the Ecosystem Approach in various case studies across the UK. For more information, please visit:

<http://www.hutton.ac.uk/research/projects/ecosystemapproachreview>.

## Suggestions for further reading

### Further information about what it means to implement the ecosystem approach

Visit the CBD's own website for further reading about the origins and detail of the Ecosystem Approach:  
<http://www.cbd.int/ecosystem/>

Visit our website and download our report to find out more about UK experiences of the Ecosystem Approach Waylen, K.A.; Blackstock, K.L.; Holstead, K., (2013) *Exploring experiences of the Ecosystem Approach. Report published by James Hutton Institute.*  
<http://www.hutton.ac.uk/research/projects/ecosystemapproachreview>

For further reading about the Ecosystem Approach and the link with ecosystem services visit <http://ecosystemsknowledge.net/node/1967> to read Fish, R D (2012) *Viewpoint: Ecosystem services and an ecosystems approach. Ecosystem News, the newsletter of the Ecological Knowledge Network, Volume 1, Spring 2012.* The author Rob Fish has also published academic work on this subject.

The UK National Ecosystem Assessment (UK NEA) was the first analysis of the UK's natural environment in terms of ecosystem services concepts. Its synthesis report in 2011 can be downloaded from <http://uknea.unep-wcmc.org/> and is a useful read for anyone planning an initiative to measure, assess, or use ecosystem service concepts.

### Further information about key issues to consider in evaluation of environmental management

This paper provides an overview of the many factors of project design and context that may affect the outcomes of projects, the differences between different aspects of outcomes (e.g. social, ecological) and how these may not always tally. Brooks, J. S., Waylen, K. A. and Borgerhoff Mulder, M. (2012). *How national context, project design, and local community characteristics influence success in community-based conservation projects, Proceedings of the National Academy of Sciences, 109(52), 21265-21270.* <http://dx.doi.org/10.1073%2Fpnas.1207141110>

This is an interesting example of how stakeholder participation alters evaluation and the various perspectives that are valid and relevant (it also illustrates how stakeholder perspectives may differ from the criterion about process and outcomes in the literature). It contains a useful list of criteria for understanding and evaluating participatory processes. Blackstock, K. L., Waylen, K. A., Dunghinson, J. and Marshall, K. M. (2012). *Linking process to outcomes — Internal and external criteria for a stakeholder involvement in River Basin Management Planning, Ecological Economics, 77, 113-122.* <http://dx.doi.org/10.1016/j.ecolecon.2012.02.015>

This paper usefully summarises several criteria (both ecological and social), which including tracking on the learning and application of new knowledge, the organisation and function of a conservation program (the process) not only its outcomes. Kleiman, D. G., Reading, R. P., Miller, B. J., Clark, T. W., Scott, J. M., Robinson, J., Wallace, R. L., Cabin, R. J. and Felleman, F. (2000). *Improving the Evaluation of Conservation Programs, Conservation Biology, 14(2), 356-365.*  
<http://dx.doi.org/10.1046/j.1523-1739.2000.98553.x>

This paper proposes a long list of criteria that every project should monitor in order to produce insights that are useful for comparative evaluation. The list may seem prohibitive but this reflects the multitude of issues in the literature. Kapos, V., Balmford, A., Aveling, R., Bubb, P., Carey, P., Entwistle, A., Hopkins, J., Mulliken, T., Safford, R., Stattersfield, A., Walpole, M. and Manica, A. (2008). *Calibrating conservation: new tools for measuring success, Conservation Letters, 1(4), 155-164.* <http://dx.doi.org/10.1111/j.1755-263X.2008.00025.x>