

Exploring experiences of the Ecosystem Approach



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Summary

This report summarises a review of UK case studies of the Ecosystem Approach, carried out over 2012 to summer 2013.

In recent years, the “Ecosystem Approach” has been mentioned by several policies relevant to managing natural resources in the UK. However, given unresolved questions about what it means to do the/an Ecosystem Approach, and what outcomes may be achieved, we hope this work also has broader relevance to academics and practitioners in the UK and beyond. We understand the Ecosystem Approach to be a holistic approach to ecosystem management, as defined and used by the Convention Biological Diversity (CBD). The CBD provides 12 principles (the ‘Malawi Principles’) as a guide to implementation.

Our review identified 24 UK case studies for analysis. We collated documentary evidence on these case studies within ‘case study fact sheets’, and with key informant carried out interviews and questionnaires on experiences of project implementation. The questions we asked and the information we collected were informed by insights from the academic literature as to the likely challenges such projects might face. We used a mixed inductive and deductive approach to analyse this data, aided by Nvivo9 software.

This report presents the initial analysis of that data. We ask: (1) how is the EcA understood, (2) to what extent the 12 principles are used, and (3) what are the challenges and opportunities for implementing an EcA?

The practical details and descriptions of our cases varied very widely (though unexpectedly, we found many projects were some form of catchment management). This variation partially stems from varied understandings of what the EcA means. Understandings ranged from emphasis on a holism and understanding ecological systems, through to a need to involve and empower stakeholders. This affected how the Ecosystem Approach was interpreted in practice but also led to confusion, disagreement as to whether Ecosystem Service concepts should be emphasised, and risked scepticism that the label may be only a “buzzword”.

Use of the Malawi Principles was uneven. Even though the projects were variable in their settings and design, similar principles tended to be neglected. These were the principles associated with using different knowledge and empowering stakeholders, and also the principles associated with thinking about ecological processes and the long-term.

Several challenges help to explain why this occurred. Many of these relate to the problems of changing existing ways of working and thinking. There are arranged into six broad categories (1) team and partnership working, (2) institutional ‘fit’ and managing trade-offs (3) stakeholder engagement and uses of knowledge, (4) thinking systemically (5) resources and (6) communicating an Ecosystem Approach. These challenges are often associated with the very attributes seen as key benefits of an Ecosystem Approach: therefore tackling them is critical if we are to promote its ethos.

In the final section of this report we make a number of recommendations for helping to move beyond ‘business as usual’ in order to support the Ecosystem Approach. For example, although there may be good reasons for why some principles are not emphasised in implementation, all principles must at least be considered during planning. Many of our recommendations are relevant to higher-level institutional structures (e.g. policy processes, organisational structures). These seem to be a critical constraint: for example, top-down funding cycles can limit the timescale and activities of an individual project manager. We therefore identify further work on this topic as key for both future research and practise.

1. Introduction: background and rationale

There is widespread agreement that safeguarding natural resources is a global and urgent priority (Millennium Ecosystem Assessment, 2005). However, to date, the environmental sector has had limited success in preventing degradation or improving the status of natural resources (Balmford & Cowling, 2006).

Environmental problems are particularly challenging because they require understanding and intervening in complex socio-ecological systems, whilst multiple stakeholder interests, views and values cause differing views of problems and solutions. There are never likely to be simple and easily generalizable solutions to these diverse environmental management challenges (Vira & Adams, 2009). This is why they are sometimes labelled as ‘wicked problems’ (Ney, 2009). However, approaches which recognise and respond to this complexity hold the best promise for helping us to improve environmental management.

One promising approach to managing this complexity, which seems to combine insights from several other strategies, is the ‘Ecosystem Approach’ (Eca¹). This builds on arguments and insights from several different strands in the literature, in particular linking the rationale of ‘adaptive management’ based on understanding ecosystem functions and processes, together with arguments for decentralisation, stakeholder participation and empowerment in decision-making. As such, it is uniquely ambitious. It is represented as 12 ‘Malawi’ Principles for holistic environmental management (Table 1). These principles were adopted by the Convention on Biological Diversity (CBD) over 10 years ago, as the strategy for implementing its goals (CBD, 2000).

Table 1 The 12 ‘Malawi’ principles of the Ecosystem Approach

Principle	Description
1	The objectives of management of land, water and living resources are a matter of societal choice
2	Management should be decentralized to the lowest appropriate level
3	Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems
4	Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. 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 ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the Ecosystem Approach
6	Ecosystems must be managed within the limits of their functioning
7	The Ecosystem Approach should be undertaken at the appropriate spatial and temporal scales
8	Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term
9	Management must recognize that change is inevitable
10	The Ecosystem Approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity
11	The Ecosystem Approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices
12	The Ecosystem Approach should involve all relevant sectors of society and scientific disciplines

Sources: (CBD SBSTTA, 2007) and <http://www.cbd.int/ecosystem/principles.shtml>

¹ We here abbreviate the Ecosystem Approach to Eca, to avoid confusion with the Environment Agency abbreviation (as suggested by Potschin et al., 2011).

Since then, there has been an increasing interest in using the 'Ecosystem Approach' to support environmental management in the UK. The approach has been mentioned in policies, statements or supporting documents published by DEFRA (e.g. DEFRA, 2011; DEFRA, 2007), the Scottish Government (e.g. Scottish Government, 2011) and the Welsh Government (e.g. Welsh Government, 2011).

However, it is often not clear in what sense it is best interpreted, since the terms seems associated with a variety of quite different projects, ideas and initiatives. Furthermore, there has been surprisingly little reflection on the EcA, and how to implement it, or when or what scale it is most appropriate. Ideas on how to implement it have been discussed in CBD-related fora (e.g. Smith & Maltby, 2001), but have been given surprisingly little attention in the mainstream environmental or natural resource management literature.

This may be for two reasons. Firstly, the principles, if taken alone, are quite vague and so may seem to offer little direction for those wishing to begin practical management. Limited guidance does however exist: see for example the book 'Ecosystem Approach: from principle to practice' (Maltby, 2000). Secondly, and more fundamentally, it probably is very challenging to implement the EcA. As the concept is ambitious, it is likely to encounter all the challenges to implementation that have been separately encountered by adaptive management, ecosystem-based approaches, and participatory approaches.

It is not yet known whether attempting to implement the EcA offers opportunities for tackling these challenges, or reinforces them (thus making it difficult to follow all 12 principles in any one situation). For example we might expect principles 11 and 12 to be difficult to do for some conservation organisations, who typically have limited resources and whose staff have skill sets not focused on facilitating stakeholder involvement. We can also speculate that there may be resistance from conflicting policy processes or societal priorities: for example, principle 10 may be seen to conflict with the current emphasis of achieving and improving growth.

Therefore, it is timely to reflect on existing experiences of trying to implement an Ecosystem Approach. Since the concept promises to support equitable and sustainable resource management, it is important that there is better understanding of if and how it may be implemented.

This project therefore aims to review and analyse both current understanding and existing attempts to implement the Ecosystem Approach, so as to synthesize insights relevant to Scotland and beyond.

1.1 Objectives

The overall purpose of this study is to identify insights for how to implement and evaluate the Ecosystem Approach (EcA) in Scotland, by reviewing existing case studies of implementation of the Ecosystem Approach.

This report presents a summary and initial analysis of the review of existing case studies.

Key research questions for this report are:

1. Within UK practice, how is an EcA interpreted or understood?
2. To what extent are all aspects (principles) of the EcA used?
3. What are the key challenges and opportunities for implementing an EcA?

2. Methods

This section describes the three stages of work: (1) how the case studies were selected; (2) what information was collected about those case studies; (3) how that information was analysed.

2.1 Selection of case studies

Since many initiatives or processes have been labelled as an 'Ecosystem Approach', care was needed to select a set of case studies that could offer meaningful insights for understanding opportunities and challenges to implementing the EcA.

We first scoped potential case studies. Names or descriptions of potential examples of the EcA were identified by: (1) searching for examples within UK and Scotland Policy documents relating to the EcA; (2) searching within UK environmental public agencies and large third-sector environmental organisation websites, using "Ecosystem Approach" as a keyword; (3) general internet search using Google using keywords such as "Ecosystem Approach", restricting results to the UK internet domain.

We selected cases only from the UK and Ireland, since these will share similar institutional settings and policy goals, and hence may be more relevant to identifying issues relevant to resource management initiatives in Scotland. We gathered as comprehensive a sample as possible, but we do not claim that it is exhaustive. For feasibility reasons, cases were excluded for which little evidence was returned after searches across the internet and key policy documents.

The second step was to investigate all the cases collected in the scoping stage, to determine whether or not they seemed relevant for inclusion in the review. At this stage, basic descriptive information was collected in an excel spreadsheet. Three criteria were used to determine relevance:

1. The Ecosystem Approach is about management: therefore we sought case studies of **initiatives that directly aim to improve natural resource management** (rather than, say, pure research projects). The Ecosystem Approach does not prescribe a particular scale of work, but it does advocate devolution. We considered policies and plans as relevant for enabling and supporting place-based examples of implementation of the Ecosystem Approach, but not as examples of the Ecosystem Approach *per se* (however, implementation of those policies e.g. projects funded under the Rural Development Programme or River Basin Management Planning might be examples of an Ecosystem Approach).
2. We selected **only those case studies which label themselves as an Ecosystem Approach, or have been labelled as such** by a documented academic or policy source working on environmental issues. Within and beyond Scotland there are a myriad of initiatives to improve or influence natural resource management. It is possible that some of these wholly or partially address the 12 Malawi principles, but the sheer number and scope of these examples is impossible to encompass in one review.
3. We selected projects that showed some (any) **indication of attempting to advocate or achieve management of ecosystem or natural processes, together with any kind of stakeholder participation** (i.e. show evidence of having involved non-policy stakeholders in planning, and show evidence of more than a single-species or single-issue focus). We did not select projects based on the number of Malawi principles attempted. CBD guidance suggests that whilst all principles should be considered, different projects will put different weights on different aspects (CBD, 2006). So, although attempting to implement one principle can lead to initiatives that are very far from the ethos of the EcA, we cannot use the simple presence or absence of all 12 principles to simply decide what 'counts' as an example of an EcA for this study.

2.2 Collection of information on case studies

We began by reviewing the literature to identify topics and criteria relevant to understanding the progress and outcomes of natural resource management projects.

These topics informed each stage in a 3-pronged approach to data collection.

1. Firstly, a 'fact sheet' template was created, with headings that allowed us to understand particular topics highlighted by understanding of an EcA and our literature search. For each case study a fact sheet was populated using all available documentary evidence (e.g. project reports, websites). This stage was carried out in winter 2012.
2. Secondly, an interview was carried out via phone or teleconference with a key contact from the project (typically a project manager). This interview focused on checking and supplementing the factsheet, with a particular focus on exploring experiences of project implementation. Each interview was guided by a standard topic guide reflecting relevant concepts in the literature (see annex). These were carried out in spring 2013 by K.Blackstock, K.Waylen and K.Holstead.
3. Thirdly, participants filled in a simple questionnaire asking them to reflect on their experiences of the project in relation to the 12 Malawi principles. The participants were also given the opportunity to check and update the respective project factsheets. This was completed by summer 2013. See Appendix I for a copy of the questionnaire.

2.3 Analysis of information

We used a qualitative approach, aided by the processes of the software Nvivo9, to analyse the data focusing on understanding and explaining experiences and outcomes of case studies of the EcA. All our case study project factsheets, interview transcripts and questionnaire responses are stored and linked using this software. Microsoft Excel was also used to display and present descriptive statistics of the questionnaire responses.

Our analysis of the material used a mixed inductive and deductive approach: for example, the selection of interview topics reflects a deductive approach (i.e. guided by ideas in the literature) but the initial coding of material was inductive (i.e. as far as possible reflected topics discussed, rather than just pre-existing ideas). K.Waylen and K.Blackstock discussed their coding and analysis, to ensure emerging ideas were shared, checked and compared.

In our selection and analysis of projects we have not pre-judged or favoured certain types of outcomes. However it is worth noting that interview participants may have a tendency to reflect positively on their own projects: this is not a bias that we can avoid but we have tried to mitigate through carefully exploring the details of responses and the basis of judgements.

2.4 Confidentiality

Although we have named the projects reviewed, we do not identify project contacts. Therefore, any quotes in this and any other outputs of the work are anonymised, so individuals cannot be identified (for example, "*I think partnership working is awful*" – a catchment manager). However, where we make statements about projects that do not depend on quotes from individuals (for example "*project Bobcat included ecosystem service valuation*") we do name the projects, since such observations or claims are a result of our analysis, not necessarily related to any individual's statement.

2.5 Research presented here

As of September 2013, preliminary analysis was completed. In this analysis we sought to identify and explain experiences of implementation, and particularly to understand what aspects of project context or design may constrain or facilitate implementation. The following sections present the outputs of this analysis. These have been circulated to participants for their feedback, to check that our interpretations fit with interviewees' views and experiences.

Later in 2013-14 more in-depth analyses will be carried out in relation to check and confirm relationships between issues, and to develop specific queries and academic questions. Some potential avenues for further exploration are briefly noted in the final section on page 32.

3. Description of case studies

This section provides an overview of the projects, including a basic overview of issues such as their impetus, location, and activities.

3.1 Project locations

The 24 are fairly widely distributed across the UK and Ireland. However, as is apparent from figure 1 below, the sample comes mostly from England. This distribution simply reflects the distribution of projects fitting our selection criteria and for which an interview could be obtained (see section 2.1 for details of how projects were selected).



Figure 1 Indicative location of the 24 projects included this review.

3.2 Project names

Where abbreviations or short forms are used in this report, these follow the main project name, in brackets.

- | | | |
|---|---|---|
| 1. Alkborough Flats Project (Alkborough) | 9. Frome and Piddle Catchment initiative (Frome & Piddle) | 17. The Sustainable Catchment Management Programme (SCaMP) |
| 2. Anne Valley Project (AVP) | 10. Galloway and Southern Ayrshire Biosphere project (Galloway Biosphere) | 18. Sustainable River Catchments for the South East (SuRCaSE) |
| 3. Stirling Ecosystems Approach Demonstration Project (Carse of Stirling) | 11. Gaywood Valley Project | 19. Thanet Coast Nature2000 Management (Thanet project) |
| 4. Clyde Pilot Project | 12. Irish Sea Pilot Project | 20. Upstream thinking |
| 5. Demonstration Test Catchment Avon (DTC Avon) | 13. Loweswater Care Project | 21. Walmore Common Integrated Local Delivery (Walmore ILD) |
| 6. Demonstration Test Catchment Eden (DTC Eden) | 14. Natural England upland ecosystem services pilots – Bassenthwaite (NE Bassenthwaite) | 22. Wandle Catchment Plan Project (Wandle project) |
| 7. Demonstration Test Catchment Wensum (DTC Wensun) | 15. Natural England upland ecosystem services pilots - Dartmoor Farming Futures (NE Dartmoor) | 23. The Wetland Example of Payment for Ecosystem Services (WEPES) |
| 8. Eddleston Water Project, Tweed Forum (Eddleston) | 16. Natural England upland ecosystem services pilots - South Pennines (NE Pennines) | 24. Wild Ennerdale |

To find the project names associated with each location, please visit the map on <http://maps.google.com/maps/ms?ie=UTF&msa=0&msid=200310559138887690730.0004d742a085a64bfab6a>. However, please note locations are only approximate and for projects with very large or multiple locations only one pin has been used. If you would like to know more about any of these projects then please ask us and we can provide the short factsheets that we have compiled on each project (based on publically-available information sources). However, please note that we will not disclose our project contacts without their prior permission.

3.1 Spatial scale and boundaries

The EcA does not specify what scale to work at, nor how to define system boundaries. The scale of projects in our sample varies hugely from 21 hectares up to projects covering thousands of hectares. For most, this was determined by biophysical boundaries of a particular resource or habitat type. It thus varies according to the properties of that resource: our very largest projects worked on the scale of regional seas (e.g. Irish Sea), whilst smaller projects worked within (sub)-catchments.

Of course, there is an obvious focus on ecological properties or environmental systems, because projects are tackling environmental problems. This is also the case where projects have defined their scope and scale by building on existing designations for nature protection (for example, the Special Conservation Area helped define the boundaries of the coastal area managed by the Thanet project). Since site designations usually reflect some particular type of habitat, such projects can also be seen to indirectly define their boundaries and scale according to ecological features.

However, these ecological scales are not necessarily easy to work with. For example, the three Natural England pilots initiated work at the scale of 'Natural Character Areas' but narrowed their work to a smaller scale, since this seemed logistically feasible. What is feasible is linked to resources: with greater funding,

perhaps it would be feasible to work at larger scales. However, larger scales add to complexity, and the number of issues, stakeholders and processes that must be considered. Furthermore, these scales may be less likely to correspond with socially-defined areas or 'sense of place', so then it can become harder to engage with stakeholders at this scale. This is especially problematic in heavily modified natural systems or urbanised systems, where units such as a catchment may be very hard to perceive.

Some projects did use social systems as the starting point for bounding their work. For example, Walmore ILD was very focused on working at the parish level, and fitting in with local administrative boundaries. However, within our sample Walmore ILD is unique in strongly following administrative boundaries. However, it is perhaps more correct to say that social and institutional structure has generally been *influential* in determining project scale and scope, but this has been taken into account *after* taking natural systems as the starting point. For example, the Carse of Stirling project team took a catchment basin as its starting point, and then modified the boundaries according to population centres (and later modified it at the behest of project participants).

Does catchment-scale work offer a solution to the problem of reconciling and connecting natural and societal systems? The vast majority of our projects chose to define their systems according to catchment boundaries, working either at a catchment or sub-catchment scale. This is interesting because the Ecosystem Approach does not mention a link with catchment management, and we did not deliberately seek this when searching for cases. Many pre-existing catchment approaches (particularly 'integrated catchment management') attempt to promote stakeholder participation to manage catchment systems, so this is another reason why this might seem a good basis for implementing an Ecosystem Approach.

3.2 Project management

The Ecosystem Approach calls for decentralisation. However, the majority of projects in our sample could be characterised as 'top-down' efforts to manage the environment, since nearly all projects were designed and led (or co-led) by public agencies. Within England, Natural England and the Environment Agency are the key agencies which appear singly, in partnership with each other, and in partnership with other organisations such as the privatised water companies. In addition, existing third-sector catchment management organisations have worked in partnership or with funding from these public bodies organisations. Given the prominence of the NGO sector in the environmental sector, it is perhaps surprising that such organisations were not leading more of the projects in our sample.

Only two cases have been partly or fully driven by private individuals: in the Loweswater project, farmers and academics collaborated to obtain RELU (research council) funding, whilst the Anne Valley project evolved from one man's efforts to improve wetland management.

3.3 Funding and timescales

The three projects which have had water companies involved or leading, receive funding from those companies, to incentivise actions. In all other cases, any funding controlled by the projects comes from public sector, from Defra or via the statutory agencies.

Public sector funding specifications and cycles have influenced the lifespans of the projects: the Ecosystem Approach advocates working in the long-term but in only five cases was there confidence in the funding allowing any project work beyond five years (Figure 2). It is interesting that only one of these longer-term projects depended on a single source of funding, from the public-sector, whilst the others received at least partial funding or support-in-kind from the private sector.

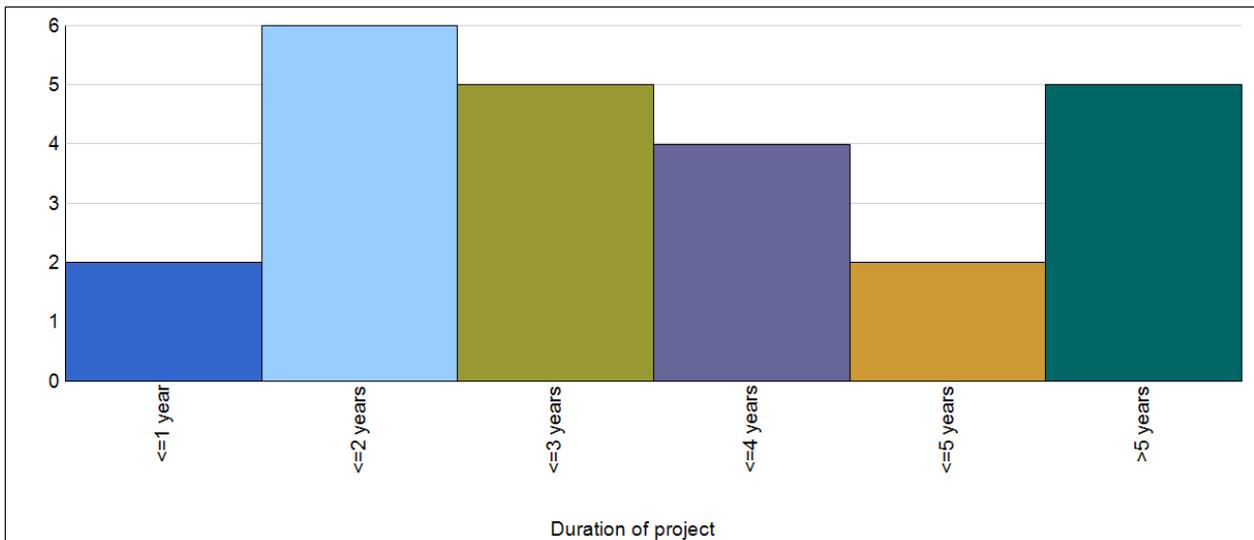


Figure 2 The planned duration of projects in this sample.

3.4 Project impetus and focal issues

Tackling some type of pre-existing environmental problem was, unsurprisingly, the primary objective for all projects. Social issues such as tackling deprivation or improving recreation opportunities were secondary objectives, if explicitly considered.

In general the focal issue was the need to continue pre-existing land-management (usually farming) but also to deliver more public goods. Many catchment management initiatives focused on working with farmers and other land-managers to reduce the detrimental impacts of their environmental activities. For the catchment-based projects, a key focus was identifying and progressing actions to reduce impacts on water quality, but also sometimes flow regulation. Other objectives mentioned included carbon storage, (particularly where project systems encompassed uplands), and sometimes recreation.

For all those projects with a catchment focus, it might be expected that the ambitious statutory targets for water ecology would be a key driver. These legally-binding commitments arise from the Water Framework Directive. Meanwhile, targets for the protection of terrestrial species and habitats are reflected in Sites of Special Scientific Interest (SSSI) and the Natura2000 designations (Special Areas of Conservation and Species Protection Areas). Since these targets are legally-binding, and often difficult to achieve, these may be expected to provide the impetus for many of our case studies. For a handful of our projects, the link was indeed very clear: for example, the Thanet project was a very direct response to the problems of complying with these statutory targets on the Kent coast. Furthermore, the projects in the Clyde and Irish seas were a response to new marine policies and planning needs.

SCaMP was an example where the impetus for a project came from targets for terrestrial SSSI management. However, in many cases project impetus was not framed as a direct response to statutory targets. Instead, projects were more typically framed around more specific and proximate problems, such as the challenge of reducing diffuse source pollution. In addition, projects were framed in terms of the need to integrate responses to multiple drivers and demands, rather than single issues. For example, the three Natural England pilot projects were not linked to any specific policy driver, although it was hoped that in the long-term these projects would assist in meeting statutory nature conservation targets and overall increasing the efficiency of action.

3.5 Project objectives and activities

All of the projects we selected aimed to contribute to tackling environmental problems. However, although problem-solving motivated all projects, many of the projects were only funded to make plans, not to actually resource actions influencing natural resource management. For example the Carse of Stirling project was a one-year project to help identify management priorities, but with no clear plan or funding for activity

beyond that. Other projects went beyond planning – particularly where they were associated with pre-existing NGOs and initiatives – but to encourage action they could often rely only on awareness-raising, and on encouraging applications to other or future sources of funding (as in the Wandle catchment). By contrast, SCaMP was an example of a project where its mandate and resourcing allowed it to support a variety of activities. For those projects focused on catchment management - for example the Frome & Piddle- there was a strong focus on working with farmers, and/or extension work to encourage them to apply for agri-environmental schemes funded via the Common Agricultural Policy.

Several projects also combined problem solving with another objective, usually to act as a kind of demonstration or pilot for the Ecosystem Approach. For example the Carse of Stirling project was intended as a role model, to “*Demonstrate the benefits of applying an Ecosystems Approach to land use, and a way of doing this that is practical and realistic*”. The three Demonstration Test Catchments, as suggested by the name, also had a key role in investigating and demonstrating the effect of different actions, and so placed particular emphasis on collecting and modelling data.

Most participants were positive about their projects’ achievements or at least the trajectory they were on: many stressed they were part of a long-term process and it was too soon to judge if they had fully met all objectives. However, a few projects were compromised by the imminent end of their funding, leading to concerns if stakeholders’ expectations had been raised without being able to ensure delivery of on-going actions on the ground. Outcomes tended to be seen in terms of positive ecological or environmental change e.g. SSSIs back in favourable condition or improved water quality but some projects did also recognise the importance of social or economic outcomes – such as improved environmental awareness and understanding; health benefits or the social capital built through working together. However, these social and economic outcomes were rarely formally monitored, unlike the environmental indicators.

3.6 Stakeholder involvement

Despite the diversity in project locations, focal issues and scales discussed above, all projects shared a focus on working with one or more stakeholder groups. However, the interpretation of stakeholder engagement varied and could mean anything from cross-organisation working, information provision and awareness-raising through to multi-stakeholder discussion groups and workshops (e.g. for example, Upstream thinking combined partnership working with NGOs and representatives with consultation with key land-managers, and newsletters to local communities).

We frequently encountered the phrase “*partnership working*”. This was frequently but not exclusively heard from public sector organisations: although these organisations led most projects, this was always in formal or informal collaboration and partnerships with others. Furthermore, all public-sector lead projects made efforts to inform or involve other societal groups with interests in the system (the marine projects, which were strategic and very large scale, deliberately did not attempt much engagement with non-public sector organisations.) Sometimes partnership reflected existing links between organisations (often the EA and NE), in other cases projects invested in creating these: for example SCaMP created a new partnership with a River Trust.

The dominant group focused on by most projects was farmers. Their actions as land-managers have direct influence on land-uses and indirect impacts across their systems, e.g. runoff from land affects water quality within catchments. Therefore, some projects (e.g. DTC Avon) focused just on working with this group. Patterns of land-tenure and property rights mean that for these and many other situations, environmental outcomes strongly depend on the multiple decisions of individual independent land managers. However, our sample also contained projects on communally grazed land (as at Dartmoor), tenant farmers and/or a few large land-owners (e.g. SCaMP). Thus, different projects had to engage with different patterns, scales and traditions of decision-making.

Taken together, these indicate the challenges of working in systems with complex land-tenure arrangements, but also the rewards of opening up decision-making to more interests. Wild Ennerdale is particularly interesting as a case where the public sector organisations had large land-holdings and so little

necessity to involve local communities in order to manage their resources, but nevertheless they have made active efforts to create local interest and input in planning, and even resulting in the creation of local volunteer groups. Across the sample, EcA ideas were therefore communicated to a variety of audiences, ranging from engineers, NGOs, councillors and planners, to members of local communities or interest groups, each of whom have different needs.

A wide variety of methods were used to do this, from conventional meetings and workshops through to a range of social media and interactive web-based tools. A common feature was having a formalised series of interactions so that communication was interactive knowledge sharing. This may explain why a few respondents felt that an EcA could improve communication between agencies and other stakeholders, as the ethos of an EcA meant that it was about partnership, not hierarchical orders. However, there were some comments made about uneven penetration of this ethos within agencies and how some technical officers were uncomfortable with an EcA for a variety of reasons.

The differing degrees of involvement of different groups (from schools to local authorities to householders to special interest groups) are discussed under the Malawi principles relevant to societal involvement (see page 16).

4. Understandings of an Ecosystem Approach

Although our sample frame was designed to select projects that were considered to demonstrate an ecosystems approach in practice, once we started interviews it became obvious that not all participants viewed their projects as examples of the EcA. In fact, only three fifths of the sample thought they were an example of an EcA. Of these, some were happy to adopt the label but explicitly did not set out with the EcA concept in mind. less than half of the sample actually started their projects as an explicit application of the EcA (see figure 3).

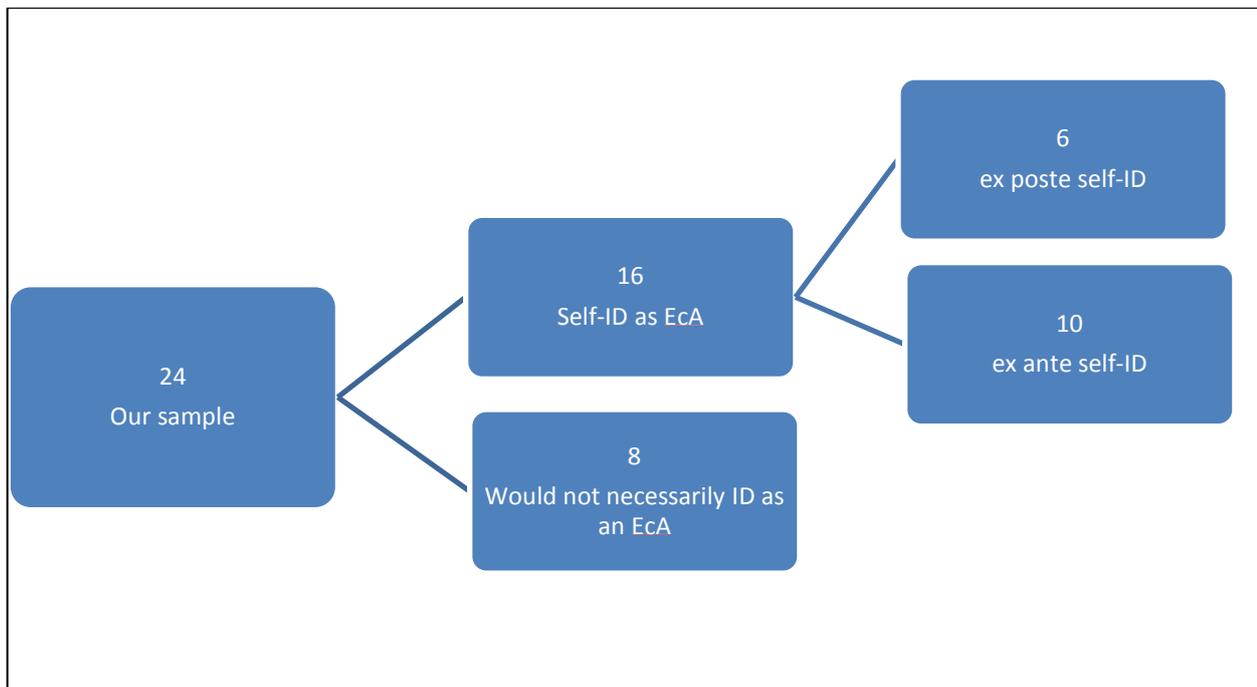


Figure 3: Which of the projects in this study identified themselves as an Ecosystems Approach?

Figure 3 helps to explain why there was a range of understandings of an EcA given in the interviews. Despite comments about the complexity of the concept and the difficult language involved in an EcA, there was considerable agreement about what the term meant. For most people, an EcA required an emphasis on systems. This has several elements: integration of natural and social systems; stakeholder engagement; holistic assessments rather than single issues; and working at a broader scale rather than piecemeal. However, there were also some aspects that were more controversial or mentioned less often, such as the role of valuation and whether or not an EcA required new approaches to decision-making.

A few participants felt an EcA was common sense. However, it was striking that many projects (including some which referred to the EcA as common sense) described previous or planned educational processes to help explain and embed its ethos in their organisations or with the stakeholders implementing it ‘on the ground’ – this would imply the EcA is not obvious to all.

There were some references to projects (not necessarily within our sample) adopting the label because of the current popularity of the term, leading to some consternation from some of our participants. For example, a participant who strongly emphasised the importance of properly facilitated stakeholder interactions and influence commented: *“I’ve seen people do things they call the ecosystem approach which I think ‘how could you even give it that label? You’ve just jumped on a bandwagon, grabbed the buzz word and slapped it on something that seems to bear no relation to the twelve principles or the five operating principles or anything at all!”*

The use of valuation was highly contested – some projects felt it was important to raise awareness of the importance [value] of ecosystems and the service/benefits provided but this did not need to be expressed in

‘pounds, shilling and pence’ but others argued that without monetised values, decisions would not take the real value of the environment into account in decision-making. Some responses relabelled an EcA an Ecosystem Services Approach; and within these responses there was the strong sense that it was the measurement and valuation of Ecosystem services (ESS) that made an EcA distinct from other management processes.

For most interviewees, an EcA is about understanding how our environment or nature is shaped by, and shapes, human choices and behaviours and therefore requires an approach that considers these interactions. The language makes clear that social and economic development is premised on ensuring ecological health and integrity in their area. For many, an EcA was novel or unique in its comprehensive or holistic nature; and it was clear that projects pursuing a single issue like water quality should not be labelled an EcA; explaining why some of our sample were not comfortable with the label for their project. It also explains why some people felt the EcA was a new paradigm for conservation as it required looking beyond biodiversity conservation to wider delivery of benefits from the system e.g. food, drinking water, sense of place etc. Implicit in some of these responses was the fact that this approach actually radically reframes how we think about land and water management.

“I’m kind of interested in the ‘Ecosystem Approach’ - because it takes a holistic approach to land management: rather than choosing between competing objectives, it attempts to reconcile them”

A project manager from a project which promoted partnership working and also had to factor in long-standing arrangements for land-management. However, it should be noted that other projects did talk about trade-off analysis, although they felt these trade-offs would be more ‘rounded’ following the process of deliberation and mutual learning.

A holistic approach delivering a suite of benefits necessarily requires working at broader geographic scale than traditional agri-environmental schemes or individual businesses tended to. A few participants did suggest that an EcA was therefore a way to implement sustainable development or other forms of integrated resource management at a landscape scale. The emphasis on understanding how these interactions generated ‘multiple benefits’ for society was also visible in responses, with a number of projects highlighting the importance of an EcA for raising awareness to the public about what the environment did for them (see also page 24). This blended with the focus on ensuring multi-stakeholder engagement and partnerships in planning and decision-making to make a project an EcA; another reason why some participants did not feel their projects should use the label. It is important to note that all these elements – holistic, integrated, landscape scale management involving all relevant stakeholders – are needed to address complex and intractable problems, but such an approach is neither easy nor a panacea.

5. Use of the Malawi Principles

Implementation of the Malawi Principles (MPs) is supposed to allow the aims of the EcA to be achieved. It is therefore useful to employ them as a tool to help us understand if projects did or did not 'fit' with the ideals of the EcA.

Here we consider each principle in turn, and focus on examining and understanding the extent to which they were or were not achieved during project activities. We first look at how participants assessed their own projects.

5.1 Overview of use of the Malawi principles based on the questionnaires

In a few of the case studies, participants had already self-evaluated their project against the Malawi principles (MPs) to see how well they were implementing the approach, illustrating their use as a way of steering and benchmarking project implementation. However, several other participants who were aware of the principles felt that explicitly using the principles would have been off-putting or overwhelming for local stakeholders. Therefore in these cases the principles were used to frame strategic thinking rather than to communicate 'on the ground'. Indeed, one project manager argued: *"The vocabulary of the principles is fairly unhelpful, impenetrable and in places very far removed from the reality of practical project management."* For example, he looked specifically to MP 4 and asked *"what does 'internalize costs and benefits in the given ecosystem to the extent feasible' mean?"*

Overall, few projects had explicitly used the principles to self-evaluate, and some had never considered the principles in any form, since they had not set out to adopt an Ecosystem Approach. Therefore, after the interviews, we distributed a simple questionnaire to collect and compare participants' own judgements of how each principle had been used in their projects. The resulting overview is presented in the two figures on the next page: Figure 4 summarises how projects that considered the principles during planning, whilst Figure 5 summarises ability to implement the principles.

Of those who responded to the post-interview questionnaire (20 of 24), most participants felt they had considered some or all the principles at the start of the project. Most consistently considered were MP 7 (Work at the appropriate scale) followed by MPs 5 and 8 (Conservation of ecosystem structure and functioning, and Recognise temporal scales and lag-effects). MP 3 (Consider effects on adjacent systems) was least likely to be fully considered, and there were also reservations as to the extent that MPs 1, 2 and 10 were considered (Objectives are a matter of societal choice, Decentralisation, and Balance conservation and use). This perhaps fits with the constraint that many of these projects were initiated top-down by public agencies, and bound to consider statutory objectives.

The pattern of principles implemented was similar – for example Principle 3 was challenging. However, several believed they had implemented all 12 principles to some extent. This was not confined to those who set out to do an EcA (and conversely, nor did all of those who set out to do an EcA implement all 12 principles). Of the sub-set self-identified as an EcA at the start, only eight considered all the principles in the planning process and six had implemented them all during the implementation.

This suggests that not all projects set out to, or were able to, implement the Malawi Principles. This raises the question of what is an EcA, if it is not defined by the use of these principles? What is lost by the partial selection of some principles rather than the entire set?

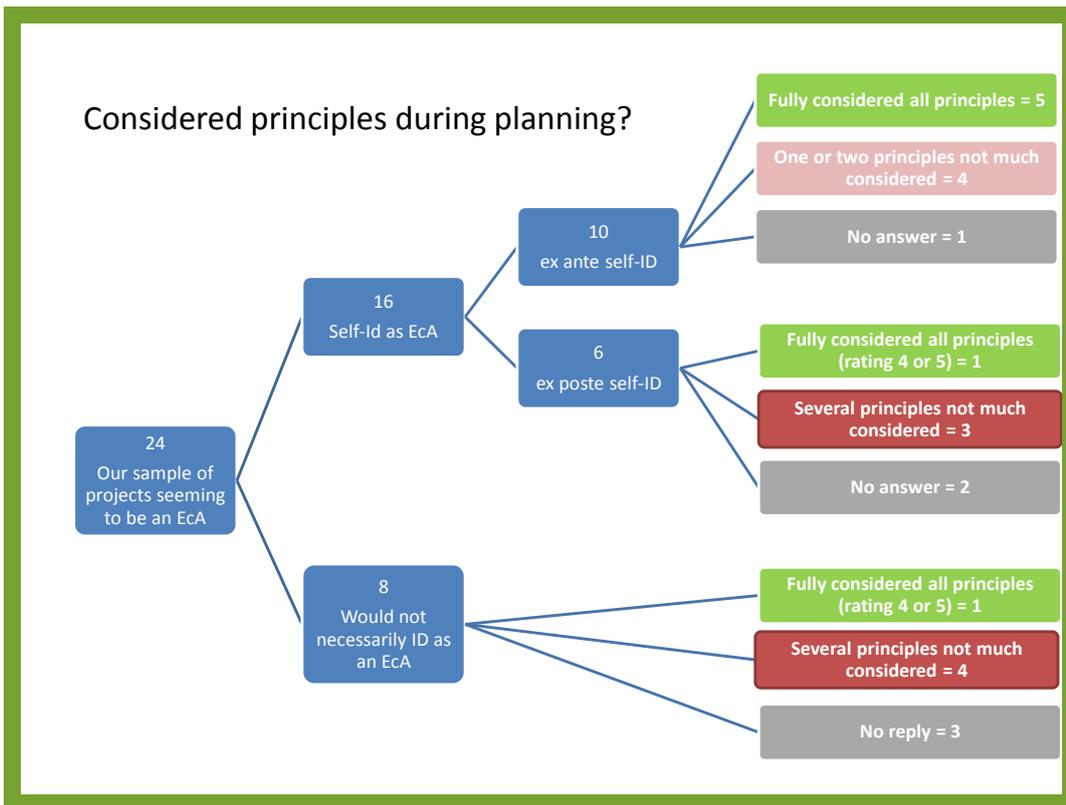


Figure 4 Principles fully considered by projects during planning, as self-evaluated by interviewees filling in questionnaires on their projects

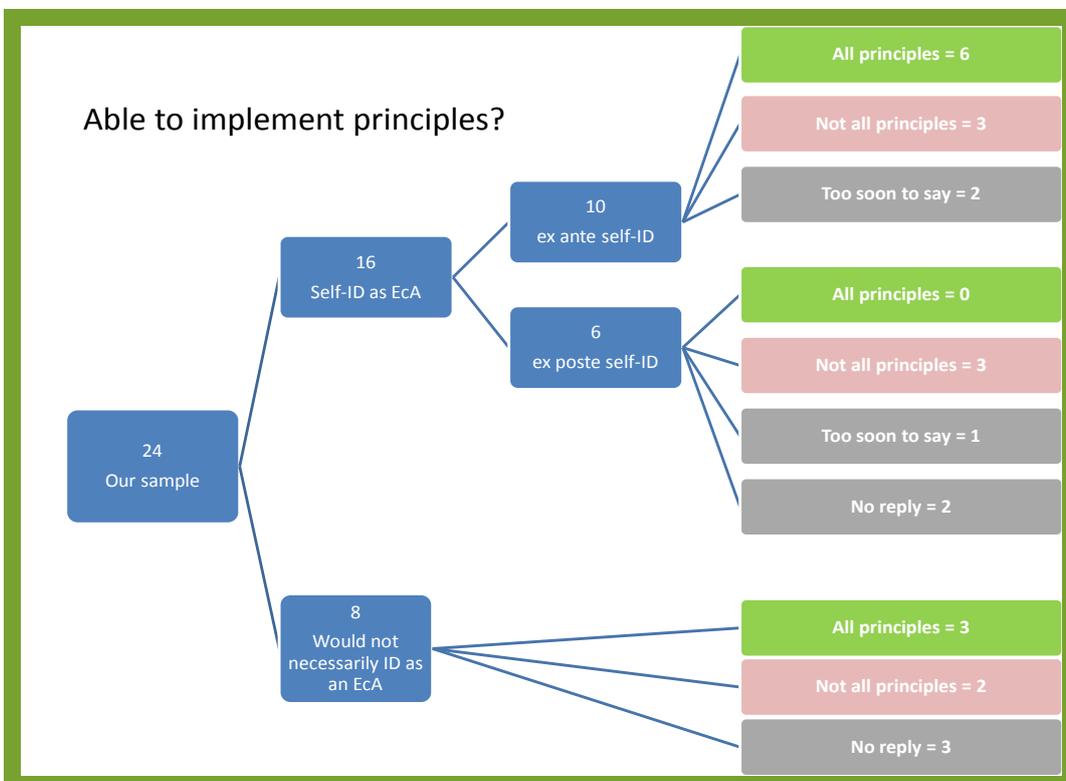


Figure 5 Principles implemented by projects during planning, as self-evaluated by interviewees filling in questionnaires on their projects

5.2 Experiences with each principle

The following pages discuss each Malawi Principle (MP) in turn, based on participants' experiences discussed in interviews. We not only summarise whether or not the principles seemed to be implemented, but attempt to highlight connections between principles and other issues that help to explain these experiences.

MP 1: The objectives of management of land, water and living resources are a matter of societal choice

As discussed on page 11, the majority of our case studies did not focus their work in terms of compliance with statutory targets. However, in only a couple of cases was the impetus for a project completely unrelated to statutory targets or policy drivers (both of which were small scale, relatively self-contained catchments). In short, it was hoped that the projects would help deliver statutory targets and obligations, even though much planning did not specifically refer to our focus on specific targets.

Since the UK is a democracy, it can be argued that whenever projects such as these try to support a statutory policy objective, this is an articulation of societal will enshrined by Government. However, taken together with MP 2 and MP 11 and MP 12, we believe an EcA requires more active participation to shape specific project objectives. In many of our cases, significant multi-stakeholder engagement (see MP 12) was used to agree the project objectives or at least a vision for what the project would achieve. The use of the term 'societal' is problematic when considered in light of MP 2 below as society tends to refer to the Nation-State rather than local participation. Therefore, MP 1 may suggest the need to set specific project aims within a broader articulation of social values. It is telling that some of the case studies with strong local influence on the project actions and aims raised questions about how to reconcile these with national and/or statutory policy requirements (e.g. Loweswater).

The idea of societal choice also raises questions about values provided by ecosystems and how these values are elicited and whose values and weightings count (this is about recognising values to society, not necessarily a debate on the use of monetary value). For example, the concerns of some participants seemed to implicitly highlight that society is not homogenous and with shared preferences, and hence any EcA might require arbitration of choices or trade-offs. A well-run process could, however, identify areas of mutual benefit and allow consensus to be reached about how to make trade-offs that take into account the interests and perspectives of different groups. (To foster such group decision-making, one participant suggested it could even be useful to avoid the term 'trade-offs', to avoid decisions being framed as "*us versus them*").

In some cases, the participants felt there was a need to better illustrate the way that societal well-being, economic development and individual livelihoods were dependent on functioning ecosystems, before society would put adequate weight on ecosystem protection in land and water management.

MP 2: Management should be decentralised to the lowest appropriate level

Our analysis suggests that some projects covering significant areas (+50,000 hectares) did advocate for decentralisation; whilst other smaller-scale projects struggled. This highlights that decentralisation is not spatially determined – small is not automatically better.

This principle links to the concept of 'subsidiarity' in environmental policy making. In some cases, the objectives for the project were set by a national or regional programme, but there were local choices made by partners about how to implement the objectives, in particular measures to be implemented by individual businesses. There were interesting contrasts. Some took a deliberately 'strategic' perspective to try to influence policy and wanted to work across administrative boundaries, effectively creating a new regional governance tier (e.g. Clyde). Others were insistent that 'top-down' approaches did not work; so whilst regional and national perspectives might frame the projects, significant effort went into stimulating 'bottom-up' engagement and up take of measures (e.g. the DTC projects). Thus, implementation of this MP relates strongly to some of the benefits identified above – a belief that empowering local action will generate local 'ownership' of pro-environmental actions in a more targeted manner, resulting in more effective use of resources.

There are some possible insights from which types of projects reported success with this MP: those projects managed by NGOs often found this process easier than those working for national agencies. However, water

companies and local authorities were interesting cases: they seemed to fit this principles as these organisations were often the ‘lowest’ management unit relevant to the site (as owners), so very decentralised. However, these projects also encountered problems with devolving responsibility to tenants; or to engaging councillors supported the pro-environmental objectives of the projects. Furthermore, this MP is strongly related to the belief in partnership working expressed by many of the participants – whilst the ‘level’ may be local; it was often recommended that the management was undertaken by a partnership of relevant local organisations rather than any one individual.

MP 3: Ecosystem managers should consider the effects of their activities on adjacent ecosystems

Smaller scale projects tended to demonstrate more awareness of the effects of their activities on adjacent systems such as a wider catchment or region. Larger projects tended to focus on how habitats and ecological processes interacted within these areas, rather than the implications for neighbouring ecosystems. Indeed, for many larger scale projects a major driving for taking an EcA had been the need to understand the ecological interactions within their areas, in order to avoid the ‘piece-meal’ implementation of policies (particularly agro-environmental policies) that did not respect ecosystem interactions. This sometimes subsequently led to spatial prioritisation, as in the South Pennines and Eddlestone projects.

This focus on ecosystems within one site was linked to being determined by biophysical considerations, and hence working within relatively self-contained biophysical boundaries. However, this pre-supposes a particular ‘take’ on ecological systems, that they are primarily determined bio-physical boundaries like a catchment. There was no mention of managing interactions with air-sheds (although climate change was discussed in some projects) and little talk of mobile living resources (e.g. birds, mammals, dispersal of Non-native invasive weeds etc). Even some of the marine or coastal projects, which are focussed on the interactions between land, freshwater, estuarine and marine systems, did not focus much on the issue of adjacency. This may have been a function of our questions but some participants did volunteer that their focus might be too ‘small’ and that they were not taking sufficient account of how their interventions in a catchment fed into larger issues such as climate change mitigation or adaption for example (as for the Demonstration Test Catchment projects).

The ability to see connections between ecosystems seemed easier for rural projects, whereas those working with highly modified systems e.g.the Wandle and SurCASE projects found it more difficult to explain interactions that were often invisible to the public. In some cases, the project officer(s) were clearly interested in the dynamics of nested systems, but it was unclear whether those implementing measures on the ground understood how their actions related to the wider ecosystem (as for some of the tenant farmers in SCaMP).

Whilst this MP is focussed mainly on nested ecological interactions; we note here that over half of our sample projects are part of a wider programme and therefore are nested socio-ecological systems. Thus, there were lots of discussions of how project activities affected other organisations and institutions (rather than neighbouring ecological units). Although this is not well reflected in the existing MPs, it was an important issue and suggested issues of ‘boundary mismatches’ between different organisational, administrative and bio-physical boundaries and operational scales. These mismatches contribute to the difficulties of managing a system.

MP 4: Manage within an economic context

Much of our interview transcripts related to this MP. An EcA was seen as a way to marry conservation with sustainable use of resources; but also showing why conservation is necessary to sustain economic development in the future. This was seen as a critical benefit of the EcA (see our findings on the benefits of an EcA on page 24), and there were numerous mentions of how an EcA helped illustrate the economic importance of the environment to a wider suite of stakeholders than were usually engaged in catchment or landscape management projects (e.g. the Bassenthwaite project).

Having said this, most of the projects spoke specifically about the impact on farm businesses ; with some concerned about mitigating impact on food production and farm profitability (mainly lowland areas) and others interested in how payments for ecosystem services could provide farm diversification pathways for

marginal businesses (mainly upland areas). Therefore, this MP raises the question of how an EcA interacts with existing farm support policies under CAP and opportunities or constraints for businesses to be paid for provision of ecosystem services. An interesting point, in relation to MP1 and MP 7, was that cost savings or financial benefits to private actors (e.g. farmers) might greatly vary depending on factors such as the scale of the business, and the type of action carried out, the designation of land, and the design of a compensation or PES scheme. However, even if cost-savings or increased profits are small for a business, cumulatively the benefits arising from an EcA will probably be very important for the national economy. However, there is little evidence yet of the economic impact or benefit to society of these projects, which relates to what is and is not monitored.

Some projects had challenged existing economic management in 'silos' and showed that current accounting processes did not account for externalities². Views on how to respond to this varied: rather than focussing on 'polluter pays' to account for externalities, some participants wanted EcA projects to illustrate how these externalities could be seen as resources for economic development (e.g. reclaiming nutrients from waste water). Many projects also explicitly or implicitly referred to trade-offs between conservation and development; or even between different land-based industries e.g. mineral extraction and eco-tourism (e.g. the Gaywood and Ayrshire projects).

MP 5: conservation of ecosystem structure and function should be a priority

Most of the projects, especially those that set out to be an EcA, mentioned the need to maintain or restore ecosystem health and function. Even those not labelling themselves as an EcA often complied with this MP, as their project had a conservation policy driver influencing it e.g. Water Framework Directive or Natura 2000. It is worth remembering that many projects were motivated by a desire to fix existing environmental or ecological problems, but to also take a more systemic approach than previously used.

However, few interviewees went into much detail about how structure and function should be conserved. Some felt they struggled to implement this MP as they lacked sufficient data or ecosystem understanding (e.g. at Wensum) whilst others (e.g. at Thanet) noted where the participatory systems approach required by an EcA highlighted gaps in knowledge or identified problems that more traditional 'silo' approaches might have missed. One project argued that it was important to implement an EcA not an Ecosystem Service Approach (ESA), in order to maintain the focus on the ecosystem, rather than become too focussed on the anthropogenic benefits arising.

This MP has interesting overlap with MP11, as some projects used oral histories and photographs to think about how the structure and function had changed and what should be restored. However, some partnership processes created problems: what happens when partners' priorities and preferences may further damage ecosystems; and conflict with statutory designations and recovery plans? (e.g. the Dartmoor project). The issue of a lack of fit between some statutory designations and dynamic ecological processes arose for some projects, indicating a challenge to implementation of this MP, even though many projects had a 'conservation' driver.

MP 6: Ecosystems should be managed within the limits of their functioning

As with MP5, our interview data give little detail about how projects applied this MP; although the majority of our case study questionnaire responses felt they had considered it as important or very important and most had implemented it.

Most of the references to limits are implicit, within discussions about the importance of illustrating how society and economic development is dependent on healthy ecosystems and the need to restore damaged habitats where limits were exceeded in the past. Participants from a few catchment based projects did talk about times when limits were already exceeded in terms of over-abstraction; flooding or sediment loading. Other upland case studies talked about the need to restore peatland habitats, implying existing practices had exceeded the limits of the habitat function.

² An externality is a cost or benefit (i.e. air pollution) that results from an activity or transaction and that affects an otherwise uninvolved party who did not choose to incur that cost or benefit.

Most of the tools and technologies used in the projects were focussed on understanding *current* interactions and how existing ecological processes did, or could, provide opportunities for development and where current uses were damaging the system. There were few explicit references to how limits might be breached in the *future*, but when these ‘futures’ thinking were used, it seemed that a better appreciation of how thresholds might be crossed arose. Interestingly, in the few cases that did explicitly talk about thresholds in the interviews, there was concern that the MP could not be properly implemented due to a lack of understanding of how systems functioned. There was a sense that marine systems are less well understood than terrestrial. In one case, the participant did not understand what the MP meant, although their case study indicated a good understanding of the need to prevent over-exploitation of the resource.

MP 7: The Ecosystem Approach should be undertaken at the appropriate spatial and temporal scales

The EcA does not specify at what spatial scale work should be carried out. Therefore, it would be challenging to identify whether or not projects have chosen the ‘correct’ scale for an EcA. Such a mission is anyhow fruitless as it is thought that most socio-ecological systems need to be managed at multiple scales simultaneously, but the challenge is to identify the best entry points for engaging with these multiple scales and interactions.

The scale of projects varied widely - see page 9. Whatever their size all projects considered themselves to be working at an appropriate scale. However, by looking across the sample we can identify some pros and cons of choosing to work at different scales, and hence why all scales of work might be deemed as appropriate.

As we’ve already discussed many projects worked at the catchment scale and as such their scale was determined by biophysical boundaries, although pre-existing conservation designations were also influential. System boundaries were typically predetermined by public agencies (possibly conflicting with MP12 and MP2) although in the case of the Carse of Stirling, stakeholders were allowed to modify the site’s boundaries. These scales may indeed be appropriate, e.g. to help achieve statutory targets for site management. However, pre-specified or biophysical units are not always easily recognised by non-agency stakeholders, making it harder to foster stakeholder engagement (e.g. the Wandle project).

Another example of how social issues may influence appropriate scale is patterns of property rights. Where there are few decision-makers controlling resource management (for example a few large land-owners), coordination is relatively manageable. By contrast, it can be quite challenging to liaise with a relatively small area under commons management. In the UK it is more typical to encounter myriad actors who have some influence over the system to be managed, although it is characteristic of some areas of Scotland. Anyhow, even where there are large single land-owners, it may be more in keeping with the ethos of the EcA to try to encourage community involvement and decentralise management (as in the case of Wild Ennerdale).

Therefore, it does seem that smaller scales likely facilitate achieving the principles related to societal involvement and input (e.g. MPs 1, 2, 11, 12). Projects working at the largest scale in our study, in marine sites, involved very little input from interests other than public agencies and local authorities (although it must be noted that it is possible to achieve good practice in stakeholder engagement whilst also working at a fairly large scale – as at Thanet). Larger scale approaches are sometimes thought to allow decision-making to be “*more strategic*”, but this can also reduce the ability to directly involve all individuals or organisations making decisions on the resources to be managed.

MP 8: Recognising the varying temporal scales and lag-effects that characterise ecosystem processes, objectives for ecosystem management should be set for the long term.

Nearly all projects had to finish their work within 5 years (or at least only had certainty of being able to work in this time) and funding for 1 or 2 years is far from unusual. This is not the long term, whether we are influenced by advice on how to involve and engage stakeholders, or an understanding of the timescales over which ecological processes operate and the timescales thus needed for adaptive management.

Nearly all participants to our questionnaire said that they did not fully consider this principle during planning, nor were able to fully reflect it in implementation. It is true that some projects that had a short duration were supposed to be mainly focusing on planning not implementation, but they often could not foresee any

likelihood of funding for activity after that. We therefore suggest that most projects are failing to fulfil this principle – they are constrained from doing so, typically by public agency or government funding cycles. Projects with longer timespans all involve some degree of third sector or private sector funding.

MP 9: Management must recognise that change is inevitable.

Since our interviews focused on experiences of processes, rather than interrogating by the principles one by one, we could not be too surprised if this was not often discussed. However, a wide range of changes were discussed: this can be grouped into (1) natural changes and fluctuations in ecological systems, (2) societal and demographic changes, (3) changes within project management teams and (4) changes (some indirect and unanticipated) resulting from management actions. Having said that, if “*drivers of change*” were explicitly invoked, then these conversations tended to focus on the need to consider and adapt to ecological changes (e.g. forest succession, climate change) rather than societal changes (e.g. demographic changes, changes in societal values and needs). Taking into account these changes, many mentioned the need to use adaptive management. However, we might suggest that the timescales of most projects might leave little room for this, leaving no time to recognise changes and causing inflexibility in plans made.

MP 10: The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

In the questionnaires, not many considered that they had fully considered this principle during planning. However, in interviews, nearly everyone discussed the need to, and the difficulties of, balancing different objectives. This seems to suggest most projects were trying to implement this principle. For example, the Ayrshire Biosphere reserve is supposed to “*balance up pressures for development against conservation*”.

However, when ‘balance’ was referred to, quite often it was actually referring to the need to balance the delivery of different types of benefits from nature. For example, managing land to reduce flooding risk, can be at odds with managing land to maximise food production, and so a balance between these objectives needs to be found. So, some projects – typically those using ecosystem services terminology – are focused on balancing different types of use and benefits from nature, rather than conservation versus use per se. This is perhaps because focusing on anthropogenic reasons for conservation is seen by some as the best way to motivate environmental management: “*a lot of people would say a view is priceless or a species is priceless [...].but unless we start looking at the environment in terms of what it can give us we’re in danger of losing a lot of things we have*” (participant based in a catchment management organisation)

In these situations, pre-existing conservation designations may be helpful for achieving this principle, of reflecting a balance between conservation and use of nature. These designations (for example Natura2000 sites) are typically based on protecting rare habitats and species, regardless of their direct value to humans. However, these designations were more often criticised for being static, and so not fully allowing ecological processes and change. It is unclear if designations are helping to achieve balance, since they are receiving criticism both from those who focus on conserving ecological function, and from those who would more fully focus on more anthropocentric benefits.

MP 11: The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.

Most projects have a very strong focus on using public agency data sets, and being able to combine information from different sources and on different aspects of ecology is seen as making good progress (e.g. as discussed for the Clyde project). Some projects also collect their own data for monitoring purposes: in these cases there is always a focus on chemical and ecological parameters (for example catchment managers monitor Dissolved Organic Carbon). This is often influenced by the need for monitoring specified by statutory targets e.g. measuring indicators of ‘Good Ecological Status’ under the Water Framework Directive.

Whilst these types of information are certainly relevant and useful, all projects are neglecting to monitor aspects of social systems. However, this type of information should be relevant, given that most projects aimed to improve stakeholder participation and involvement. Furthermore, nearly all projects are not sufficiently eliciting or valuing other forms of knowledge on ecology or social issues: for example, local perceptions of ecosystem function, or cultural benefits locally perceived. Where there is good societal

involvement (see MP 12 and MP 1) this information is being tacitly drawn on. Furthermore, some projects, particularly those with an ecosystem services focus, survey or discuss local knowledge in order to better understand perceptions of and values for different potential benefits delivered by natural settings. However, explicitly considering only scientific knowledge, particularly in the form of public agency datasets, does not conform with this principle of the ethos of the EcA. Combining more than one source of knowledge is difficult (this is also mentioned in the section on challenges, on page 26). For example, where local views are prioritised, this may seem at odds with accepted scientific understandings of ecological functions (a worry for the public agency driving one project). However, cases such as Thanet, where scientific and local input combined to produce new systems understandings, show it can be done.

MP 12: The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

Nearly all projects are initiated top-down by public agencies such as Natural England, and so are nearly always involved in project activities. However these types of projects generally make explicit attempts to involve other sectors or societal groups (e.g. farmers, businesses, specific interest groups) to some extent. For example the SNH-commissioned Carse of Stirling project explicitly mapped stakeholders and then encouraged a range of them to mix and become involved in planning. It is sometimes hoped that involving multiple sectors – particularly linking multiple public bodies – will help to promote integration in the planning and delivery of multiple objectives. However, it can have uncomfortable consequences for public agencies: for one project, subsequent to encouraging land-manager involvement and empowerment, the lead public agency experienced an unanticipated loss of control.

Quite often, stakeholder involvement is more at the level of information provision and consultation, particularly with non-farming groups. For example the DTC Eden project gave talks to Parish Councils, and to Anglers. Encouraging a greater degree of input and control would perhaps be more consistent with MP2. However, the degree of involvement is perhaps linked to the scale of work, in space and time: for example the Ayrshire Biosphere project had multiple meetings with community councils, the general public and special interest groups: it would not have been practically possible for all these groups to also fully participate in decision-making on the plans. The projects working at the largest scales to manage seas (e.g. Clyde and Irish Sea) acknowledged that they had very little involvement from sectors other than public agencies and some input from local authorities, due to their strategic nature and scale.

Where projects have not been initiated by public agencies, there is no clear pattern of what sectors are involved, and how. For example, the Anne Valley Project was initiated by a private land-owner, and is still a project involving only land-owners, plus some input and links to the Local Authority. By contrast, a project initiated by a consortium of farmers and academics, Loweswater, also engaged with public agencies, the National Trust, water companies, responded to non-farmers interest in tourism. Water companies are also key players in those projects not initiated by public agencies, and these projects also involve farmers, if not other groups as well (for example sectors involved by SCaMP included farmers, NGOs such as the RSPB, public bodies such as the Forestry Commission and Natural England).

From this diverse set of projects we suggest there are two patterns. Firstly, projects initiated by large organisations (for example public agencies or water companies) may be ‘top down’ but, in reality, if they aim to influence actions on the ground then they have to involve and work with others. Secondly, projects that are initiated by collectives and collaborators across sectors are more likely to widen their networks even further, linked to a desire to improve integration.

5.3 Are the Principles essential?

Earlier, we raised the question of what is an Ecosystems Approach if the Malawi Principles are not considered in planning or applied during implementation. Whilst we maintain their importance in helping underpin the key aspects of an EcA, we recognise that it is the philosophy or ethos that matters, rather than rigid adherence - something reflected by all the CBD guidance (e.g. CBD, 2006).

In the words of one advocate *“think as imaginatively or as creatively as you possibly can. So that’s ...absolutely critical, do not take a tick box approach. Too often the boxes are ticked but the concepts and ideas are lost so I would be very fearful of ‘we’re taking an Ecosystem Approach, these are all the little boxes that we have to fill in’, you’ve missed the point!”*

We would suggest that it *is* necessary to consider all the principles during planning. However, this careful consideration may then highlight good reasons to not emphasise all principles in implementation: for example because it is better to complement rather than duplicate the focus of other overlapping initiatives. However, lack of implementation of the principles may also arise because principles were not considered, or challenges were encountered. It thus necessary to know if the pattern of implementation of the principles is deliberate (intended) or not.

We conclude that the principles are essential for planning, and can help in evaluation, even if they may not always be observed in implementation.

6. Benefits and challenges encountered during implementation

In the previous section we summarised the progress in implementing each of the 12 Malawi principles. This suggests what an EcA can offer, but also highlights difficulties and challenges for trying to implement equitable and holistic resource management. In this section we summarise these, focusing first on benefits and then on challenges.

6.1 Benefits of implementing an Ecosystem Approach

A number of benefits of implementing an EcA were implied in the discussion of what motivated projects to take an EcA *viz a viz* other approaches to environmental conservation and management. These included: (1) more sustainable solutions; (2) stimulating partnership working; (3) better use of public resources; (4) increased public appreciation of the need for nature conservation and (5) re-framing conventional approaches to decision-making. Each one is described in more detail below.

1) *More sustainable solutions:* As one person put it – the value of an EcA is making the whole more than the sum of the parts. Firstly, a number of our case studies provided a challenge to piece-meal approaches to conservation, arguing instead that fixing long term problems requires a systemic understanding otherwise one is reduced to tinkering with pre-existing approaches (*“gardening”*). More radically, some participants suggested that yesterdays’ single issue solutions were creating the ecological problems today. Linked to this was the importance of using stakeholders’ local knowledge, particularly when they tended to appreciate a more joined-up approach to environmental issues. Thus, an EcA requires a systemic and dynamic approach that helps us think differently about what is a ‘good’ conservation solution. Some projects involved students, building capacity for more holistic and interdisciplinary managers in the future.

2) *Stimulating partnership working:* Involving a wider suite of stakeholders exposes people to different perspectives and generates new approaches to decision-making. Furthermore, participatory systems thinking encourages people to think of creative and collective solutions for themselves. Such solutions are much more likely to be adopted than top-down policies and solutions; particularly where local aspirations could be reconciled with top-down national policies and targets. Indeed, some case studies highlighted how the ethos helped overcome an ‘us and them’ mentality between agencies and land managers, and could provide opportunities to enable local communities and land managers to influence spatial planning processes.

3) *Better use of public resources:* An EcA was seen as a solution to the perception that many different organisations *“with massive budgets”* had previously been working in isolation from each other; an holistic and large scale approach can harness these budgets and ensure they work together more effectively. Many argued that an EcA partnership meant small pots of money could stretch much further; or that an EcA helped focus at how to ‘scale up’ affordable solutions. More interestingly, many argued that the *“wider benefits delivery”* agenda that was part of an EcA meant that the same public funding would deliver much

more; and in fact, a systems approach could make cost savings by avoiding single issue solutions that created problems for other places or issues (e.g. integrating water quality, flood control and biodiversity measures). Part of this would be achieved by better spatial targeting when working at a catchment or landscape scale and working long term to allow incremental adaptive management.

4) Increased public appreciation of nature conservation: the emphasis on stakeholder engagement combined with the appreciation of the diverse benefits arising from the environment was seen by many as a real benefit of an EcA. For one project manager the EcA should be valued because it helps integrate natural capital into society, people's lives and business considerations: *"large sections of society are becoming even more disassociated with the natural world and actually they don't see the direct links between the natural world and themselves and their livelihood and their businesses and they don't see the fact that we need to manage that as part of the integral day to day life"*. The systemic approach was seen to motivate a much wider set of constituencies to become interested in Nature conservation. Conservation has sometimes been seen as luxury for the middle class; but some of the case studies illustrate how the EcA was successfully implemented in deprived areas by connecting the environment to social and economic opportunities. In particular, stakeholders could see how land offered more opportunities than just farming for food; helping make more marginal land holdings more viable in the longer term.

5) New approaches to decision-making: a number of case studies argued that an EcA, or paying attention to ecosystem services, could lead to a new way of calculating cost-benefit assessments for public (and private) expenditure. It can help make externalities visible and internalised within the current economic system and help indicate where collective responsibility is required to pay for these issues. In the words of one participant an EcA gives the environment a voice in political processes. A number of participants felt that there was a political shift occurring, creating space for these kinds of new accounting processes to occur.

It is perhaps interesting to consider if any of these benefits are really unique to an EcA. Certainly many of the benefits are common to any partnership approach to managing the environment or previous buzz-words such as sustainable development or multi-functional land use. However, the benefits observed in any one case, certainly seem to go beyond what had previously been achieved at that site.

6.2 Challenges of implementing an Ecosystem Approach

Before we started our interviews, we reviewed the literature to identify what kind of challenges had been faced by projects for environmental management, particularly those that attempt to take a systems approach, and those that attempt to involve people. This review suggested likely challenges that we took special care to ask about during our interviews.

Did we find evidence of these expected challenges? Overall, yes: our participant's experiences seem to resonate with these challenges, albeit with slightly different emphases. In no particular order these interrelated challenges are: (1) team and partnership working; (2) institutional 'fit', trade-offs and tensions; (3) stakeholder engagement and using knowledge; (4) thinking systemically; (5) communicating an EcA; and (6) resources. We summarise these below.

1) Team and partnership working: Typically, projects were managed or received input from a small team of individuals, who shared a common objective, and worked well together (although often suffered from staff turnover). When different organisations became involved – whether part of the formal team managing a project or as organisations informally associated and collaborating – this could bring both benefits and challenges. For example, one statutory body might be very concerned with meeting targets for species or site protection, whereas another one would be tasked with meeting water quality objectives. Such conflicts between *"agendas"* was certainly noted, potentially linked to problems of working with partners who did not allocate much time to project involvement. However, partnership working perhaps not as widespread a challenge as we might have expected. This is because one team member usually played a critical role in liaising with these different organisations, and bridging different levels and interests. Less positively, it is also because some planning and engineering disciplines have much impact on how lands and habitats are managed, but are completely disconnected and unengaged with the EcA.

2) Institutional 'fit' and trade-offs or tensions: Institutional fit is the idea that existing ways of working, formal rules or informal norms can influence the ability to carry out new initiatives. It is to be expected that projects attempting to do something new or different (as might be the case for the EcA) would encounter some problems relating to lack of fit. It also relates to the potential problems of partnership working, since even informal differences in ethos and norms can make collaboration more difficult. Although these kinds of misfit were indeed sometimes mentioned, the more common type of misfit was in relation to pre-existing policies, either those specifying set environmental management targets, or those influencing incentives for action.

The Water Framework Directive, SSSIs, and Natura2000 sites, are designations which are relevant across all the cases, and all mandate inflexible targets for management. This could conflict with priorities identified by one or more stakeholder groups, or with new ideas of ecosystem services (which might favour changing management regimes where site targets do not produce salient human benefits) – as one manager of an agency-led project said: *“If I had a magic wand, I wouldn't have SSSIs.”* Static targets can also conflict with seeing ecosystems as dynamic and changing. Accommodating change is something that policy and some organisations found hard to cope with. We have noted that it is just possible that these tensions can help to balance anthropocentric benefits versus conservation of rare species and habitats (page 22), but it seems they inevitably limit the ability to achieve any radical new priorities.

Perhaps most common was a problem with the priorities and rules of existing incentive schemes – usually but not limited to agri-environment schemes supported by the Common Agricultural Policy, since most focused on actions to be taken by land-managers. Since most projects did not have their own resources to support actions, these other incentives schemes were often then relied upon to fund actions. Careful liaison with land-managers could help to identify mutually beneficial schemes. However, since the setting of CAP rules is beyond the power of any project managers, many prescriptions or rules likely do not fit with plans for implementing an EcA. Schemes with other sources of funding e.g. from water companies, were better able to avoid these problems.

There were also some more general comments about the difficulty of implementing a systemic approach in organisations that have disciplinary hierarchies and are not well suited to adaptive and devolved management approaches. This was elegantly summarised by one participant who worked relatively independent of organisational structures: *“Organisational transformation to adopt systemic practice cannot be achieved in deeply hierarchical organisations that inhibit connected thinking and fail to delegate innovation and risk taking, reflecting a significant challenge to making a meaningful transition towards bringing systemic practice into mainstream”.*

3) Stakeholder engagement and use of knowledges: Stakeholder engagement requires time, skills and often entirely new ways of working. These skills and capacities are often not easily available within organisations that previously did not value these skills. Furthermore, funding timetables and resources may also not sufficiently value these resources. Therefore, exactly who and how different projects engaged widely varies (see page 11) but often falls short of the EcA's ideals.

This may be judged problematic in itself, but also poses a problem for the use of local knowledge. The EcA proposes that multiple forms of knowledge – not just scientific – should be used. However, typically projects focused on collecting natural science data and particularly that relating to monitoring single parameters (often influenced by pre-existing statutory targets). This is perhaps understandable, given the uncertainty associated with understanding complex ecological systems. However, we identify three key limitations of this focus: lack of value for local knowledge, limited attention on social issues, and lack of consideration of change and the effect of interventions.

Firstly, local knowledge was under-valued versus the guidance of the EcA: it was often not collected at all, and where it was collected it was seen as a secondary supplement to plug gaps in scientific knowledge. Where ecosystem services concepts were used, local knowledge was recognised as important, because existing scientific data was typically not structured in terms of ecosystem services, and these concepts anyhow require some understanding of human perceptions of nature's benefits and values. Secondly, and

related to this, projects also tended to collect little information on social aspects of systems, instead focusing on natural and ecological processes or indicators. However, since there is much emphasis on equity and balance, and involving multiple stakeholder groups, in order to fairly evaluate and understand the progress of EcA projects, we would have expected more attention to monitoring social influences and outcomes. Lastly, as noted under MP 6, most of formal monitoring tools and techniques used in the projects were focussed on understanding current interactions and how existing ecological processes did, or could, provide opportunities for development and where current uses were damaging the system. As noted under MP 6, this risks missing how limits and thresholds might be breached in the future.

We would predict that if power and influence in the projects is more fully devolved to stakeholder groups, their knowledge and values will automatically come to the forefront and begin to influence outcomes that cannot be controlled or predicted by those who initiate the process. Of course, this process will add uncertainty on top of that already existing!

4) Thinking systemically: Managing systems is inherent to the EcA, but doing this is often suspected to be challenging. It can also be a difficult thing to demonstrate or measure, so we directly asked people if they thought it had been challenging to take into account systems, which many agreed to. It seemed hard to predict if anyone group would or would not find systems thinking difficult. For example, a participant who had tried to promote systems thinking approach at a catchment scale believed that no particular type of stakeholder or collaborator could be predicted to be good or bad at this: *“some academics are better than others, just like some practitioners are better than others at understanding it! And I think... some of that seems to be institutionally some of the institutions are much better at understanding you know uncertainty in catchments and timescales and things like that, than others.”* The issues of uncertainty and complexity were also often mentioned and relate to systems thinking, since we often have imperfect understanding of complex systems. Some recognised – and for some other projects we could observe – that complexity also arises from the interaction of multiple partners and stakeholder groups, not just natural processes.

There were no clear insights as to how enable and promoting systems thinking. Some thought it might be linked to some kind of innate aptitude and training. However, dialogue between groups and individuals could help in helping understand other perspectives and connecting expertises, sometimes causing individuals to suddenly have *“lightbulb”* moments, or groups to change their *“mindsets”*. This also seemed to be associated with being able to recognise another’s point of view when making decisions (a degree of altruism) although whether this is true, or what comes first, is unclear.

5) Communicating an Ecosystem Approach: Communicating an ecosystems approach was sometimes identified as challenging, at least its terminology. Very few explicitly used the terminology associated with an EcA (for example the principles and their terminology). Those who did, did so within their steering groups or partnerships but not with other participants such as members of the public or farmers (although there were a number of references to the need for education and training processes within public agencies to ensure understanding). When EcA terminology was used with steering groups or partnerships it was felt helpful that there was policy ‘buzz’ around the concept of ecosystem services, so helping to get traction within policy circles.

When working with farmers and other public groups, projects tended to adopt other terms such as multiple/wider/public benefits; benefits from land or from nature. These terms were best used when related to existing ways of understanding the world, such as existing farm system terminology when working with land-managers. A commonly held view was that non-academic and agency stakeholders could grasp the ethos of an EcA very easily, but the terms themselves could be exclusionary (particularly when some felt that even terms such as ‘catchment’ were to be avoided due to lack of understanding). A counter view was that anyone could understand the terms if they were involved in a process that provided tangible applications of the terms at demonstration sites. Thus, a conclusion might be that it is possible to use these terms, if they used in an on-going dialogue that starts from issues of interest to those involved (rather than imposing a technical language from above). For example, communication has to take account of the context and legacies from previous projects or distrust of the motivations for the approach. However, across the

sample, we can see that facilitators or extension officers can play a critical role in helping to mediate this and how terms are interpreted.

It is useful to distinguish between projects that were actively seeking change to land and water management 'on the ground' and those projects that remained at the strategic planning stage and were not, therefore, involved in implementing measures on the ground. Those doing things on the ground often noted that if the language of ESS were used, it opened up discussion to wider aspects of cost-savings and ability to deliver more for the same resource input, which made conservation more attractive to a wider constituency. There were however some concerns expressed about the dangers of not distinguishing between an Ecosystem Approach (EcA) and an Ecosystem Services Approach (ESA). Within our sample, this was a fairly divisive issue: some felt an ESA was controversial due to its use (or misuse) of valuation techniques to quantify and cost services and/or the tendency to rank or trade-off services under an ESA when an EcA should emphasise win-win solutions for the whole system.

Many of the issues raised regarding communicating an EcA are common to communicating any complex and contested management issue. Thus, although the terminology could be seen as difficult, we might suggest this is because the complex systems are hard to summarise in one label. As one partnership facilitator put it: *"It's a very difficult thing to articulate though I think in a phrase or a word because it's quite a large concept isn't it? To have something that says what it does on the tin is a challenge!"*

6) Resources: Finally, shortages of resources were sometimes deemed problematic. It might seem obvious that most people wish they could do more with more money, and although was often true our participants were as likely to feel they had been limited by timelines. This relates to our reflections on the short timelines of these projects (page 21), but in particular the resources, skills and time required for facilitation were often thought to be under-appreciated. Lack of continuity in skills and funding schemes meant one interviewee even recommended that project planning should *"ensure it's short"*, which is totally at odds with the need to work over the long-term (MP8).

These problems also illustrate how different challenges can interact, with some problems exacerbating others. For example, resourcing shortages could exacerbate the challenges of trying to recognise and use different forms of knowledge. However, participants generally felt it had been worth trying to tackle these challenges, and their projects had made progress in doing so. As an interviewee from a multi-partnership project observed: *"it [the project] would have been slicker if there had been less of us, there's no doubt about that!... But you know you could argue ...the project wouldn't have had the same value and knowledge and experience coming into it"*. Furthermore, some interactions can be positive, and so help to overcome challenges. For example, partnership working by the Bassenthwaite project, which linked with initiatives such as the Natural England River Restoration Strategy for the River Derwent, helped to support actions that otherwise would have gone unfunded. Future analysis of our data to understand these positive and negative interactions, may be particularly helpful to identify critical factors to emphasise, or change, in order to make progress in implementing the EcA.

In some ways the benefits and challenges are like flip sides of the same coin: the very things that are seen as benefits of the EcA are also the things that cause problems and are hard to achieve. For example, partnership working is desired, but liaising between multiple organisations and stakeholder groups also causes challenges. Identifying how to overcome these challenges is critical to achieve the objectives of the EcA. In the section that follows we review the implications of these experiences and suggest factors likely to facilitate the EcA.

7. Discussion

In this section we discuss our findings in light of our research questions, and then identify recommendations that can help support future attempts to implement an EcA. We then briefly note future research questions, which may help us to refine these ideas and make progress in supporting the EcA, before briefly concluding by summarising all the implications for the EcA.

7.1 Early answers to the research questions

Firstly, within the UK, how is an EcA understood and interpreted in practice? Multiple aspects of project design and detail vary widely between projects. Our sample encompasses marine planning (e.g. Irish Sea) through to catchment and subcatchment management (e.g. Eddleston). Such differences in design may naturally stem from differences in project settings: for example, projects vary in their focal habitat or management problem. Indeed, the literature surrounding the Ecosystem Approach tells us to expect that EcA will take many forms, so that it may appropriately adapted to local settings.

However, these differences in design are also related to varied understandings of an EcA. These range from an emphasis on a holistic approach to understanding ecological systems, to a need to better involve and empower stakeholders. For example, where an EcA is understood to place a focus on ecosystem-based management and ecological processes, and consequently the project could only consider stakeholders as individuals (usually farmers) to be informed and influenced so land management practices may adjust to support and restore ecological processes. By contrast, other projects could spend more time on collecting and connecting local views and priorities, yielding very different results.

This can vary between projects – for example, the Anne Valley Project worked with individual farmers, whilst the Thanet’s emphasised collective deliberation and planning. The differences between these projects are not just because one focuses on catchments and the other on coasts, but are due to rather different understandings of the Ecosystem Approach: these are therefore important because they are substantially affecting how the EcA is interpreted in practice. This variation also matters because – for some at least – there is scepticism that the label means anything more than a “buzzword”, and confusion about its relation to Ecosystem Services. Post-hoc labelling of other initiatives (such as catchment management projects) may be contributing to this, even though many of these projects indeed seem to conform with the ethos of the Ecosystem Approach and its Malawi Principles.

“If you combine the ecosystem approach with the very best practice stakeholder dialogue, you’ll get phenomenal results. If you take the ecosystem approach, use highly technical language, talk to people about ecosystem delivery and ecosystem function, make it quite narrowly focused and don’t facilitate your workshops, I don’t suppose you’d get anything like the same results”.

Reflections on the difference made by different interpretations of the Ecosystem Approach concept, made by someone who valued carefully facilitated processes.

Our second research question was to what extent were the different principles of the EcA implemented. The variable interpretations of the EcA might well be expected to be associated with the implementation (or otherwise) of its principles. However, it is striking that whatever the pre-existing interpretation of the EcA (or indeed intention to adopt an EcA), certain principles were less likely than others to be implemented. These are the principles associated with using different knowledges and empowering stakeholders, and the principles associated with thinking about ecological processes and the long-term. Thus, the varying extent to which different principles are implemented highlights common challenges for initiatives for natural resource management.

Thirdly, then, what are the key challenges and opportunities for implementing an EcA? From our interviewees' experiences and our observations, we identified a number of challenges arranged into five broad categories: (1) team and partnership working; (2) institutional 'fit' and managing trade-offs; (3) stakeholder engagement and uses of knowledge; (4) thinking systemically; (5) resources; and (6) communication of an EcA. These challenges suggest that higher-level institutional structures (e.g. policy processes, organisational structures) are a critical constraint. For example, top-down funding cycles can limit the timescale and activities of an individual project manager and hence their ability to think long term. We also note the importance of both formal or tangible constraints (such as funding, or staff organisation) and less intangible constraints that relate more to soft skills and ways of thinking, since many specialists or natural resource managers are trained in 'reductionist' thinking or to think in terms of specific targets.

Understanding and overcoming all these challenges will be crucial for future attempts to implement the EcA– or indeed any equitable holistic resource management – both in Scotland and beyond. We must remember that we will probably never find simple, easily replicable and cheap solutions - as has been said before, there are no 'silver bullets' for most complex natural resource management challenges (e.g. Vira & Adams, 2009). However, we can search for approaches and interventions that help to facilitate management.

In the following section we list recommendations for action, which incorporate those made by interviewees, and our own observations of activities and approaches that are useful for overcoming the challenges. These recommendations apply as much to higher-level institutions or processes that enable projects, as much as to individual project managers trying to take on-board or try new approaches.

7.2 Recommendations

In the table on the following page are a number of preliminary recommendations from this research. These recommendations are based on collating what participants have suggested to us in interviews, as well as what we can infer would help tackle the challenges described in the previous section.

This is in no way an attempt to supplement or supplant the existing Malawi Principles. This simply represents our initial attempt to capture and organise the experiences from our case studies in the UK. Furthermore, the emphasis of this list is very much on those practices needed to move beyond current 'business as usual'. These are not aimed at a single audience: the facilitating factors apply as much to those who facilitate and constrain projects (e.g. funders) as to individuals or projects themselves.

7.3 Further work and research gaps

Our recommendations table on the next page provides guidance as to how the EcA can be supported. After peer-review it will later be used as the basis of a short brief as to how to support implementation of the EcA in Scotland. We will also use the experiences in this report to provide guidance on the issues that need to be understood in order to fairly monitor and evaluate attempts to implement the EcA, and as the basis of one or more academic outputs.

This report represents the summary of our first stage of analysis of this data, and further work is required to check and extend this. In later work we will explore the data more thoroughly in relation to one or more issues, with a particular interest in the constraining role of higher-level institutions on these projects.

There are also many other research avenues that could follow-on from this project. These include:

- how ecosystem services concepts (that may be valued) are or are not used to support an EcA.
- comparative work between this and other pre-existing concepts (sustainable development, integrated catchment management) to ask what an EcA adds
- comparisons as to public and private sectors differ in their approach to an EcA
- what scale to work at
- how ideas and decision-making processes at different levels (e.g. project manager to policy) may be directly or indirectly interconnected

Preliminary recommendations for how to move beyond 'business as usual' in order to support the EcA

Recommendation	Facilitating factors
<ul style="list-style-type: none"> • Value partnership working, both across levels (e.g. between organisations) and between levels (e.g. between agencies and local interest groups) • Create a safe space to explore different views and facilitate mutual learning 	<ul style="list-style-type: none"> • Leadership; a coherent, shared vision and an integrated project design. It is important to build on existing successes and partnerships. Therefore an EcA should start with a gap-analysis of existing projects in order to target what is needed and where existing good practice should be sustained. • A process built around regular face to face interactions that addressed both current and future conditions. • Enjoyable social occasions with good food went a long way to sustaining partnerships, particularly when working with volunteers. • For initial engagement, having an EcA related to the individual interests or agendas (e.g. providing information about cost-savings to individual businesses) • A dedicated, neutral project officer, skilled in facilitation, employed by an organisation seen as an 'honest broker'.
<ul style="list-style-type: none"> • Foster a paradigm shift to systems thinking • Allow flexibility 	<ul style="list-style-type: none"> • A champion within an organisation or a local community. • Use of demonstration sites to demonstrate what an EcA can look like or result in, particularly where these facilitate 'peer-to-peer' learning from one local resident or farmer to another. • Pursuing outcomes through a variety of different processes, to give the flexibility to take account of local conditions and preferences. This also tends to lead to more varied landscapes, which are more resilient to long term environmental changes.
<ul style="list-style-type: none"> • Take actions, don't just plan* 	<ul style="list-style-type: none"> • Where possible, processes should identify how to carry out actions and how to influence decision-making* (this often but not always may involve providing or accessing funding). Planning without prospect of actions can be frustrating and feel meaningless. • Rewards for outcomes not business as usual. Where schemes could pay for ecosystem services, there was often uptake of these payments, but it is not clear if the wider ethos of the EcA necessarily penetrated. Payments should be for outcomes, not just to sustain existing farming practices. Large land owners could exercise considerable influence through their ability to direct tenants' actions through investment in infrastructure.
<ul style="list-style-type: none"> • Combine expert knowledge with local knowledge 	<ul style="list-style-type: none"> • Identify how and why local knowledge will be used. • Use 'experts' who already have a holistic ecological perspective. • Respond to absences of data by analysing which data are essential and create an action plan to gather it, but not using this to prevent action. • Planning for holistic monitoring that will be useful for allowing the plans and actions to be later updated.
<ul style="list-style-type: none"> • Be realistic 	<ul style="list-style-type: none"> • Be realistic about what can be known within project timescales and budgets. A lack of data should not be a reason not to act. • Recognise that the project is just one step in a wider set of processes and relationships. • Allow time. Partnerships may slow progress initially and need time to develop, but are to be more resilient over time.
<ul style="list-style-type: none"> • Emphasise the ethos 	<ul style="list-style-type: none"> • Ensure the project team /partnership share an understanding of the ethos of the EcA as per the CBD. • Communicate this ethos consistently to all stakeholders involved – if introducing new concepts or terminology, relate to examples and demonstrations. • Consider all 12 principles in planning, even if it is not possible or appropriate to reflection them all in implementation.

*Some felt that quantification, and where possible, monetary valuation of ecosystem services would assist getting an EcA to influence decision-making. However, this was controversial and not supported by others, so we have not listed it in the main table.

7.4 Conclusion

According to the CBD, the goals of holistic and equitable management can be achieved by implementing 12 flexible but interconnected 'Malawi Principles'. This report reviews a very diverse set of projects which vary in their settings, ethos goals and activities. No project in our sample was able to fully implement all 12 Malawi Principles. Furthermore, none of the projects achieved a level of stakeholder involvement or systems thinking that is unique or radical *vis a vis* recommendations from the academic literature. There are also other existing projects that have implemented aspects of the EcA: for

"In the absence of anything startlingly better it's probably still the best there is"

Comment on the utility of the EcA made by a representative for a multi-partner, multi-activity project that planned and initiated a variety of actions for catchment management

example many projects have attempted to take account of ecosystem processes (e.g. Tallis et al, 2010). So, what do the projects reviewed here tell us about the Ecosystem Approach and the Malawi Principles?

Firstly, although other management approaches have promoted stakeholder engagement (e.g. community-based natural resource management) and others a focus on ecosystem processes (e.g. ecosystem-based management) the EcA is unique in trying to combine both themes. In this study, this was reflected by all the projects advancing the practice of natural resource management in their sites, as regards inclusiveness and/or systemic approaches. Therefore, we conclude that it is worthwhile to continue to focus on and promote the EcA. The EcA reflects and combines the best and latest ideas from across the natural resource management sector, so, even though it may be difficult to implement, its concept is 'as good as it gets' (see quote above).

However it may be necessary to more tightly constrain and reinforce the ethos and understandings of the EcA. This is relevant to understanding the failure to implement all the Malawi principles. In theory, because projects must be tailored to their context they do not necessarily have to fully implement all the principles. However, the variable understandings of the EcA, highlighted by this report, have contributed to the diversity of projects labelled as an EcA, and hence which principles are considered during project design and implementation. In future, if the EcA label is applied to projects that do not fit with the ethos of the EcA, we might risk seeing the label being dismissed as meaningless.

We also suggest that the limited implementation of the principles that we observed is a cause for concern because it highlights significant challenges and constraints facing the projects' attempts to do things differently. These challenges relate to the problems of changing existing ways of working and thinking, often constrained by higher-level institutional structures (e.g. the constraints of funding cycles and pre-existing statutory targets). Thus the implications and recommendations we make are relevant not only to project managers but also to those at higher levels who would influence project design, i.e. those in policy departments and public agencies, whose processes and resources constrain and shape the actions taken by individual projects.

Despite these challenges, it is worth noting that for all case studies their efforts went beyond pre-existing approaches to resource planning or natural management. Therefore they may be giving a renewed impetus to conservation, and are attempting to make progress beyond 'business as usual'. As such, we must celebrate and support these efforts to advance holistic and inclusive management, and use their experiences to inform future work.

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Glossary

AVP	Anne Valley Project
CBD	Convention on Biological Diversity
DTC	Demonstration Test Catchment
EA	Environment Agency
EcA	The Ecosystem Approach (see http://www.cbd.int/ecosystem/)
ESA	Ecosystem Service Approach
ILD	Integrated Local Delivery
MP	Malawi Principle, part of the Ecosystem Approach
NE	Natural England
NGO	Non Governmental Organisation
RELU	Rural Economy and Land Use Programme http://www.relu.ac.uk/
SCaMP	The Sustainable Catchment Management Programme
SSSI	Site of Special Scientific Interest
SuRCaSE	Sustainable River Catchments for the South East
WEPES	The Wetland Example of Payment for Ecosystem Services

References

- Balmford, A. and Cowling, R. M. (2006). Fusion or failure? The future of conservation biology, *Conservation Biology*, **20**(3), 692-695.
- CBD (2006). *The Ecosystem Approach: advanced user's guide*. <http://www.cbd.int/doc/programmes/cro-cut/eco/eco-guide-ad-en.pdf>
- CBD (2000). *Decision adopted by the Conference of Parties to the Convention on Biological Diversity at its 5th meeting; Decision V/6 Ecosystem Approach.*, Nairobi, Kenya. <http://www.cbd.int/decision/cop/?id=7148>
- CBD SBSTTA (2007). *In depth review of the application of the ecosystem approach; 30th March 2007 note by the Executive Secretary; UNEP/CBD/SBSTTA/12/2*, SBSTTA Twelfth meeting, UNESCO, Paris, 2–6 July 2007, Item 3.1 of the provisional agenda. <https://www.cbd.int/doc/meetings/sbstta/sbstta-12/official/sbstta-12-02-en.pdf>
- DEFRA (2011). *The Natural Choice: Securing the value of nature*, DEFRA, London, UK. <http://www.defra.gov.uk/environment/natural/whitepaper/> [Accessed 21st October 2011].
- DEFRA (2007). *Securing a healthy natural environment: An action plan for embedding an ecosystems approach*, Department for Environment, Food and Rural Affairs, London.
- Maltby, E. (2000). *Ecosystem Approach: from principle to practise*, IUCN. http://www.biotechnology.uni-koeln.de/inco2-dev/common/contribs/18_maltb.pdf
- Millennium Ecosystem Assessment (2005). *Ecosystems and human well-being: Current state and trends: findings of the condition and trends working group*, Washington D.C., USA.
- Ney, S. (2009). *Solving messy policy problems: handling conflicts in environmental, transport, health and ageing policy*, Earthscan, Bristol, UK.
- Scottish Government (2011). *Getting the best from our land A land use strategy for Scotland*, Laid before the Scottish Parliament by the Scottish Ministers on 17 March 2011 in pursuance of Section 57 of the Climate Change (Scotland) Act 2009, The Scottish Government, Edinburgh. <http://www.scotland.gov.uk/Resource/Doc/345946/0115155.pdf>
- Smith, R. D. and Maltby, E. (2001). *Using the Ecosystem Approach to implement the CBD: A global synthesis report drawing lessons from three regional pathfinder workshops*, IUCN. <http://www.cbd.int/doc/case-studies/esys/cs-esys-cbd-en.pdf>
- Vira, B. and Adams, W. M. (2009). Ecosystem services and conservation strategy: beware the silver bullet, *Conservation Letters*, **2**(4), 158-162.
- Welsh Government (2011). *The Natural Environment Framework 'A Living Wales'*, Written Statement by the Welsh Government, 15 June 2011.

Appendix I: Questionnaire sent out to participants

Experiences of the Ecosystem Approach

As discussed in the interview, please fill in the following questions to the best of your ability - there are no 'wrong' answers. Please tick the box to the left of the score that best represents your own personal opinion and provide any additional comments in the box at the end.



The James
Hutton
Institute

Project Name:
Date:

1. To what extent were the following principles considered at the **start** of the project? Please click on the boxes you wish to select. (For those who did not set out to implement an ecosystem approach, please consider if similar ideas and principles were – or were not – important.)

	Not considered at all			Fully considered			Don't know
Principle 1: The objectives of management of land, water and living resources are a matter of societal choices.	<input type="checkbox"/>						
Principle 2: Management should be decentralized to the lowest appropriate level.	<input type="checkbox"/>						
Principle 3: Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.	<input type="checkbox"/>						
Principle 4: Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should: Reduce those market distortions that adversely affect biological diversity; Align incentives to promote biodiversity conservation and sustainable use; Internalize costs and benefits in the given ecosystem to the extent feasible.	<input type="checkbox"/>						
Principle 5: Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.	<input type="checkbox"/>						
Principle 6: Ecosystem must be managed within the limits of their functioning.	<input type="checkbox"/>						
Principle 7: The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.	<input type="checkbox"/>						
Principle 8: Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.	<input type="checkbox"/>						
Principle 9: Management must recognize the change is inevitable.	<input type="checkbox"/>						
Principle 10: The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.	<input type="checkbox"/>						
Principle 11: The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.	<input type="checkbox"/>						
Principle 12: The ecosystem approach should involve all relevant sectors of society and scientific disciplines.	<input type="checkbox"/>						

The next questions concern the implementation of the project, since as projects evolve some things become more or less feasible, or more or less useful, than originally envisaged. Please skip this section if you are not yet at the implementation stage.

2. To what extent have you been able to follow each of the principles during the **implementation** of the project?

	Yes	No	N/A (not planned)	Do you have any comments about your ability to implement the principles as planned?
Principle 1:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Principle 2:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Principle 3:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Principle 4:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Principle 5:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Principle 6:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Principle 7:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Principle 8:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Principle 9:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Principle 10:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Principle 11:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Principle 12:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

3. Overall, to what extent are the project objectives on track to be achieved?

Totally off track					Totally on track
<input type="checkbox"/>					

4. To what extent have your expectations of going beyond the statutory minimum by using an ecosystem approach been fulfilled (for those who did not set out to implement an ecosystem approach, answer for the approach you took)?

Totally unfulfilled					Totally fulfilled
<input type="checkbox"/>					

5. Please add any additional comments that have occurred to you whilst filling in this questionnaire below:

Thank you for your time and effort and we look forward to returning the results to you in due course. Please return to Kirsty Blackstock kirsty.blackstock@hutton.ac.uk